Department of Science
and Technology
Government of India

INDIA -JAPAN GEOSPATIAL AND SPACE BUSINESS SUMMIT

Hyderabad International Convention Centre, Telangana, INDIA

November 16, 2022

I BACKGROUND INTRODUCTION

Opportunities in Geospatial and Space Ecosystem

The Geospatial industry is emerging as the next 'Big Opportunity' worldwide, both as an 'advancing market in itself' as well as 'augmenting business processes' of mainstream IT, Engineering and Autonomous industries. Today 'Data Insight' is at the driving wheel of knowledge economy, penetrating and integrating across workflows and processes of every industry. As every business is getting more and more driven by insights, data serves as 'oil' to knowledge economy and shared economy business models, resulting in greater efficiency, productivity, transparency and compliance. Therefore, geospatial industry would continue to provide accurate and rich foundation to data infrastructure and increasingly add the 3rd dimension to 'everything we do' leading to 'geospatial by default' embedded in digital twin and metaverse impacting how humans interact with the digital and physical world in near-real-time.

There is a compelling need for a new thinking for space strategy based on the recent developments in the context of pace sector. Increasing number of counties in the Asia Pacific region are using space for various purposes. Many are also aspiring to acquire indigenous capabilities for space activities. Moreover, increasing private/commercial activities are seen in this region resulting in the growth of competitive market for technology, applications and services. Security needs are also major drivers of space activity in many countries. Many have been actively using space systems like communication and remote sensing satellites to meet various social needs, disaster monitoring, natural resources management, tele-education, tele-medicine, national communication, navigation services etc.,

Geospatial Industry and World Economy

Global Geospatial Market size is estimated to be US$ 452 billion in 2022 and it is forecasted to grow at 14.61% CAGR to be US$ 681 billion by 2025.Thereafterit is expected to grow at much faster rate of 16.1% CAGR post 2025, taking it to US$ 1.44 trillion by 2030. While the current growth rate is driven by technology innovation, integration of workflows, and augmentation of spatial analytics in business processes, post 2025 it gains momentum due to public policy reforms and increasing investments in geospatial infrastructure (both public and private) and industry acceleration programs worldwide.

As geospatial industry is maturing and mainstreaming, associated trade and commerce is gaining momentum too, duly augmented by public policy reforms towards commercialization and industrialization of geospatial technology and infrastructure globally. There have been several policy initiatives towards opening of data and facilitation of private sector engagement through incubation programs and the same has played a key role in scalability of applications and maturing of user adoption levels. However, growing demand of geospatial services and harnessing huge business potential would require greater partnerships with commercial enterprises, and therefore its very imperative for progressive governments to play a proactive role in developing 'geospatial infrastructure' and creating a conducive and enabling business environment.

Indian Geospatial Industry: Growth Market

Indian geospatial industry has largely been driven by exports of services. Recent policy reforms have provided much needed boost to the domestic market. With Government support it could reach around US$12.5 billion by 2030 and would play a key role in India's progress in the 4th industrial age. Enabling this would need strategic engagement and partnerships between public and private sector stakeholders. In order to move up the value chain, commercial geospatial industry would need to invest in technology developments and leverage expertise of domestic market to enhance its exports not only in developed nations of west but also developing nations of Indo-Pacific region. Current exports of Indian geospatial industry is estimated to be around US$1.5 billion and the same is likely to grow substantially in the next decade.

II COOPERATION BETWEEN INDIA AND JAPAN

Relationship between Japan and India goes back to ancient times through exchange of culture and values and ever since both the countries have enjoyed cordial relations. However, a formal diplomatic relationship was established in the year 1952 and the same has been consistently strengthened and today both the countries have 'Special Strategic and Global Partnership Working Together for Peace and Prosperity of the Indo-Pacific Region and the World'.

Driven by principles of peace, democracy, prosperity and sustainability, economic relations between them have been growing rapidly. In the recent years both the nations have stepped up their cooperation in the area of digital infrastructure, and today India considers Japan as its most trusted partner in economic and technological modernization and currently Japan is the 4th largest investor in India.

The political leaderships from both the nations have been affirmative towards synergizing India's demographic dividend and Japan's capital and technology to realize the true potential of the Japan-India economic partnership for a prosperous and progressive future. In this regard, the two countries agreed for a Bilateral Swap Arrangement of USD 75 billion, the launching of a comprehensive Japan-India Digital Partnership, and other cooperation and initiatives. The two countries, concurred to further develop Japan-India relations and work closely toward the realisation of a 'Free and Open Indo-Pacific'. It is characterised by a safe ocean connection, integration by trade and investment, and respect for sovereignty and territorial integrity as documented in international law.

