

THE ISSUES CONCERNING THE FUTURE OF UTC

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Time Scales

- **Mean Solar Time**
- **Universal Time (UT1)**
- **Ephemeris Time**
- **International Atomic Time**
- **Coordinated Universal Time (UTC)**
- **Dynamical Time Scales**
- **Special Time Scales, i.e. GPS Time**

Coordinated Universal Time

- **Broadcast time services**
- **UT1 and TAI**
- **Frequency offsets unacceptable**
- **1972 definition by CCIR**
- **DUT1**
- **BIPM**
- **IERS**

Redefinition of UTC 2000 - 2012

- **ITU SG 7A Proposal**
- **Surveys, Discussions, Studies**
- **Surveys favor the status quo**
- **Lack of real cost estimates**
- **No Consensus**
- **Negative votes in WP 7**
- **Forwarded to Radiocommunications Assembly in 2012**

Study Question ITU-R 236/7

- **(1) What are the requirements for globally-accepted time scales for use both in navigation and telecommunications systems, and for civil timekeeping?**
- **(2) What are the present and future requirements for the tolerance limit between UTC and UT1?**
- **(3) Does the current leap-second procedure satisfy user needs, or should an alternative procedure be developed?**

Issues concerning the Recommendation to Redefine UTC

- **Significance with respect to Radiocommunications**
 Technical, legal, and public issues
 Continuous time scale
- **Involvement of International Standards and Scientific Organizations**
 ITU-R non consensus
 IAU, IERS, URSI, AAS
- **Time Scale Nomenclature**
 Change definition, change name

Issues concerning the Recommendation to Redefine UTC

- **Alternative Time Scales**
 - Use of GPS time
 - TAI, or equivalent, as an additional time scale
- **User Preferences**
 - Surveys favor *status quo*
 - Only minor anomalies with leap seconds
 - no documentation supporting redefinition
- **Software and Hardware Modifications**
 - GNSS**
 - Consult computer scientists and software developers

Issues concerning the Recommendation to Redefine UTC

- **Distribution of UT1**
Availability and distribution of UT1 and DUT1
- **Distribution of DTAI**
Recommended in 460-6 for a decade
Why isn't it being done?
- **Legal Considerations**
Status of UTC as official time in countries
- **Non-Technical and Non-Scientific Applications**
Religious activities based on astronomical time

Issues concerning the Recommendation to Redefine UTC

- **Re-education**
 - Literature and textbooks would require revision and explanation of two definitions**
- **Celestial Navigation and Almanacs**
 - Changes in almanacs and explanations of use**
 - Problem of navigation in an emergency**
- **Rate of Rotation of the Earth**
 - Long and short term trends in Earth rotation rate**
- **Long-Term Societal Effects**
 - Long term adjustment procedure**

Proposed action for now

- **Before any final action is taken on the proposed redefinition of UTC:**
- **1. ITU-R should withdraw the recommendation to redefine UTC and reconsider the Study Question**
- **2. Determine who should be involved in the decision**
- **3. User requirements should be documented and pursued**
- **4. Make DTAI, UT1, and DUT1 readily available**
- **5. Seek a consensus among standards and scientific organizations and national governments concerning the future of UTC**