

# ADVANCED INTEGRATION AND TEST SERVICES (AITS)

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## Abstract

We present the development of software components for a new ground application used for integrating, testing and operating spacecraft. The Advanced Integration and Test Services (AITS) project aims at providing a solution for Electrical Ground Support Equipment (EGSE) and Mission Control Systems (MCS) in Airbus DS and ESA missions. The primary identified use case was the Ariane 5 ME EGSE, but the building blocks are generic enough to be applied for other launchers, orbital spacecraft or satellite EGSE systems and also spacecraft operations systems. The main reasons to start a new product development were first, the increasing difficulties for maintaining existing legacy products due to technology obsolescence issues and second, the need to move to a state of the art technology software platform providing better support to the latest ESA standards for ground segments.

The activity was started in 2009 as a company internal R&D project and has moved to a co-funded Airbus DS / ESA GSTP project at end of 2011, with the collaboration of five European sub-contractors. The AITS project applied an agile iterative development process with a tailoring of the ECSS E-40 (software development) and Q-80 (software quality assurance) standards. Operational software was delivered and demonstrated at the end of every three-weeks iteration and feedback from the customer, end users and domain experts was gathered to refine the requirements backlog. In addition, demonstrators for the launcher, satellite and operations domain integrating hardware and software were built for each major milestone.

The experience and results from AITS development have also been used to contribute to EGS-CC (European Ground Systems – Common Core), for example, in the areas of technology selection, automation procedures, and software development environment. Furthermore, lessons learnt and best practices on agile processes in ECSS context have also been used for the definition of the EGS-CC development plan.