

## **Reference Frames, Timing and Applications**

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Growing importance of the global geospatial information to address the key challenges & to support improved decision-making and macro and micro-scale mapping for sustainable environment requires a uniform, global and accurate reference and timing systems. GNSS is today's best tool for positioning, and as such, it requires a global & unique/standard reference frame to ensure inter-operability. Reference systems and frames are of primary importance for much Earth science based research and applications, satellite navigation as well as for practical applications in geo-information. A precisely defined reference frame is needed for an improved understanding of the Earth's rotation and its gravity field, sea level change with time, tectonic plate motion and deformation, deformation due to Earthquakes, local subsidence and other crustal displacements. Availability of global positioning, navigation and timing are essential to a new growing interest in location-aware systems and services, such as personal/pedestrian navigation, emergency response and rescue operations, navigation of Unmanned Airborne Systems (UAS) for mapping, surveillance, precision farming and emergency response, asset location and tracking, location based services, etc.

This talk will discuss the current approach to a global reference frame implementation, the geodetic infrastructure needed to maintain it, the requirements for interoperability and example applications where mm to cm-level accuracy requires highly accurate and stable reference frame and timing information.