

CCTF/01-02b



Recent time and frequency activities in CRL



Mission of CRL

On April 1, 2001 "Independent administrative institutions"



Activities of T&F Groups in CRL

(1) Atomic Frequency Standards Group

- R&D of Primary Frequency Standards
- R&D of Space borne Hydrogen Maser

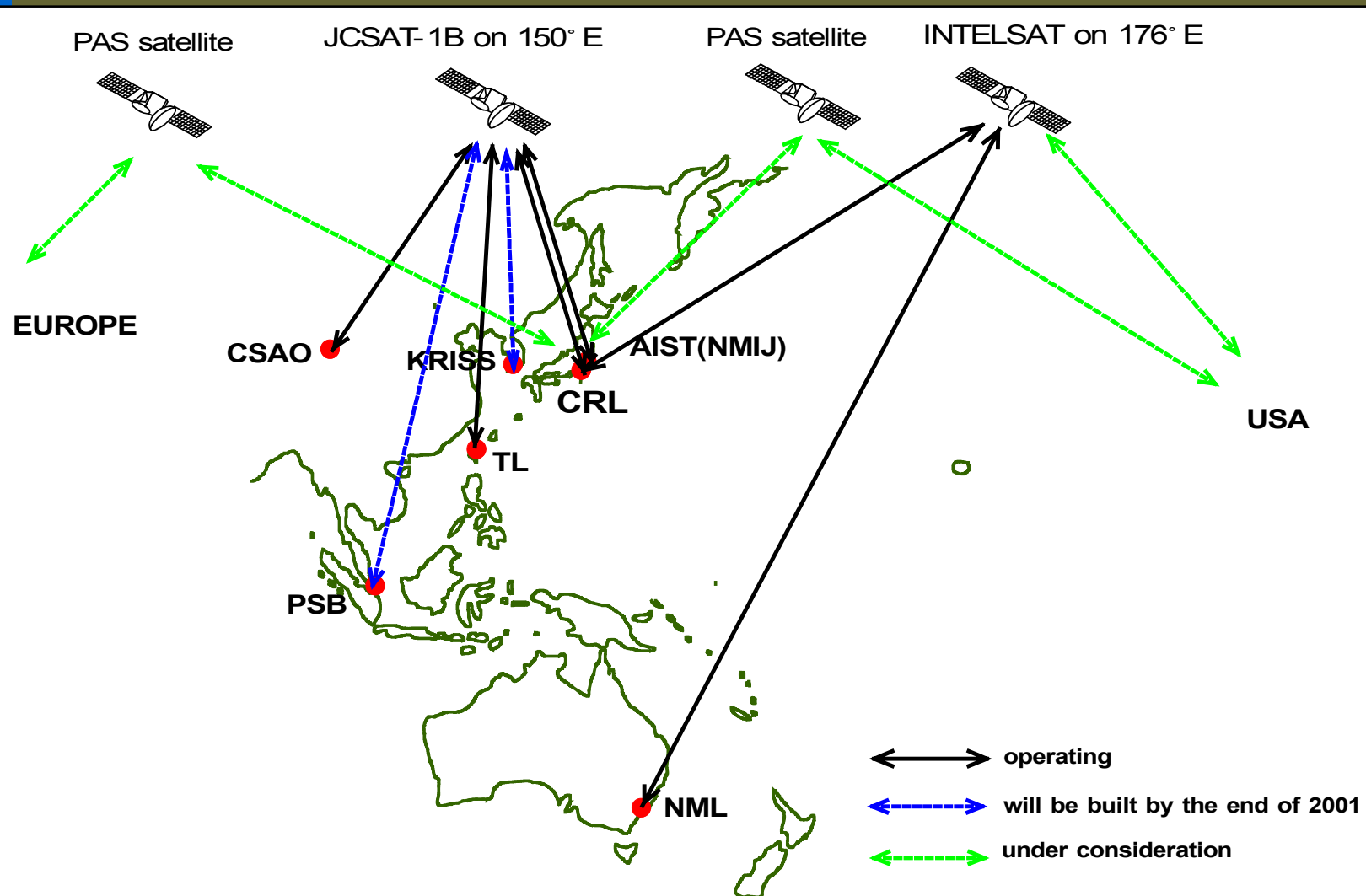
(2) Time and Frequency Measurements Group

- R&D of Precise Time Transfer (**TWSTFT**, GPS · · ·)
- Time Scale Algorithm
- Millisecond Pulsar Timing
- **Secretary of International Collaboration on T&F**

(3) Japanese Standard Time Group

- National Time and Frequency Standard
- Daily Time Transfer
- Standard Time and Frequency Dissemination
- Frequency Calibration Service for MRA
- R&D of Trusted Time Service for TSA

TWSTFT Network in the Pacific Rim Region



Development of multi-channel TWSTFT modem

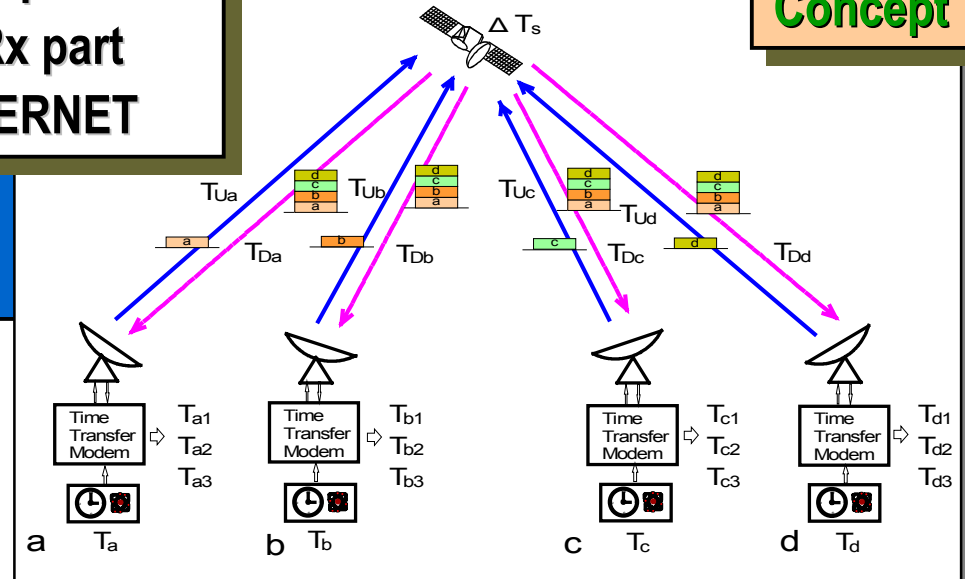
Main features

- **Multi-channel** ≥ 2 channels for Tx part
8 channels for Rx part
- **Remote control function using INTERNET**

Merits

- **Simultaneous time transfer for all pairs of the participating stations**
 - reduce the satellite link fee
 - eliminate the estimation error caused different measurement epochs
- **Reduce the human power**
- **Perform time-transfer exactly on TAI reference epoch (0:00 UTC of every 5 days or everyday)**

Concept



ATF2000 Workshop



International Contribution on T&F

- **Asia Pacific Time and Frequency Workshop 2000(ATF2000)**

October 31-November 2, 2000

more than 80 participants, about 35 foreign researchers

Planning to open every two year (at least)

- **CRL research invitation program for time and frequency**

Invite more then 5 foreign researchers to CRL

(mainly from Asia Pacific Region)

- **Support APMP TCTF activities**

Time transfer

MRA in the field of T&F

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