NavIC Applications in e-Governance

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Location and Time tagging at Aadhaar Enrolment Centres

- Aadhaar numbers are used for unique identification of Indian citizens.
- Malpractices and forgery while generating these unique identification numbers are observed.
- Location and Time tagging of Aadhaar Enrolment centres ensures legitimate generation within the national boundaries.
- Low-power, small-size Receiver modules with outdoor to indoor connectivity.

- **Installation of about 100000 devices is planned**

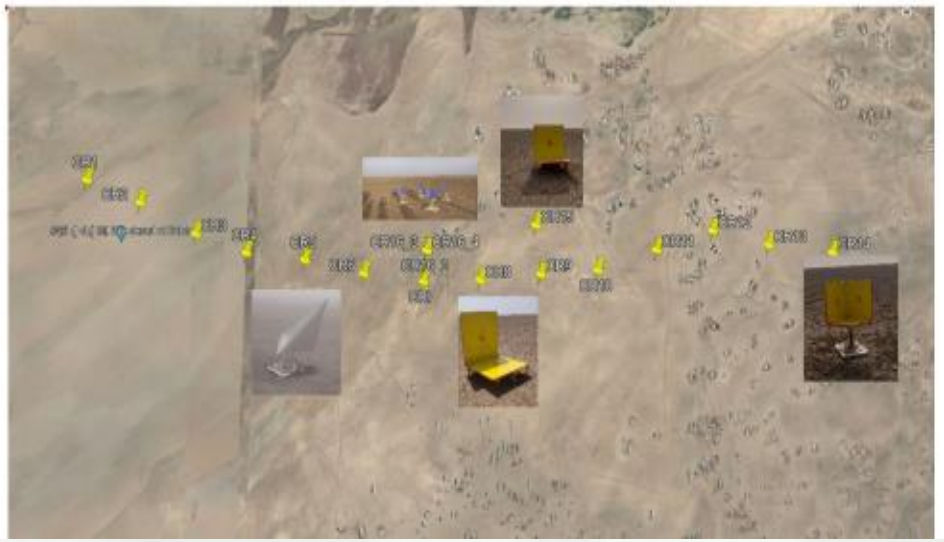
NavIC for High Accuracy Applications

Differential NavIC/NavIC based RTK

Base

Baseline

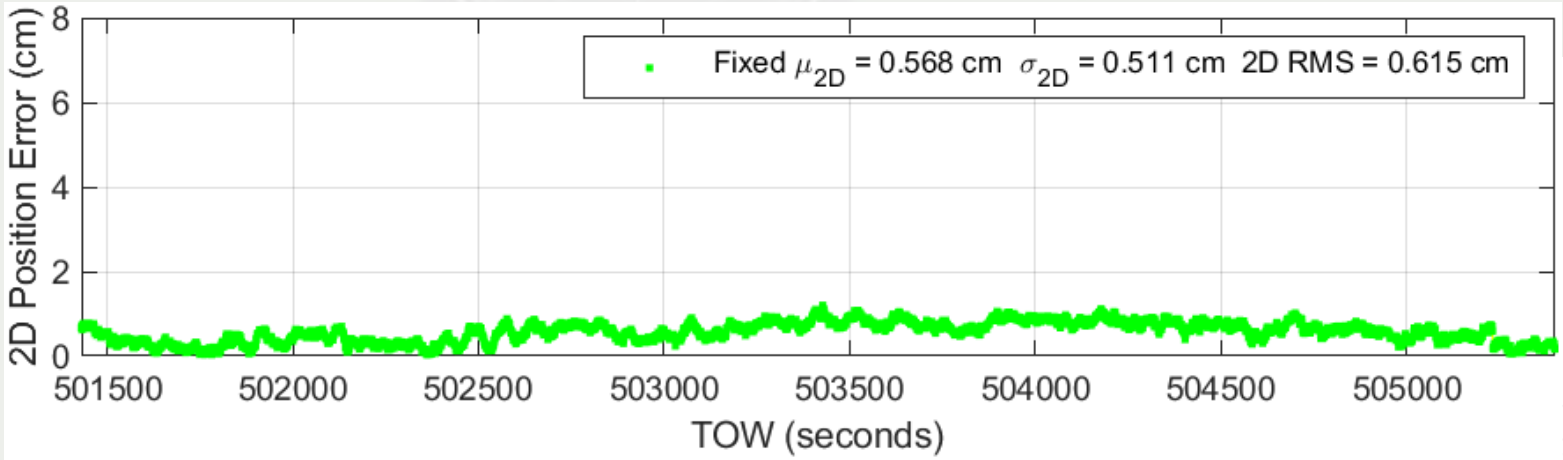
Rover

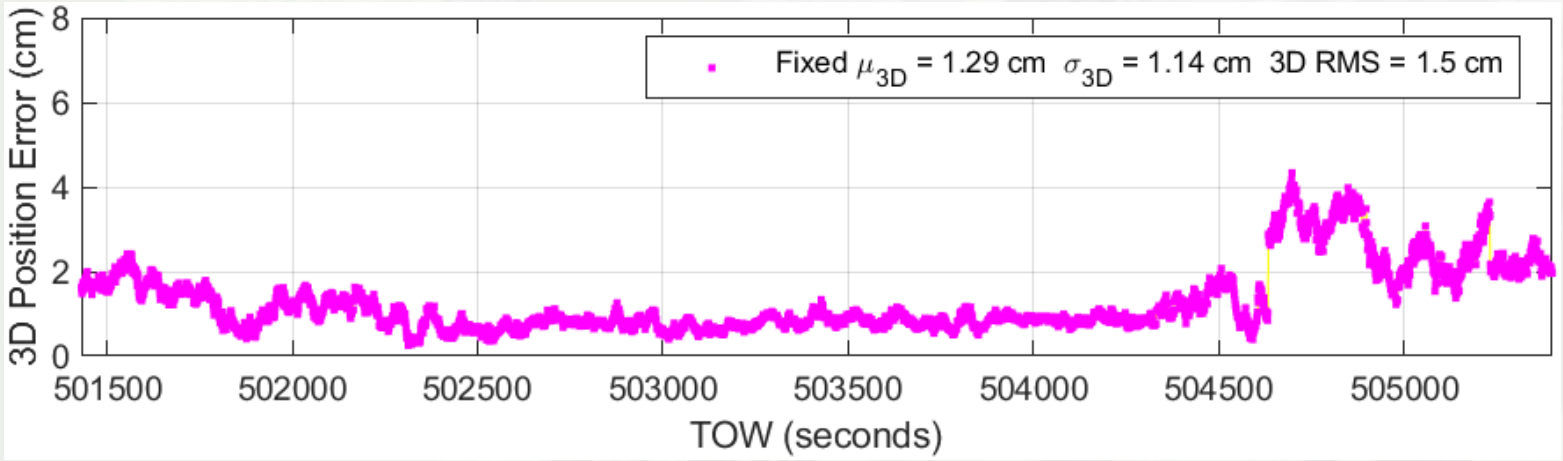


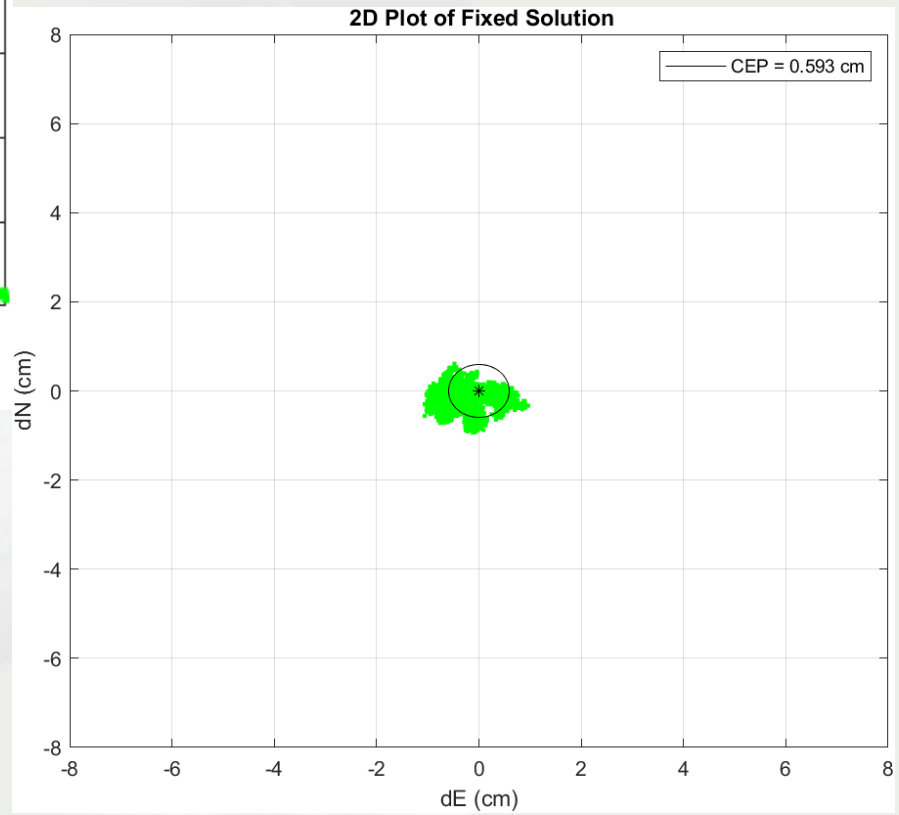
- NavIC based RTK for surveying of reflectors for remote sensing satellite data calibration.
- **NavIC L5+S based CORS Receiver** for CORS Network and NRTK.
- Instantaneous Fixed solution at longer baseline.
- NavIC L5 is incorporated in CORS Receivers of national and state surveying agencies.

