

Requirements for UTC and Civil Timekeeping on Earth

A Colloquium Addressing a Continuous Time Standard

CALL FOR PAPERS

May 29-31, 2013, University of Virginia, Charlottesville

Abstract Deadline: February 1, 2013

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Universal time is the conventional representation of Earth rotation and astronomical time-of-day. It serves as a contemporary measure of mean solar time at Greenwich, which is the legally recognized basis of civil timekeeping for most nations now or historically. *Coordinated Universal Time* (UTC) is an international broadcast convention for labeling uniform atomic seconds, so that precise clocks remain synchronized with Universal time of day to within one second. Thus, many users expect UTC to indicate the orientation of the Earth and sky.

UTC was first transmitted using radio signals and thus its prescription resides with the Radiocommunication Sector of the International Telecommunication Union (ITU-R). In 2001, the ITU Radiocommunication Assembly inquired "*What are the requirements for globally-accepted time scales [...] for civil time-keeping?*" via Study Question ITU-R 236/7 ("The Future of the UTC Timescale"). After years of debate within ITU-R study groups, the 2012 Radiocommunication Assembly was not convinced that UTC should be redefined by halting future *leap seconds*, and recommended further studies "to ensure that all the technical options have been fully addressed" by 2015. The Assembly's decision paralleled guidance from specialists attending an international colloquium in October 2011.

Purpose and Scope

The international request for further studies over the question of "*requirements [...] for civil time-keeping*" necessitates wider participation. Technical options beyond "UTC without leap seconds" may include the distribution of a reference time scale distinct from UTC or alternative adjustments to UTC. Changes to global timekeeping practices will have broad implications and require substantial resources that would benefit from careful planning among affected users and appropriate external organizations. Altering or augmenting UTC may have economic, legal, societal, technical, and terminological consequences that have not been explored sufficiently.

This Call solicits contributions from specialists, operators, academics, and professionals outside the regulatory concerns of telecommunication to further discuss and document distinguishing philosophies, pragmatic solutions, and timetables relevant to various possible options for future timekeeping practice. Particular emphasis is sought regarding fundamental requirements for the present and future, and derived technical specifications to meet those requirements. Affected technologies and applications may be related to the domains of agriculture, architecture, astronomy, astrodynamics and celestial mechanics, business enterprise, computer technology, geodesy and geophysics, history, law, medicine, meteorology, military defense, navigation, oceanography, remote sensing and space surveillance, spacecraft operations, and social and natural sciences. "Civil timekeeping" encompasses the maintenance of time-of-day for the benefit of human civilization at large; societal, religious, and non-scientific aspects of recording and using time-of-day may impose particular requirements within this meeting's intended scope.

Participation

Presentations and supporting manuscripts are solicited on topics related to fundamental requirements for civil timekeeping, how those evidenced requirements and their derived specifications may be affected or complemented by a modification or supplementation of UTC, and alternative timekeeping proposals that could meet requirements. Proposed manuscripts will be considered and accepted based on the quality of an abstract describing a topic within the scope of the meeting, subject to the space and time constraints of the venue. Submissions that emphasize specific technical, legal, organizational, historical, logistical, economic, and societal implications associated with fundamental requirements, as well as survey works exploring such, are especially encouraged. This is a working meeting anticipating international participation with English as the operating language.

Prospective contributors are expected to provide via an online submission form by Friday, February 1, 2013:

1. The name, affiliation, postal address, telephone number, and email address of the presenting author,
2. The proposed subject title and an extended abstract of 300 words or more that includes:
 - a. a concise exposition of the subject area to be addressed, and
 - b. a clarification of its significance to fundamental requirements and their derived specifications in civil timekeeping, representing distinguishing philosophies and pragmatic solutions relevant to various possible options for civil-timekeeping practice.
3. A separate summary (~100 words of text) for the meeting program.

Detailed author instructions will be provided following acceptance. Because of space and time limitations, priority may be given to the earliest abstract submissions.

Proceedings

By submitting an abstract, the author(s) affirm(s) that a complete, supporting manuscript shall be provided in advance of the meeting and published as part of the proceedings. An abridged transcript of roundtable discussions in response to questions within the meeting's scope may also be included as part of the proceedings.