IAA Study Group 4.8
Space Systems Cross compatibility

OUTLINE

Synopsis

Common systems and standardization have been referred as “key words” in reducing space mission costs. NASA has experimented with these concepts for at least 35 years and implemented approaches for modular, standard components and interfaces with varying degrees of success. Interface definitions today have evolved considerably, and present a unique opportunity to effect cost reductions, in particular through the application of “plug-and-play” (PnP) principles. The IAA is launching a study group on “Space System Cross-Compatibility” that leverages PnP interfaces, modularity and other concepts in reducing mission costs. Among the numerous possibilities, systems that leverage these ideas promise to find application in Science, Exploration, Commerce, and other areas requiring cost reduction through fast system design, build, integration, test and flight. Subjects to be explored by the study group are contained within both Space and Ground Segments, and include electrical, mechanical, and data systems (space), and ground systems and networks.

Proposed Outline

1. Introduction and Motivation
    a. Historical Drivers of System Variety (Steve Greenland)
        i. Obstacles to Overcome
    b. Global Cooperation versus/and Competition (Susan McKenna-Lawlor)
        i. Globalization and Competition Model
    c. Alliance with Existing Efforts (Jaime Esper)
    d. Search for Reduction in System Complexity / Non-Complicated Systems (Peter Mendham)
        i. Understanding Complexity (Complication) Drivers
        ii. Interface Simplicity
    e. Systems for the Benefit of Humanity (Humanosphere) – Guy Pignolet Contributor
        i. Economic Benefits (Paul Walker)
        ii. Availability / Repeatability Benefits
        iii. Programmatic Benefits (Paul Williams/GW)
2. Cross-compatibility (Marco Derrico)
    a. Definition
    b. Needs
3. Space Mission Life Cycle Effectiveness (Rhoda Hornstein / Linda Herrell Contributors)
    a. Feasibility
    b. Design
    c. Fabrication
    d. Integration and Test
    e. Flight and Operations
    f. Returning / Re-Application
4. Needs and Requirements for System Compatibility
5. Architectures Enabling Space System Cross-Compatibility
    a. Modular, Adaptive Reconfigurable Systems
    b. Other Architectures

6. Common Elements Among Several Architectures
7. Detail Features for Space Segment
    a. Mechanical Systems
    b. Electrical Systems
    c. Software Systems
8. Detail Features for Ground Segment
    a. Hardware Components
    b. Software Systems
9. Applications and Examples
    a. Science
    b. Exploration
    c. Commerce
10. Conclusions

MEMBERSHIP

Responsibility	First Name	Last Name	Organization	Country
	Paul	Williams		
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