ICG-14 Action update on Recommendation #20

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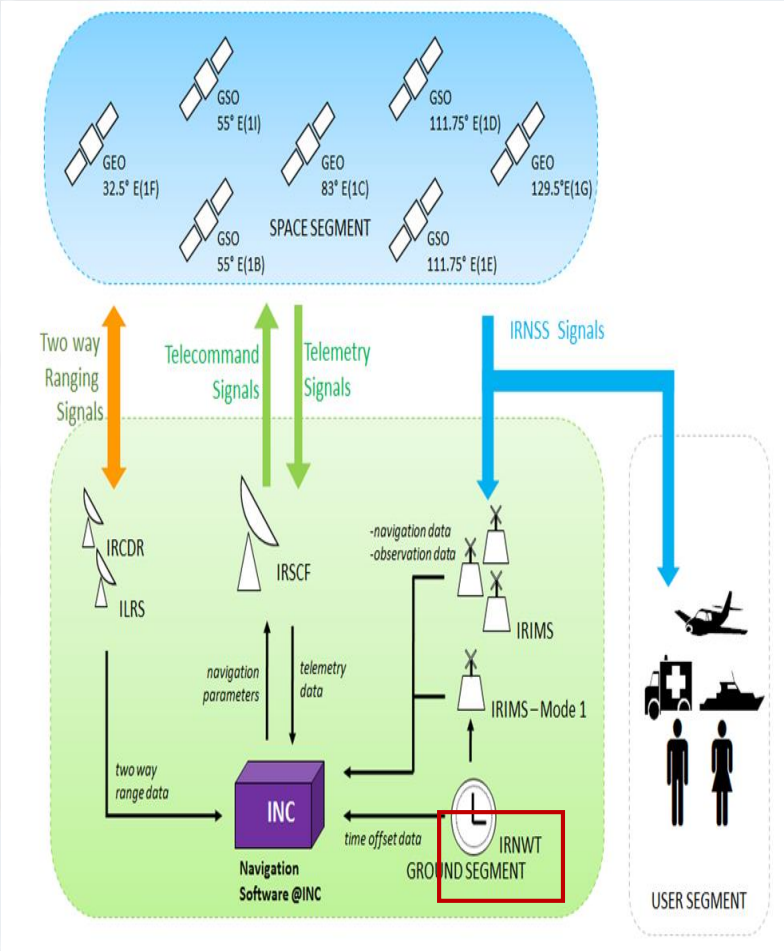
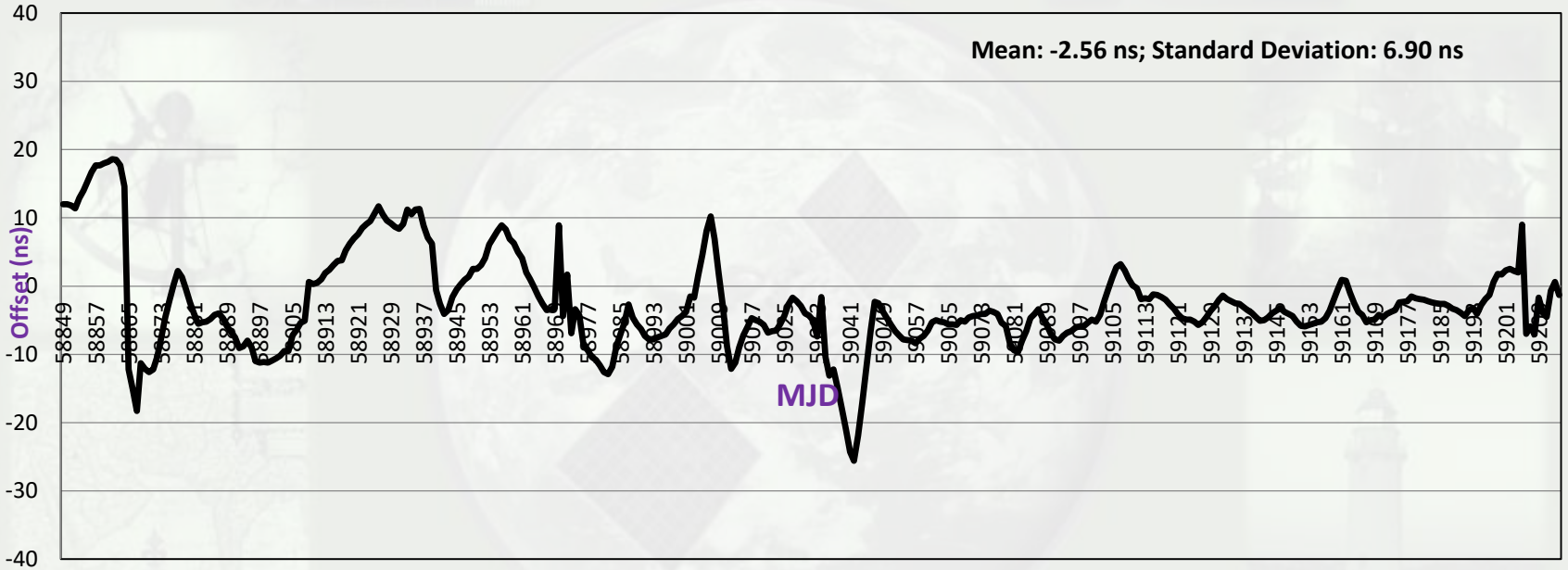
Introduction to NavIC System Time