Significant Milestones between the Two Countries

- Treaty of Peace (1952)
- Agreement for Air Service (1956)
- Cultural Agreement (1957)
- Agreement of Commerce (1958)
- Convention for the Avoidance of Double Taxation (1960)
- Agreement on Cooperation in the field of Science and Technology (1985)
- Japan-India Comprehensive Economic Partnership Agreement (2011)
- Agreement between the Government of Japan and the Government of the Republic of India Concerning the Transfer of Defence Equipment and Technology (2015)
- Agreement between the Government of Japan and the Government of the Republic of India Concerning Security Measures for the Protection of Classified Military Information (2015)
- Agreement between Japan and the Republic of India on Social Security (2016)
- Agreement between the Government of Japan and the Government of the Republic of India for Cooperation in the Peaceful Uses of Nuclear Energy (2017)
- Agreement between the Government of Japan and the Government of the Republic of India Concerning Reciprocal Provision of Supplies and Services between the Self-Defense Forces of Japan and the Indian Armed Forces (2021)

Bilateral Trade between India and Japan

The bilateral trade of Japan with India totalled at US$ 17.63 billion in the financial year 2018-19. India's primary export categories to japan include petroleum products, chemicals, elements, compounds, non-metallic mineral ware, fish and fish preparations, clothing and accessories, textile yarn and fabrics, iron, steel products and machinery, among others. The top imports for India from Japan remain nuclear reactors, boilers, machinery and mechanical appliances, inorganic chemicals, organic chemicals, vehicles, parts and accessories, photographic, cinematographic measuring, medical and surgical instruments, optical among others.

In 2020, India exported US$4.36 billion to Japan. The main products exported from India to Japan were Refined Petroleum (US$457 million), Crustaceans (US$307million), and Diamonds (US$251million). During the last 25 years the exports of India to Japan have increased at an annualized rate of 1.89%, from US$2.73 billion in 1995 to US$4.36 billion in 2020

India-Japan Science & Technology Cooperation

While India adapts to Japan's technology, Japan could allow India to shift towards more leaner, more globally competitive, manufacturing aided by automation, artificial intelligence (AI), and the creation of new skills sets. Not just in technological aspects, there is an increased cooperation in the field of defence as a result of greater technological integration and it has been based on the set of goals of 'co-development and co-production' in the Japan-India Vision 2025.

The Cooperation is expected to promote sectors such as 5G, Internet of Things (IoT), Artificial Intelligence (AI) and more importantly due to the security concerns raised against the adoption of 5G technology produced by China. Further, the cooperation will include the implementation of submarine optical fibre placements, smart cities, and utilisation of artificial intelligence in healthcare. The submarine optical fibre cable connecting Chennai and Andamans & Nicobar Islands was a result of the joint cooperation between India and Japan. Their collaboration also includes the transfer of AI technology in the assisted colonoscopy diagnosis at the Asian Institute of Gastroenterology in Hyderabad, India.

India - Japan on Space Collaborations

In addition to this, India and Japan have been making massive progress in the fields of space and geospatial infrastructure and there lies a greater opportunity to leverage on ongoing political, economic and security relationships to strengthen trade and commerce in the said fields. India has undergone path breaking policy reforms in the field of geospatial, drones, space and IT in recent years and this is an indication of strategic importance of the sector in overall development of the country. And these reforms have in built promise and commitment of the political leadership to open Indian market for commercial companies as well as facilitating international trade and commerce. Few partnership and cooperation arrangements are worth mentioning in this context:

- Indian and Japanese space agencies, Indian Space Research Organisation (ISRO) and the Japan Aerospace Exploration Agency (JAXA) have been working on earth observation, lunar cooperation and satellite navigation, and also agreed to explore opportunities for cooperation in "space situational awareness and professional exchange programme."
- Both agencies signed an Implementing Arrangement for collaborative activities on rice crop area and air quality monitoring using satellite data.
- India and Japan are already working on a joint lunar polar exploration (LUPEX) mission and the two space agencies have been working on the mission that aims to send a lander and rover to the Moon's south-pole around 2024.
- Under the umbrella of Space Policy and Law Network in Asia Pacific (SPLANAP), University of Tokyo (Japan) and National Institute of Advanced Studies (India) have taken up a joint study to research and prepare a report on space policies of the Asia Pacific region, especially Japan, India and many other space faring nations in this region. Japan and India are leading space faring countries in this region. In Japan, promoting advanced technology innovation and scientific research has been the

major policy objective. In addition, space utilization, as well as industrialization of space are also primary drivers for the space policy objectives since the enactment of Basic Space Law in 2008.

