IAF SPACE OPERATIONS SYMPOSIUM (B6)
Mission Operations, Validation, Simulation and Training (3)

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PLANNING AND SCHEDULING IN AN ENABLED WORLD

Abstract

Planning and scheduling for space is a very wide field, from simplistic schedule merging and validation to more elaborate and complex goal planning using AI techniques. The actual planning systems that are used to support this also vary dramatically from one-off bespoke systems to generic re-usable systems. ENABLE Planning System differs from these in that it is part of an overall space operations platform, being developed by Telespazio VEGA Deutschland GmbH, with an aim at being capable of supporting small, large and mega missions from day one.

Through state-of-the-art technologies and decades of operational experience in the space domain, ENABLE Planning System brings together all aspects and lessons learned from knowledge of past, existing and future missions to provide a single consolidated solution for today's and future space operational needs. Part of a solution which is designed to be scalable, performant and configurable not only in the platform it provides but also from a financial point of view.

Within this paper we will explore how the ENABLE Planning System can be used for the classical planning situations, followed by an insight into how it can be configured in collaboration with other ENABLE services to provide support to other ground functions of the operational space domain within a single environment. We will proceed to present details of how the ENABLE Planning System has been derived and its place within the overall ENABLE platform. To illustrate this, we will highlight the various types of space operations that the platform can support, such as single satellite support, constellation facilitation, fleet management, deep space exploration, near earth observation and mission preparation. These will be backed up by providing some concrete examples of how the ENABLE Planning System is used in the context of the ENABLE platform as a solution to facilitate these types of space operations. A comparison will be made between the classical planning systems and the environment that they are operated in to the platform provided by ENABLE for its Planning System to operate in, not only from an architectural point of view but also from a cost perspective. Our conclusion will provide details of future developments and re-cap on the key point why such a development is needed for future space operations and exploration.