- Generated at IRNSS Network Timing (IRNWT-1/2) established at ISRO Navigation Centre (INC-1/2)
- Reference time for the entire NavIC network
- Traceable to UTC(NPLI) through GNSS CV, NavIC CV and TWSTFT
- Ensemble of multiple atomic clocks and is steered to a desired reference
- Supports the Orbit Determination and Time Synchronization (OD&TS) for the NavIC satellites



Performance of NavIC System Time



Offset between NavIC System time and UTC(NPLI) over a year

Proposal by ISRO during ICG-14

- NavIC to be included in the BIPM report which publishes the ***relationship between UTC and TAI with predictions of UTC(k) disseminated by GNSS and their system times***

- Currently, BIPM publishes this data for GPS and GLONASS.

NavIC Broadcast for inter-GNSS interoperability

- Message Type 9 and 26 of NavIC broadcast message
  - contains offset of NavIC system time w.r.t UTC, UTC(NPLI) and GNSS systems.

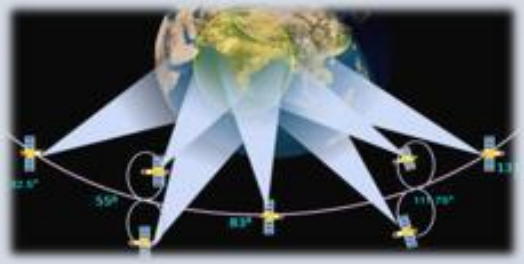
GNSS ID	Description
0	GPS
1	GALILEO
2	GLONASS
7	UTC(NPLI)
3-6	Reserved

Parameter
IRNSS-UTC PARAMETERS
Bias coefficient of IRNSS time scale relative to UTC time scale
Drift coefficient of IRNSS time scale relative to UTC time scale
Drift rate coefficient of IRNSS time scale relative to UTC time scale
Current or past leap second count
Time data reference time of week
Time data reference week number
Leap second reference week number
Leap second reference day number
Current or future leap second count
IRNSS-UTC (NPLI)/ OTHER GNSS PARAMETERS
Bias coefficient of IRNSS time scale relative to GNSS time scale
Drift coefficient of IRNSS time scale relative to GNSS time scale
Drift rate coefficient of IRNSS time scale relative to GNSS time scale
Time data reference time of week
Time data reference week number
GNSS type ID
Spare
PRN ID

Status update

- **Interaction with BIPM:**
  - ISRO formally made a request to BIPM (Point of contact: Dr Patrizia Tavella)
  - Included as an ***agenda in ICG-15 Working Group D***

- **Proposal for the deployment of NavIC Time transfer receiver at National Metrological Institutes:**
  - ISRO is making formal proposals to ***foreign (non-Indian) NMIs*** to deploy and operationalize NavIC receivers








Thank You