However, the pressing challenge is to create a policy framework on a) how to promote space utilization and industrialization and b) how to coordinate policies and goals of various stakeholders.

- In recent years, India has also actively pursued space exploration program, including ambition for human space flight. In a recent study by NIAS, a clear need for a comprehensive national space policy in India has been established.

India's Cyber Security Pact with Japan

The Cyber Security Pact, between India and Japan, promotes "cooperation in capacity building, research and development, security and resilience in the areas of Critical Information Infrastructure, 5G, Internet of Things (IoT), Artificial Intelligence (AI) and cooperating on the telecommunications and digital infrastructure front, thus paving the way for a safer Geo –Political order. The Cyber Security Pact allowed NEC Corporation, a US$28-billion Japanese IT communications company to invest a lot in India especially in the field of technology. The company has set up various R&D centres in Bangalore, Chennai, Noida, and others, with the Chennai centre focusing on 5G and is already working with major telecom companies in India for its immediate rollout.

India Japan on Defence Research

In the area of defence research between India and Japan, the counties have to potential to "emerge as a key pillar of bilateral defence relations." The relationship has reached new heights since the last decade, especially with Japan's post-war security posture and its easing of the arms export policy. Both the countries have engaged in many agreements on sourcing the Japanese defence technology, joint development, and the production of defence equipment. India aims to modernise their defence capabilities with the help of modern Japanese technology and aims to diversify their sources of acquisition, whereas Japan aims to revive its defence industry as it comes out of its export ban and it is well within the framework of India-Japan Vision 2025. The agreement regarding the transfer of defence equipment and technology and the agreement Concerning Security Measures for the Protection of Classified Military Information was signed in December 2015, thus paving the way for more joint research, development, and production.

The efforts between Japan's Acquisition, Technology and Logistical Agency (ATLA) and India's Department of Defence Production (DDP) has led to the creation of the India-Japan Defence Industry Forum, which was instituted in 2017. The two agencies under 'Cooperative Research' unveiled their maiden projects in the area of Unmanned Ground Vehicle (UGV) and the Visual Simultaneous Localization and Mapping (SLAM) Based Global Navigation Satellite System (GNSS).

India and Japan Acquisition and Cross-Servicing Agreement (ACSA)

India and Japan signed the ACSA in September 2020 on the similar lines of the Logistics Exchange Memorandum of Agreement (LEMOA) that India maintains with the United States. The LEMOA allows the armed forces of both the countries to "exchange supplies and services on a reciprocal basis during exercises in which they both participate." With the ACSA, the Armed Forces of both India and Japan would be able to use each other's bases for logistical support. For example, the Indian Navy will be able to access the Japanese base in Djibouti, whereas the Japanese Self Defence Forces will be permitted to use India's military installations on the Andaman and Nicobar Islands located in the Indian Ocean. Given their stance on the Indo-Pacific and due to their growing concerns around various activities in the region, it would allow both the countries to anchor the two ends of the Indo-Pacific leading a regional status quo between them (the two countries).

India – Japan on Encrypted Communications

Recently both Japan and India and the 'Five Eyes' intelligence alliance members have urged tech companies across the world to review their encryption practices, as they were concerned about the unbreakable encryption that could potentially be used as a tool for terrorists and child traffickers posing a direct threat to the people. Popular messaging applications like WhatsApp, Telegram, Signal and others resort to end-to-end encryption (E2EE), meaning that the messages can only be decoded by the sender and the recipient, making it difficult for others to monitor and prohibits law enforcement agencies from investigating crime rings, but also the tech platforms themselves from enforcing their own terms of service. In October 2020, the representatives from seven countries (Australia, Canada, India, Japan, New Zealand, UK, and USA) published a joint statement, calling for all the tech companies to work with the government and demanded a "backdoor" in their encrypted applications to help and assist the law enforcement agencies.

