



International Committee on
Global Navigation Satellite Systems

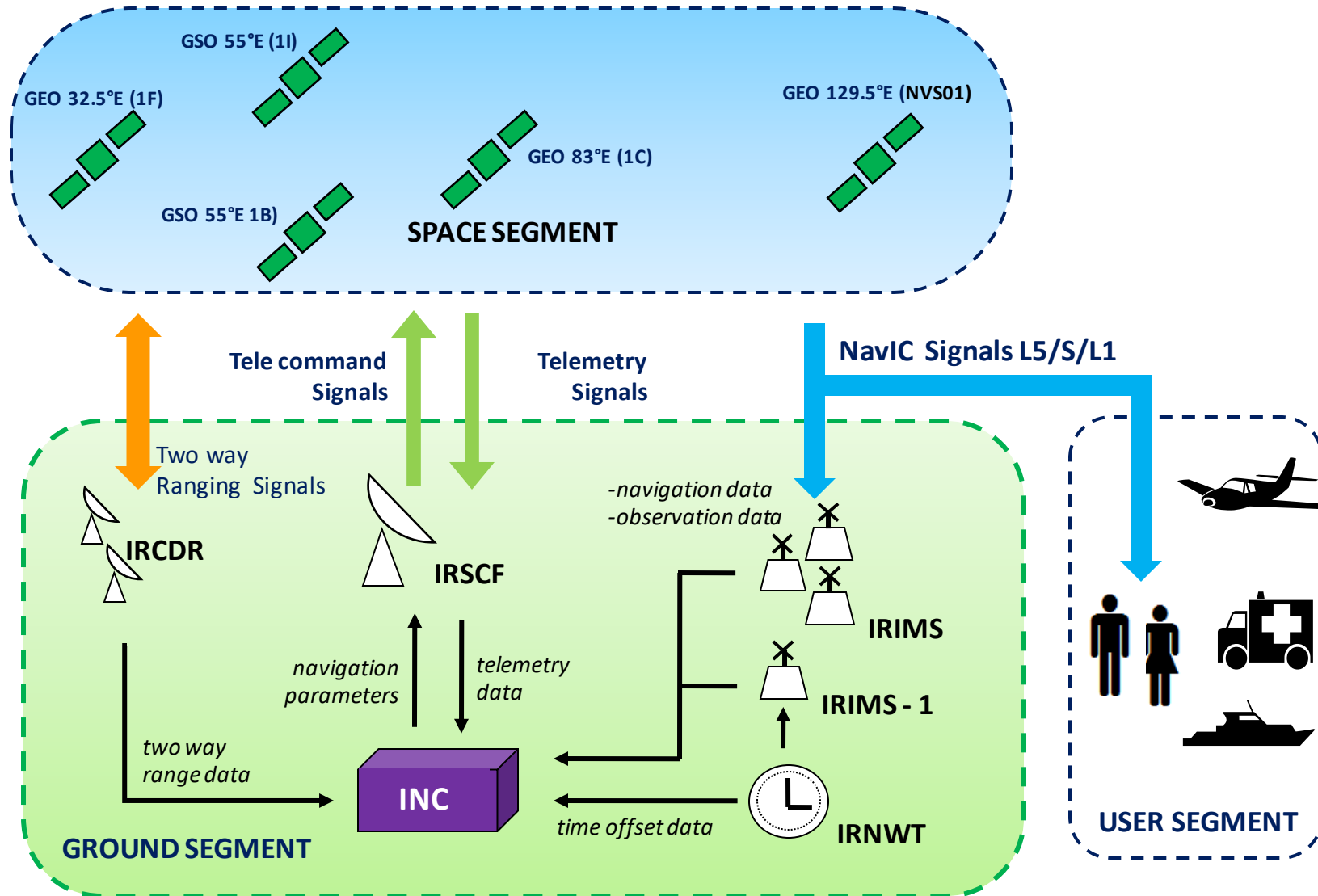


NVS-01 performance: L1 Signal, Data & Indigenous Atomic Clock

Umesh Swami & Kaitha Rajaiah
INDIAN SPACE RESEARCH ORGANIZATION (ISRO)

- **NavIC Architecture**
- **NVS01 : New Elements**
- **Indigenous RAFS**
- **NVS-01 performance**
- **Summary**

