

Current status of clock comparison in TAI

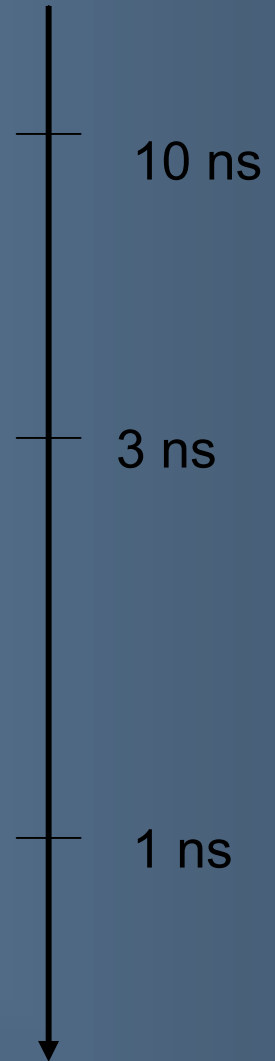
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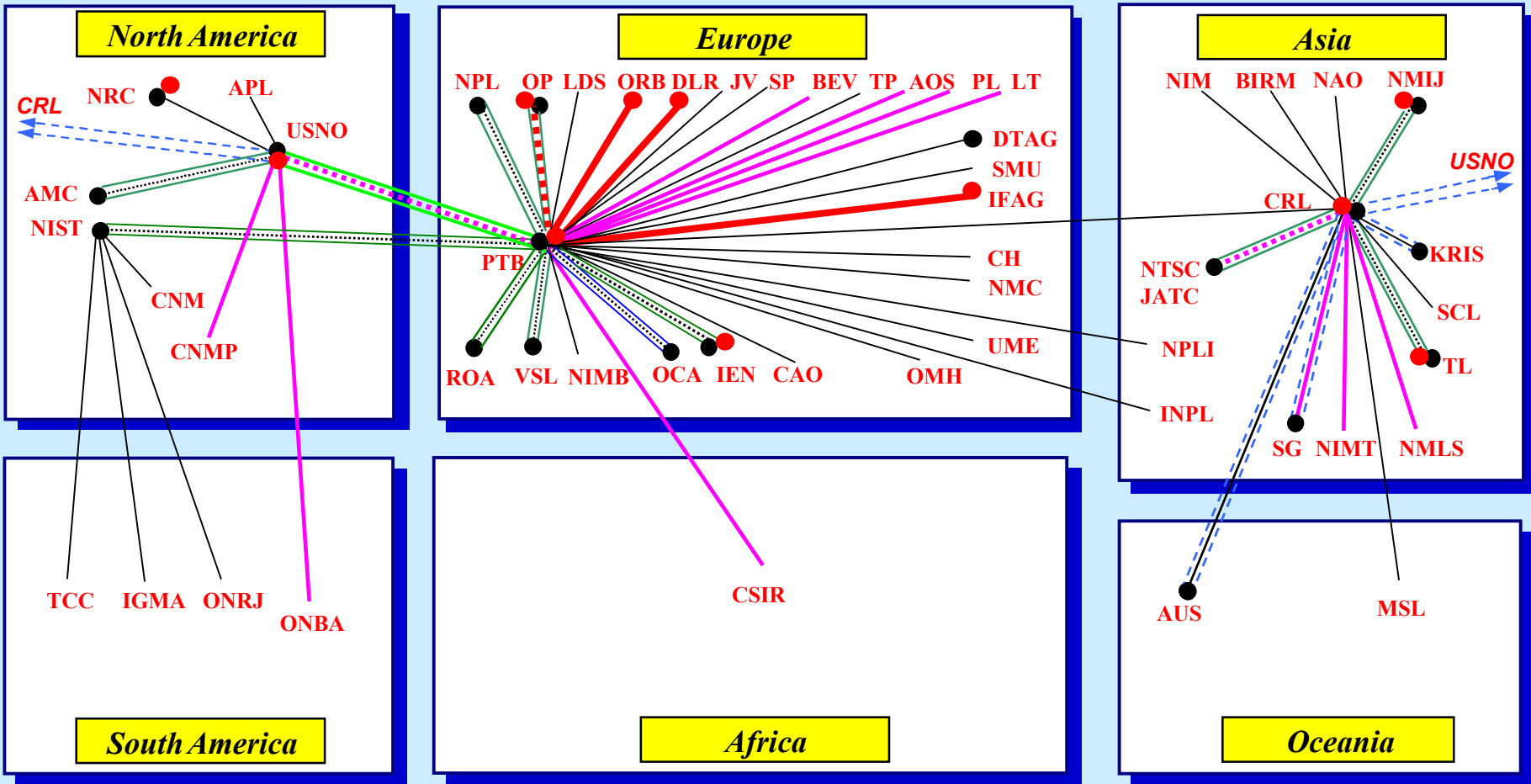
6th meeting of laboratories
contributing to TAI
31 March 2004, BIPM

Time links for TAI

- GPS C/A-code single-channel common-view
 - (3-10 ns uncertainty)
- GPS C/A-code multi-channel common view
 - (ns uncertainty)
- TWSTFT (daily/sub-daily)
- GPSP3



- **multi-technique links**
 - compare time transfer results
 - official link by one method
 - non-official are backups
 - calibrate a link by using another (calibrated) technique
 - fill « gaps » in a link by transferring results from another technique



ORGANIZATION OF THE INTERNATIONAL TIME LINKS

February 2004

- TWSTFT
- - - - - TWSTFT back-up link
- - - - - TWSTFT link in preparation
- - - - - OCA/PTB link not used for computation of TAI
- Laboratory equipped with TWSTFT
- TWSTFT by Ku band with X band back-up
- Laboratory equipped with Dual Frequency reception

- GPS CV single-channel
- - - - - GPS CV single-channel back-up
- GPS CV multi-channel
- - - - - GPS CV multi-channel back-up
- GPS CV dual frequency link
- - - - - GPS CV dual frequency back-up



BIPM differential calibrations of GPS time equipment

Uncertainty 3 ns (1σ)

- In 2001-2004 campaigns were carried out
 - West and central Europe, Asia-Pacific region, North America
- About 50% of the receivers in TAI have been calibrated in the period



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Use of GPS dual-frequency P code observations in TAI

- IGS/BIPM Pilot Project (1998- 2002)
- TAI P3 pilot experiment (April 2002)
- Calibrated Ashtech Z12T receivers
- Data since mid-2002
- 7 TAI P3 links compared to other techniques in TAI
 - TWSTFT, GPS C/A SC
- Long term time stability of order 1.0 ns (1σ)
- Start introducing TAI P3 links in TAI (July 2003)
 - DLR/PTB
 - IFAG/PTB
 - ORB/PTB

