SPACE SYSTEMS SYMPOSIUM (D1)
System Engineering - Methods, Processes and Tools (1) (3)

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TRL BEST PRACTICES A NEW ECSS HANDBOOK

Abstract

The European Cooperation for Space Standardization (ECSS) is an initiative established by the European Space Agencies and Space Industries to develop and use a coherent, single set of standards and handbooks to be used for the customer-supplier relationship when developing space projects. ECSS recently adopted the ISO standard "Definition of the Technology Readiness Levels (TRLs) and their criteria of assessment . This standard is a metric which defines the technology maturity with a scale of nine levels. ECSS has now developed a handbook providing best practices to use this metric in the framework of space projects and of Research and Technology/Development (RT/D) activities. The objective of this paper is to present this handbook which, after a general introduction (presentation of the scale, its history, general principles and introduction in ECSS system) is including three main parts. The first part describes the process to perform a TRL Assessment (TRA), the organisation of a TRA, the pre-requisites, the detail criteria and inputs necessary by level. The second part gives guideline for projects to identify critical functions and technologies candidate to a formal TRA. It then presents how to build and manage a Technology Readiness Status List (TRSL) and the link with the Critical Item List (CIL) of a project. Typical levels linked to project phases and milestones are finally proposed depending on the nature of projects (governmental or commercial). The third part is about links with model philosophy, techno-demonstrators, and, technology reassessment. Re-assessment of TRL for re-use of elements with existing TRA but in a new environment or with design modifications is an important point to avoid misunderstandings. At last, annexes clarify the specificities for some disciplines as Software, EEE components or materials and manufacturing process.