NavIC Architecture



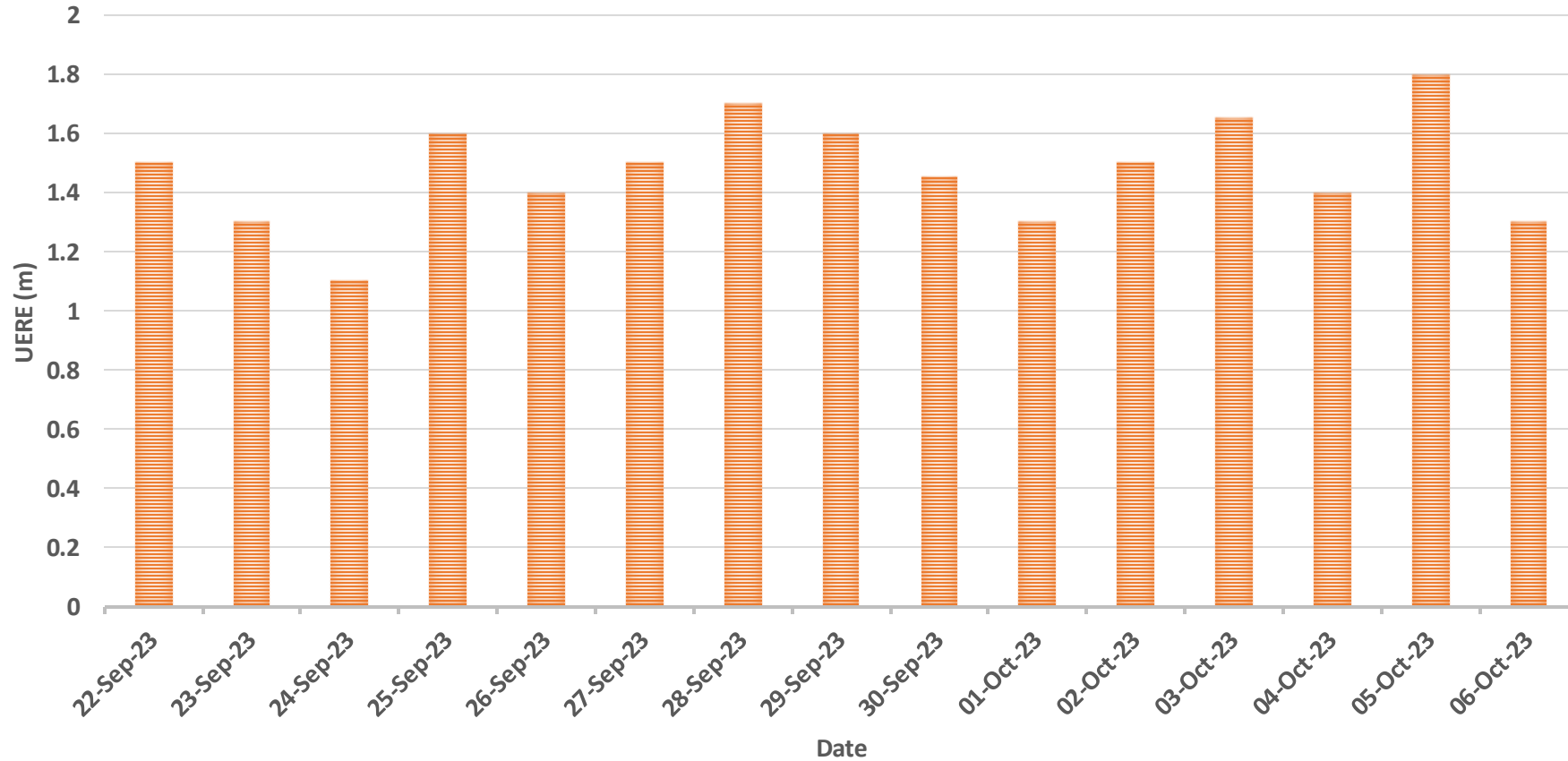
Ground Segment	Functions
IRNSS Range and Integrity Monitoring Stations	One way measurements from 16 stations
IRNSS 2-way Ranging Stations	Two way ranging from 5 Stations
IRNSS Reference Network Timing Facility	To provide the NavIC ground reference time
ISRO Navigation Centre	Generates the Navigation parameters
IRNSS Spacecraft Control Facility	TM/TC stations for telemetry and tele-commanding

- **NVS01- First NavIC second generation satellite**
- **Launched on : 29th May 2023**
- **New Elements**
 - Navigation signals on L1 frequency**
 - Indian Rubidium Atomic Frequency standard (IRAFS)**
- **Navigation signal generation with IRAFS**
- **NeQuick-N Ionospheric parameters.**
- **Operational since 4th July 2023 for NavIC users**

