



## **Using UML for conceptual modeling of time scales according to IERS Convention 2010**

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GGOS divides geodesy as a discipline into three “pillars”. Time plays a significant role in all these parts. Even today, when atomic clocks are the basis for time measurements, time is naturally related to the Earth rotation. Precise time measurements are being used in majority of modern observation techniques (e.g. GPS, absolute gravimetry).

Currently many different time scales are being used. It is the result of various applications, e.g.: GPST (Global Positioning System Time) – time measured by atomic clocks placed on GPS satellites, TT (Terrestrial Time) – time scale which replaced ET (Ephemeris Time) and is being used as the argument of ephemeris during observations from the Earth and UTC (Universal Time Coordinated) which is the atomic approximation of the Earth rotation. Each time scale has its own definition. Moreover, each reference system demands time scale specifying.

IERS Convention 2010 methodizes time scale issues. The document defines the standard reference systems and describes models and procedures used for them.

The paper presents the conceptual schemes for various time scales as conceptual modeling and UML notation can be helpful for analysis of relations between time scales and for their model explanation. The authors define different UML diagrams showing procedures of transformations between classes representing object types in the analyzed universe of discourse.