Interventions of Japan International Cooperation Agency (JICA) in India

Established in October 2003 and headquartered in Tokyo, Japan, JICA aims to contribute to the promotion of international cooperation as well as the sound development of Japanese and global economy by supporting the socioeconomic development, recovery or economic stability of developing regions. JICA's focus is to provide support towards sustainable development and inclusive growth with the 4 Ps (People, Peace, Prosperity and Planet) in the background.

In India, the agency has aligned all its projects with India's national priorities and long-term vision. Cross cutting issues such as adequate environmental and social considerations, gender mainstreaming and ensuring human security are also encouraged. JICA has been partnering with Government of India, various state governments, civil organizations and social enterprises for poverty alleviation, investment promotion and infrastructure development for 60 years. JICA's assistance is not limited to initiatives such as Delhi-Mumbai Industrial Corridor (DMIC) but also other initiatives of development of the North Eastern Region (NER) of India, strengthening academia-industry networks, and Japan-India collaborative projects in Africa under the "Free and Open Indo Pacific".

Over the past decade, JICA played active role in supporting railway sector development (metro, dedicated freight corridor (DFC), high speed rail (HSR)), utilizing Japanese knowhow and technology, particularly for HSR. The Mumbai-Ahmedabad High Speed Railway (MAHSR) Project connecting India's largest city of Mumbai with Ahmedabad, a prosperous commercial and financial center, is an ambitious initiative to construct a high speed railway system. With the introduction of Japan's bullet train system in combination with ODA assistance from Japan, MAHSR has become a flagship project representing the "new era in Japan-India relations."

JICA is the dominant development partner in India's forestry conservation. Numerous projects have received JICA's support in energy, road, water supply and sewage, and agriculture sectors. In recent years, JICA has been extending financial and intellectual support through program loans regarding policy and institutional improvement for investment promotion, skill development, development of infrastructure to facilitate industrial development and SME development.

Since the COVID-19 pandemic has adversely impacted economic activities in the country, there is a growing need for not only strengthening health and medical systems, but also for supporting the revival of MSME sector and extending social protection to the population, who are deeply affected by the pandemic. In order to address these needs, standard assistance schemes of JICA such as ODA loan and technical cooperation are already under implementation. The core focus has been to address the following:

- Agricultural and Rural Development
- Private Sector Development
- Urban and Regional Development
- Ensure Access to Affordable and Clean Energy
- Development of Transport Infrastructure
- Urban Environment Management
- Conservation of Natural Resources Environment
- Health & Medical Care

- Power & Energy

All these initiatives contribute to the development of India and also foster stronger relations between the two countries towards the Agency's vision on creating a prosperous, sustainable economy at harmony with nature and prepared for promoting social development.

III GEOSPATIAL WORLD CHAMBER OF COMMERCE

Geospatial World Chamber of Commerce (GWCC) is a non-profit global organization. Headquartered and registered in India, GWCC is promoted by 'Geospatial World' with a vision to promote trade and commerce globally as we all know that Geospatial knowledge serves as foundational infrastructure for sustainable socio-economic development and the same provides big boost to international trade and commerce.

The objective is to focus on B2B platforms at national, bilateral, regional, and multilateral levels with an aim towards a) connecting geospatial and space industries with mainstream political and economic leadership; b) towards facilitating growth of trade and commerce of Indian geospatial industry and space industries with primary partner countries of India in the context of evolving geo-political world order. GWCC strives to facilitate open trade and commerce, and work towards developing level playing fields, and ease of doing business practices for commercial companies at national, regional and global levels.

Rationale and Objectives

There is a need to have a comprehensive 360 degree view, equipped with holistic approach, and combined efforts of leadership towards mainstreaming and harnessing the growth potential of geospatial and space industries. Like other mature industries, it is time that geospatial industry began to work towards advancing and facilitating trade and commerce globally. Momentum build by public policy reforms needs to be augmented by trade and commerce strategies. There are several institutions that are focusing on professional networks and policy developments globally, but the time has come when the thought leaders of geospatial and space industries work together towards advancing geospatial trade and commerce globally through fair principles and level playing practices. Since geospatial and space industries are closely linked with security and sovereignty sensitivities, there lies greater needs for cautious and constructive engagement with governments as well as trade and commerce institutions. It is highly important to adopt credible and trusted process of engagement with political and commerce institutions globally, and therefore it becomes imperative to showcase collective approach of global geospatial and space industries in this endeavor.

