

Thoughts on GNSS system times and broadcast time scales

WG-D Task Group on timing references
Contribution from BIPM

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Why continuous GNSS system times?

- ◆ **For avoiding system disruptions**
 - ◆ Availability of services in peril
 - ◆ Safety of life issue (even if the procedures are well built and most of times successfully implemented)
 - ◆ Potential risk of system outages
 - ◆ No adapted for system synchronization (but this is the use!)
 - ◆ Simplify operations

- ◆ **Steering to a reference time scale (a realization of UTC)**
 - ◆ For improving the accuracy of GNSS times
 - ◆ Steering to UTC(k) modulo 1 s is a good procedure

Why continuous GNSS system times?

- ◆ **When/where a 1-s step can create problems?**
 - ◆ Time tagging on UTC and GNSS time in different parts of a GNSS system.
Offset of a few seconds (BeiDou), of tens of seconds (GPS, Galileo)
- ◆ **What time scale should GNSS broadcast?**
 - ◆ Certainly NOT a GNSS internal system time. It should be limited to internal system operations
 - ◆ YES a prediction of UTC(k), but taking care to make a GOOD prediction.