Generic Flight Dynamics Data Representation in XML: OrbitML

Francisco Martinez-Fadrique, Alberto Águeda-Maté

GMV, SA

OrbitML, The Spacecraft Flight Dynamics Mark-up Language, is an Extensible Mark-up Language (XML) application for the representation of information objects in the spacecraft Flight Dynamics problem domain. OrbitML encompasses all the range of space missions (scientific, telecommunications, earth observation, navigation, ...) and phases (LEOP, commissioning, routine, end of life, ...).

By providing a standard definition of the involved concepts, their structure, relationships and interfaces based on an extensively used and well known underlying technology (XML), OrbitML allows easy interaction between different operators and agencies in the space field. The key of the success of such prospect is the open contribution of other users and operators to the further definition of the OrbitML standard.

The initial implementation of OrbitML aims to the operations support of a variety of satellite missions while allowing the extension of its coverage to incorporate new requirements for navigation missions, constellations, interplanetary scenarios and beyond.

The full initial specification of the OrbitML language standard can be consulted (http://www.OrbitML.com) and, therefore, OrbitML compliant files can be generated, distributed and even validated against an OrbitML definition schema describing the standard specification (available via web at http://www.OrbitML.com/specification/orbitML.xsd).

After the definition of the OrbitML standard, GMV has started to use this standard for the generation of OrbitML compliant files. Furthermore, a generic API and supporting library is being currently developed for the easy handling OrbitML data and its conversion to and from any other data representation or standard.

The latest available implementation of the OrbitML standard supports all basic mission independent Flight Dynamics, Navigation and Mission Planning related data items. All items are defined through a generic data typed definition approach, optimal for object-oriented applications, and is encapsulated into its own namespace for optimal data encapsulation and context representation.
OrbitML is part of the focusSuite family: GMV's generic multi-mission Flight Dynamics system for satellite control.