

BENEFITS OF INDIAN SATELLITE NAVIGATION SYSTEMS

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The applications of Global Navigation Satellite System (GNSS) are rapidly increasing across various sectors and entered into our daily life in many ways that we might not think about and the values of those services are beyond monetary values. Yet, the future potential is still far reaching.

Realizing the enormous potential benefits and economic impacts of Navigation Satellite System providing position, navigation and timing services, India took early initiative and initiated GAGAN (GPS Aided Geo-Augmented Navigation) and IRNSS (Indian Regional Navigation Satellite System) or NAVIC (Navigation with Indian Constellation) projects.

The GAGAN system is a Space Based Augmentation System (SBAS) developed by the Indian Space Research Organization (ISRO), together with Airports Authority of India (AAI) to deploy and certify an operational SBAS for the Indian Flight Information Region (FIR), with expansion capability to neighboring FIRs. GAGAN provides a safety of life civil aeronautical navigation signal consistent with International Civil Aviation Organization (ICAO) Standards and Recommended Practices (SARPs) as established by the Global Navigation Satellite System (GNSS) Panel. GAGAN system provides NPA (Non Precision Approach) services of RNP-0.1 over Indian FIR and PA (Precision Approach) services of APV-1.0/APV-1.5 (AProach with Vertical guidance) over Indian landmass on nominal days.

IRNSS project is a regional independent navigational satellite system using a combination of GEO and GSO spacecrafts and state-of-the-art ground systems. The IRNSS System provides navigation solution all time with position accuracy better than 20m during all weather conditions, anywhere within India and a region extending about 1500 km around India. IRNSS provides Standard Positioning Service (SPS) and Restricted Service (RS) to the users on dual frequencies in L5 and S band.

GAGAN and IRNSS will provide benefits to many user segments for land, sea and air applications such as intelligent transportation, agriculture, maritime, highways, railways, surveying, geodesy, security agencies, telecom industry, personal users of position location applications and timing applications etc, in the Indian subcontinent.

The application of GAGAN and IRNSS in a number of market segments will deliver enormous benefits to India's economy. The products and services create values for commercial and noncommercial users. For commercial users, the satellite navigation technology will make the production processes and operations to be easier, safer, and cost-effective. For noncommercial users, the technology will create monetary values of time and cost savings as well as nonmonetary values of safety and lifestyles. Like other innovative products and services, this technology is expected to create jobs and economic activities to support the economic growth.

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