



Possible Changes to Universal Co-ordinated Time (UTC)

1. UTC is a man-made, atomic timescale that is constrained to approximate the Earth's rotation to within one second by the inclusion of periodic adjustments known as 'leap seconds.'
2. The technical reasons for the proposed change, eliminating these adjustments, appear esoteric and the benefits extremely limited-bearing in mind that a main means of dissemination of time is GPS.
3. UTC (approximating to GMT) is the legal timescale in many countries and so a change of definition is likely to require (a) a legal impact assessment to understand which laws need to be modified, and (b) a technical impact assessment to understand how the change will affect existing systems.
4. In the UK UTC is disseminated using many different mechanisms including: satellite navigation (e.g. GPS System Time automatically corrected to UTC), low frequency radio (e.g. 60kHz MSF), and the Internet (NTP servers), hence there is a need for a technical assessment of the proposed change.
5. We note the role of timing in distributed systems (including transport, finance, communications, energy), many of which are safety or mission critical and impact on the critical national infrastructure.
6. We note the existing GPS vulnerability concerns and the almost impossible task of understanding fully the impact of a loss of GPS-based timing because many users (eg defence, transport, finance, communications, energy) are simply unaware that they use GPS timing in their systems.
7. We note that a UTC impact assessment will be far more complex given the different dissemination techniques.
8. The technical impact is likely to require a lot of (a) significant public relations activity (e.g. similar to that for the 'Millennium Bug'), (b) time, and (c) systems engineering activity. On top of this there may be a need to upgrade or replace existing subsystems or components. The cost could be very significant for a single country, let alone globally, at a time when many national economies are still in recession or at best fragile.
9. In summary making this change to UTC has a rather esoteric rationale, limited benefits and potentially significant costs. Many governments will require a formal



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business case comparing this change scenario with a 'do-nothing' scenario and the change scenario is likely to fail at this point.

10. For these reasons the imperative for change is not compelling to the Royal Institute of Navigation.