IAF SPACE SYSTEMS SYMPOSIUM (D1)
Lessons Learned in Space Systems: Achievements, Challenges, Best Practices, Standards. (5)

Author: Mr. Daniel Schiller
DLR (German Aerospace Center), Germany

Mr. Roger Jegou
European Space Agency (ESA), The Netherlands
Mr. Franck Durand-Carrier
Centre National d'Etudes Spatiales (CNES), France
Mr. Gianni Crivellari
Thales Alenia Space Espana, Italy
Mr. Fabien CASTANET
Centre National d'Etudes Spatiales (CNES), France
Mr. Jean-Pierre Hulier
ArianeGroup SAS, France
Mr. Wolfram Knorr
Airbus Defence and Space, Germany
Mr. Enrique GonzalezConde
ESA (retired), Spain

ECSS EVOLUTION - PROJECT PHASING AND REVIEWS IN FUTURE SPACE PROJECTS

Abstract

1 Abstract

We investigated space-projects for their best-practices, new industry methods and international approaches how to manage project life-cycle, phasing and reviews. We compared these results with current ECSS issue C approaches and then derived items for standardization in general and for improvement of ECSS 4.0 (issue D) in particular.
ECSS is currently a conservative project framework in its policies, objectives and methods. It aims mainly at singular ("one-off") space-projects performed between space-agencies and prime industry suppliers. The standard life-cycle approach in ECSS manages this individual development of a space systems, sometimes adaptable to recurrent development for a follow-on mission. It lacks modern methods to manage the life-cycle of constellation-programs, of series-production, of "off-the-shelf" procurement. It is hard to depart from the standard to apply flexible/agile methods or to use desynchronized supplier processes apart from the typical v-model.
We identified 37 recommendations for modern phasing/review approaches. They start with correcting factual errors and reach as far as to introduce new space-system, project-phasing and project-review concepts in a complete ECSS overhaul. Most of the recommendations are of this latter, "far-reaching" type. Further they do not only deal with technical content, but also with ways to improve ECSS documentation, publication and usability; especially how to define requirements.
We derived 3 implementation strategies for all recommendations. Those recommendations correcting factual errors will be handled as classic change-requests within the current ECSS issue C. The far-reaching recommendations will be included in a dedicated development activity for ECSS 4.0 (issue D). In the process they will be further analyzed, defined and consolidated to integrate them fully. New input may

still be included. Additionally we set up an intermediate implementation strategy to gain "quick wins". Thereby we want to collect as much new input as possible in guidelines/handbooks to help today's users of ECSS issue C to understand and possibly already exploit these approaches today, to explain their background, their benefits, their possible implementation and their limits. By this they do not yet form a consistent/complete "new set", but they offer potential improvements in current projects on an individual basis.
This is work in progress that will lead to a major update of ECSS, making ECSS modern and attractive for a multitude of projects and users, besides and beyond "one-off" agency space-projects.

2 TOC

1. State of the System
2. Methodology
3. Current developments
4. Future evolution