NavIC for High Accuracy Applications

RTK Fix solution using NavIC L5-S + GPS L1



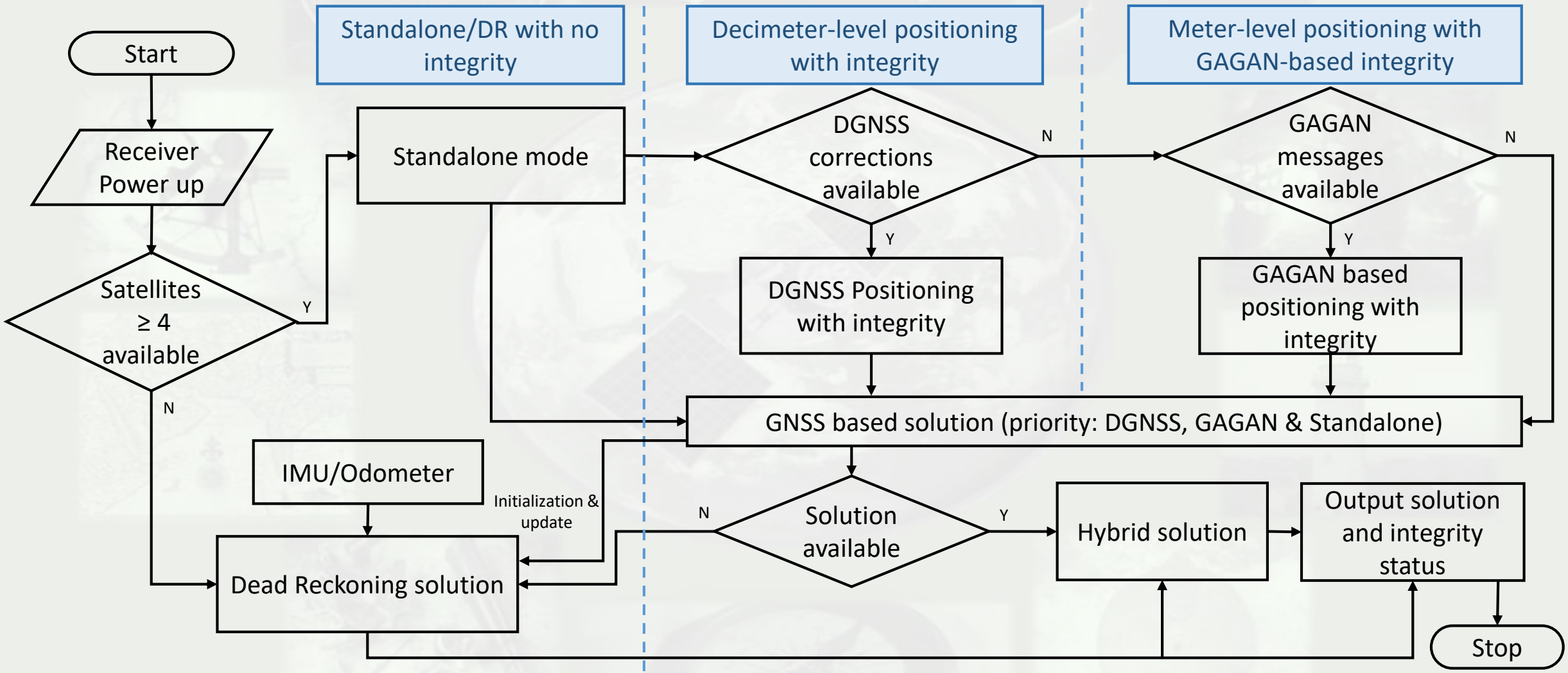




High Accuracy Positioning for Safety-of-life Applications using GAGAN/NavIC

- Combination of Differential NavIC/GNSS and GAGAN based solution to achieve required accuracy with integrity for applications in Railway's Automatic Train Protection (ATP) system (KAVACH program).
- A combined approach with seamless switching between Differential NavIC/GNSS and GAGAN based on their availability during operation can ensure the required accuracy with integrity.
- An integration with IMU and odometer sensors shall be done and a hybrid solution will be provided which shall be more robust and reliable in challenging environment.
- Deriving integrity parameters for railways having diverse ground based scenarios.

High Accuracy Positioning for Safety-of-life Applications using GAGAN/NavIC

