

SYMPOSIUM ON SAFETY, QUALITY AND KNOWLEDGE MANAGEMENT IN SPACE
ACTIVITIES (D5)

Knowledge Management and Collaboration in Space Activities (2)

Author: Mr. Mike Kearney

National Aeronautics and Space Administration (NASA), Marshall Space Flight Center, United States,
Mike.Kearney@nasa.gov

CCSDS - ADVANCING SPACEFLIGHT TECHNOLOGY FOR INTERNATIONAL COLLABORATION

Abstract

The CCSDS Committee has been developing data and communications standards since 1982. As data and communications technology has advanced, CCSDS has progressed to capitalize on commercial products when available and suitable for spaceflight, and to develop innovative new approaches when available products fail. The current scope of the CCSDS architecture spans the end-to-end data architecture of a spaceflight mission, with ongoing efforts develop and standardize cutting-edge technology.

This paper will touch briefly on standardization of exciting innovations in areas like:

- Space Internetworking – Developing concepts of the Solar System Internetwork (SSI)
- Delay Tolerant Networking – Making internetworking deal with lightspeed delays and disruptions
- Optical Channel Coding – Optical (Laser) Comm surfacing in the Standards world
- Service Oriented Architectures – Adopting a service paradigm for mission operations
- Space Data Link Security – New ways to deal with new threats
- Wireless Comm – Using the 802 suite in-space and on planetary surfaces
- Voice and Video – transporting human communications on a new spaceborne digital infrastructure
- XML activities in many areas – Data Archive, Registries/Repositories, etc.
- Multispectral/hyperspectral data compression – more data through smaller pipes
- Asynchronous Message Service – pub/sub messaging paradigm for easier interfaces

Additionally this paper will:

- Explain the ongoing collaboration of CCSDS and ISO, bringing the CCSDS recommendations to a much wider audience.
- Provide some examples for how CCSDS standards have enabled collaboration and also unexpected benefits for contingency mission situations

MOST IMPORTANTLY, the paper will provide info on how the IAC membership can review, critique and participate in ongoing CCSDS standards development, so that CCSDS final products meet the needs of future missions of IAC attendees and fuel the stimulus for interagency spaceflight collaboration.