

*Overview of research activities on time and frequency at the
National Institute of Information and Communications Technology
(NICT)*

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In April 2004,

Communications Research Laboratory (CRL),

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Telecommunications Advancement Organization of Japan (TAO),

National Institute of Information and Communications Technology
(NICT)

Five T&F groups, about 20 regular researchers

Research Supervisor *T. Morikawa*

Atomic Frequency Standards Group (*M. Hosokawa*)

Cs primary frequency standards, Optical frequency standard

Time and Frequency Measurements Group (*(T. Morikawa)*)

Precise time transfer and time-scale algorithm

Japan Standard Time Group (*Y. Takahashi*)

Time keeping, Dissemination of time and frequency

Quasi-Zenith Satellite System Group (*S. Hama*)

Space-borne atomic clock, QZSS time management system

Time Applications Group (*H. Toriyama*)

Trusted time stamping, time distributions using Internet Protocol

Time keeping

UTC(NICT); Synthesized atomic time

15 cesium atomic clocks (high-performance beam tube)

GPS receivers; E80, JRC (multi-channel), TTR6 (Single channel)

TWSTFT; Atlantis modem, NICT modem, JCSAT, PAS-8

Development of **New UTC(NICT)**

3 or 4 H-masers

as the frequency sources

New time scale algorithm

To be operational in spring next year



Research and Developments

Cs primary frequency standards (Atomic fountain),
Optical frequency standard (Ca⁺ ion, clock laser, fs comb)
Space-borne atomic clock

Precise time transfer

GPS P3, TWSTFT, ETS-VIII, QZSS system
(Details will be presented tomorrow)

Trusted Time-Transfer Technique

Pulsar Timing, Relativity

More information: Journal of NICT, Vol.50, 1/2 2003

<http://www2.nict.go.jp/kk/e414/shuppan/kihou-journal/journalvol50-1,2.htm>