



Overview of the Recent Activities of BIPM - CCTF

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The Consultative committee on Time and Frequency (CCTF) has been working since 2019 on four “hot topics” with the involvement of National metrology Institutes, Regional Metrology Organizations, and Liaison Organizations. A lot of work has been carried out by the regular CCTF working groups towards the progress on these four hot topics. In the present paper, we plan to describe the progress made in the last few years.

Hot topic 1 - Updating the Roadmap for the redefinition of second:

A formal resolution was adopted by the CGPM in 2022 – “CGPM 2022 Resolution 5 - On the future redefinition of the second”. Following this resolution, three new CCTF task groups have been formed to progress along the following three lines of activities:

- a) Redefinition options – either based on a single optical transition or weighted ensemble of few optical transitions
- b) Priority setting of criteria / conditions to change the definition
- c) Education.

Hot Topic 2 - Leap seconds in UTC and building a consensus for a continuous timescale:

A formal resolution was adopted by the CGPM in 2022 – “CGPM 2022 Resolution 4 – On the use and future development of UTC”. Following this resolution, a new CCTF task group has been formed to progress along the following three lines of activities:

- a) To work with CCTF, UTC labs, other organization, GNSS providers and stakeholders, to prepare the draft resolution for the CGPM 2026.
- b) To support the ITU delegations to arrive prepared for the WRC 2023
- c) To interact with the involved communities, such as astronomers, IERS, GNSS and contribute to broad communications and education.

Hot Topic 3 - Promoting mutual benefit of UTC & GNSS including Traceability to UTC from GNSS measurements:

The CCTF goals of this subgroup are:

- a) Current use of GNSS for UTC (time/frequency links)
- b) Calibration for GNSS hardware delays – especially for long term stability
- c) Contribution to GNSS system time from NMIs and time laboratories
- d) Validation of UTC disseminated by GNSS
- e) Interaction with the ICG for interoperability and leap seconds
- f) Traceability to UTC from GNSS measurements using fixed procedures.

Hot Topic 4 - Sharing Resources for Capacity Building to Improve the International Timekeeping:

The CCTF goals for this subgroup are:

- a) To “share the resources” by putting in common the training tools, videos, guidelines, software modules. already available at the time laboratories to increase the common heritage, with coordination by BIPM.
- b) Putting together the efforts versus a common enrichment for the benefit of all countries

In addition, we also describe some of the changes in the way of reporting the BIPM Circular T and methods of processing the data to generate it.

Finally, we list some of the published articles related to the CCTF strategy and the take home messages to all stakeholders for all the CCTF activities.