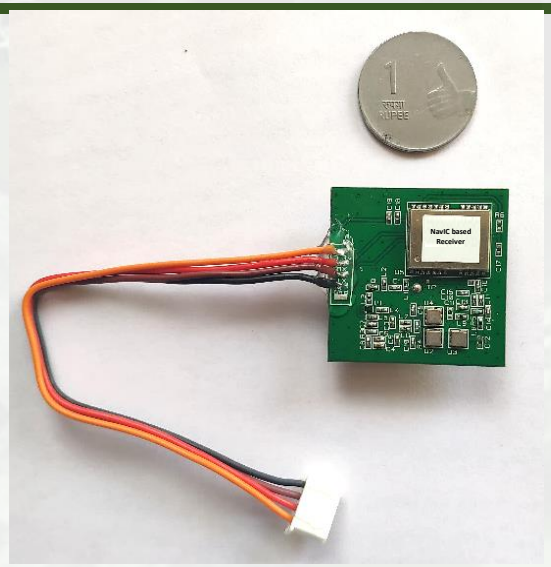


Precise and Stable Time from NavIC System

- NTP server with NavIC Time reference for Computer Network Synchronization
- Disseminate NavIC time on Internet
- Time server to Center for Railway Information System (CRIS).
- Remote Sensing satellite data time-stamping
- Precise and stable time dissemination to public

NavIC based Receiver for Radio Sonde Application

- Radio Sonde devices used in weather monitoring (atmospheric profiling) uses satellite based navigation receivers.
- These devices are battery operated, light weight and one-time usable and are flown on balloons.
- GNSS receivers are used in Radio Sonde devices for getting position, velocity and time information.
- High power UHF signal transmitted pose interference to on-board GNSS receiver
- Smaller size, lower weight, low power and lower cost
- **About 10000 units requirement per annum**



Thank You