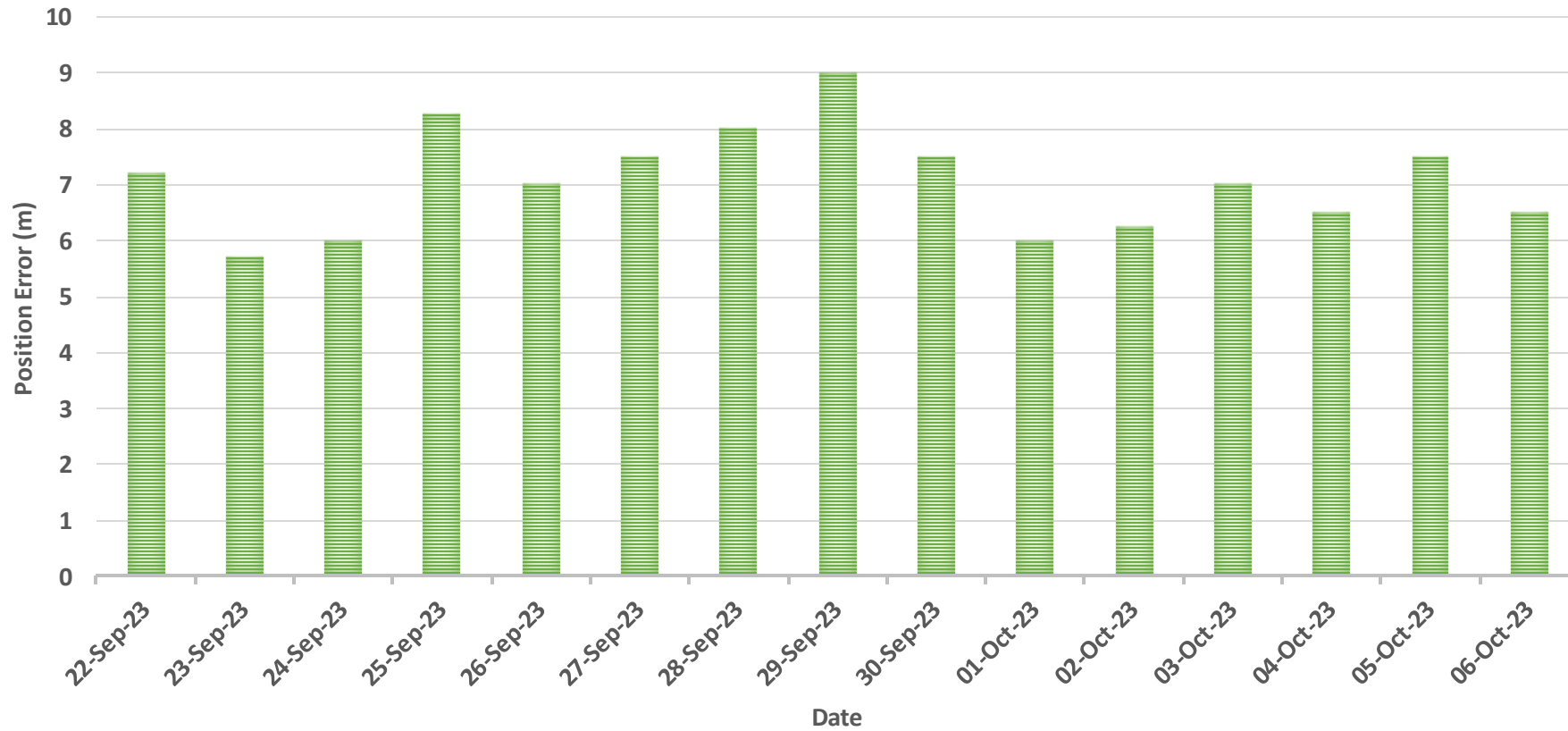
- **Ground Segment upgradation to evaluate L1 signal performance.**
- **Performance of NVS-01 signals is normal.**
- **Navigation parameters generation for L1-SPS users.**
- **NavIC L1-SPS ICD released.**

- **Indigenous design and development**
- **Flown for the first time in NVS-01**
- **IRAFS is driving the NVS-01 navigation signals**
- **Characterization of IRAFS.**
- **Performance of IRAFS is normal**

NVS-01: UERE Performance



NavIC : SPS Performance



* Note: Data considered for PDOP < 5

- **NVS01 is first satellite of NavIC second generation**
- **NVS01 providing navigational services from 4th July 2023**
- **Indian RAFS performance is normal**
- **The NavIC position accuracy is better than 10m for PDOP < 5**
- **NavIC service performance will be enhanced with replenishment of NavIC constellation.**

Thank You