Core Objectives

1. Promote, facilitate, advance, and protect interest of global geospatial and space business communities;
2. Draw plans and projects for encouraging the growth of trade and commerce worldwide;
3. Advise Governments on matters relating to commerce, trade and industry;
4. Collect and share important information about industry, market and policies to its members;
5. Assist Governments in policy development and consultations on budgetary and procurement provisions;
6. Bring to the notice of the Government the impact of various laws and regulations on business;
7. Facilitate technological development through partnerships between academia, research, government and industry;
8. Make the members aware of latest developments in technology, marketing, financing, human resources, etc.;
9. Establish chapters in various countries and develop and explore the areas where businesses can participate and cooperate.

GWCC shall collaborate and partner with associations, agencies, organizations and country governments to explore, support and expand through collaborative approach in the following fields:

Core Areas of Engagement

1. Geospatial and Space Infrastructure;
2. Research, Innovation, Incubation of Startups;
3. FDI and Joint Ventures in Geospatial and Space companies;
4. Training and Workforce Development;
5. Deployment of Space and Geospatial Technologies in Smart Cities, Infrastructure, and Security.

IV INDIA -JAPAN GEOSPATIAL AND SPACE BUSINESS SUMMIT

In view of above laid out scenario and opportunities, Geospatial World Chamber of Commerce (GWCC) is organizing the **1st India-Japan Geospatial and Space Business Summit** on November 16, 2022 as part of GeoSmart India conference at Hyderabad International Convention Centre in Hyderabad, Telangana, India**.** The strengthening of the QUAD group (India, the USA, Japan, and Australia) is further seen as a successful measure of the bilateral strength between the two countries.

Expanding our outreach and engagement, we have been in discussions with stakeholders of Japanese geospatial and space industries, and propose to organize our first round of India-Japan Geospatial and Space Business Summit. The one day summit shall witness participation from the key stakeholders from government agencies, civil society, private sector, and academia and research fraternity from both the countries – Japan and India. GWCC endeavours towards facilitating strategic dialogue between the two countries strengthening India-Japan Geospatial and Space Business Partnership.

GWCC further strives to build on the mandate of Governments to provide broader framework of cooperation and develop an enabling environment of ease of doing business in their respective countries. This would further boost confidence of commercial companies to co-invest and embark on long term pathways for sustainable and profitable partnerships.

The One day Summit strives to strengthen not only the bilateral relations between the two countries in the context of Geospatial and Space eco systems keeping the Geo Political order in view, but also strengthening of the QUAD group (India, the USA, Japan, and Australia). The Summit facilitates dialogue across Industry insights, policy reforms, technologies towards creating a holistic business relations based on Trade and Commerce.

Core Objectives:

- To deliberate on the various policy reforms pertaining to Geospatial and Space technologies towards strengthening the existing bilateral relations between the two countries
- To demonstrate combined value of geospatial and space technology in overall development of the two countries through business dialogues
- To showcase latest technology innovations across space, geospatial, AI/ML, Cloud, Autonomy and their combined integration with geospatial and EO capabilities to develop national geospatial knowledge infrastructure and its applications
- To share and exchange the best practices of the Geospatial technologies embedded with the Future generation technologies and applications
- To facilitate an actionable agenda for the capacity building of the key stakeholders by leveraging of each other's capabilities
- To draw a roadmap for the next 5 years with Geospatial and Space technologies and applications at the nucleus

Who will attend?

- Industry Leaders
- Government Functionaries
- Thought Leaders
- Business Users
- Implementing Agencies

Highlights of the Progrmme

- Dialogue forum consisting of participation from Government, Industry and Civil Society leaders
- High Level Networking Reception

Program Schedule

INDIA -JAPAN GEOSPATIAL AND SPACE BUSINESS SUMMIT November 16, 2022	
Time Slot	**Program Agenda (Draft)**
09:30 -10:15	Opening Session - Policy Impact and Ease of Doing Business: An Indian Perspective
10:15 – 11:00	Session I: India-Japan Geospatial Technology Collaboration: Opportunities for Industry
11:00 – 11:30	Coffee/Tea Break
11:30 – 12:15	Session II: India-Japan Space Technology Collaboration: Opportunities for Industry
12:15 – 13:00	Session III: Technology Transfer and Make in India: Opportunities and Potentials

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