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SPACE SYSTEMS SYMPOSIUM (D1)
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A NEW GROUND SYSTEM PRODUCT LINE FOR CNES FUTURE MISSIONS RELYING ON ISIS

Abstract

CNES, French Space Agency, has defined a roadmap for the evolution of its spacecraft operations control systems. The aim is to define a single product line used for all the CNES operated missions from 2017 onwards in line with the on going space standardisation activities. This is done in the frame of a CNES project called ISIS "Initiative for Space Innovative Standards".

ISIS was born thanks to SPOT, PROTEUS and MYRIADE positive lessons learned with many years of operations at CNES, and to the demonstration that platform and ground segment product lines can widely contribute to reduce costs and risks related to space missions development and operations.

ISIS project was created to gather these lessons learned, and set the technical basement and development model of standardized industrial platform product lines. To have a better vision on both other customers needs and existing European product lines, ISIS has been started in partnership with two major European prime contractors: Thales Alenia Space and Astrium Satellites.

ISIS project is driven by the need for CNES to have access to up-to-date platform product line(s) for future institutional missions (science, cooperation, defence) taking into account new standards and regulations and to make a "reasonable" step forward in terms of innovation and performance. The aim is to fit future missions requirements and to limit operation costs, rationalizing operational concept and system architecture and making the most of lessons learned.

The paper describes the main objectives of the ISIS project and the new software product line to operate ISIS-compliant spacecraft and all future CNES missions. The main drivers are a full technical referential, based on Standards and technical state of the art associated to a tailoring process.

The paper will also describe the deployment target of the product line : MCS, AIT, simulator test bench. The key features such as multimissions and multi satellite, automation, security constraints... will be discussed. The paper will also address the applicable standards (CCSDS TM/TC, Mission Operation and SLE, ECSS for PUS, ...). The functional scope and the design of the product line will also be presented (SOA architecture).

The development of the product line started January 2013. The development is under the responsibility of an industrial consortium led by ATOS company and the first version is foreseen in 2015. The first user missions are the French defence satellite CSO and the French-German cooperation Methane Remote Sensing Lidar Mission (MERLIN).