NavIC-based Multipurpose Open Hardware Drone

Breif Background

Frequent natural disasters demand fast, reliable, and data-driven response, yet traditional disaster management is limited by delays, poor accessibility, and lack of real-time situational awareness. UAVs can overcome these challenges, but their performance depends on accurate navigation, which conventional GPS cannot always guarantee. NavIC offers higher regional accuracy and faster signal acquisition across India, making it ideal for autonomous emergency response drones. Therefore, integrating NavIC with open-source drone platforms will significantly enhance real-time situational assessment, improve disaster response efficiency, and enable rapid customization and deployment through open hardware/software ecosystems

TRL 4

Tech/Prod. Summary

A NavIC-enabled, open-source drone aimed at achieving high positional accuracy and reliability. The system is designed to improve autonomous flight performance, enhance real-time navigation, and increase operational efficiency for critical applications such as disaster management, precision mapping, and environmental monitoring

Tech/ Product Description

The produtc was built using open-source hardware and software, the platform is cost-effective, modular, and easily customizable, with all design files and firmware released for community use and innovation. With real-time NavIC signal processing, autonomous waypoint navigation, and expandable sensor/payload support, this drone provides a scalable solution for disaster response, environmental monitoring, precision mapping, and research applications—strengthening India's capability in next-generation UAV systems

Market Potential

Global drone market: Reach USD 55-60 Billion by 2030
Indian Drone Market: Reach USD 13 Billion by 2030

Value Proposition

1. offers precise and reliable navigation, enhancing disaster management, search and rescue, and environmental monitoring.
2. Open-source, modular design ensures affordability, adaptability, and community-driven innovation.
3. Make in India provides customization, cost-effectiveness .

Impact - SDG:

SDG 9 : Industry, Innovation, and Infrastructure

Application Sectors

- Agriculture
- Mapping and digital twin
- Disaster Management

Project Title: NavIC-Based Multipurpose Open Hardware Drone
University: International center for free and open source solutions (ICFOSS)
Principal Investigator: Dr. Sunil TT, Director, ICFOSS

v2 Optimized Open Drone