GSAW 2020 Tutorial K:

Introduction to Open Systems Specifications for Space

Length: Half day

Overview:
This tutorial covers the advantages of adopting open systems specifications for building cost-effective, adaptable, interoperable, resilient ground systems for space missions. It introduces attendees to specifications from CCSDS, OMG, and other standards organizations publishing space-relevant standards.

I. Introduction
    a. Who are your instructors?
    b. Why Standards matter
    c. Overview of organizations involved in space standards
        i. Consultative Committee for Space Data Systems (CCSDS)
        ii. Object Management Group (OMG)
        iii. ISO/ANSI/IETF/W3C/OMS
    d. What are your expectations for the tutorial?
II. Specifications in the CCSDS Technical Areas
    a. Systems Engineering
    b. Spacecraft Onboard Interface Services (minimal, not ground)
    c. Space Link Services
    d. Cross Support Services
    e. Space Internetworking Services
    f. Mission Ops & Info Mgmt Services
III. Specifications in OMG related areas
    a. Platform Specifications
    b. Domain Specifications
IV. Other standards organizations
V. Wrap-up and Q&A
    a. All of the specifications can contribute to a maintainable ground system
    b. Technology will continue to drive changes in systems and standards
VI. Resources, Contacts

Instructors: Robert Ritter, IMI – RT Logic; Brad Kizzort, Peraton, Inc.; Gerry Simon, Braxton Technologies; Luis Rodriguez, Amergint Technologies; Jay Bugenhagen, ASRC Federal Technical Services; and Justin Boss, Kratos

Biographies:
Robert Ritter – is a ground systems architect for US Navy space programs, the Chief Engineer at Integral Marketing, and formerly a Director of Communication Systems Engineering for RT Logic. He has over 30 years of experience in designing ground system architectures for satellite missions, and data communication networks. Robert has been involved in many worldwide programs implementing CCSDS Standards, and he has worked closely with DoD, NASA, ESA and other agency personnel to find practical means for standards adaptation and co-utilization of assets. He has designed boards for communications and signal processing, has written signal processing and simulation software, and has taught numerous courses in the past, including many CCSDS courses around the world. Mr. Ritter has a BSEE from the University of Virginia, an MSEE from Virginia Tech, and an MBA from George Mason Universityy.

Brad Kizzort – has been building ground operations centers and I&T systems for spacecraft for over 30 years, including the first two major constellation control systems for Iridium and GPS. He is currently chief technologist for the OS/COMET product and is responsible for ensuring that it evolves to meet new challenges for spacecraft monitoring and control. Brad was one of the original contributors to the SOLM

specification and was task force chair for the publication of XTCE 1.2, XTCE 1.1, XUSP 1.0, SOLM 1.0, and C2MS. He is currently a co-chair of the Space Domain Task Force (SDTF) within Object Management Group (OMG).

Gerry Simon – has 30+ years experience in software, hardware, and systems engineering within the space and telecommunications industries, including positions as System Engineering Manager, Chief Engineer, Chief Technologist, and Chief Architect. Gerry was one of the original contributors to the XTCE specification and task force chair for the publication of XTCE 1.0.

Luis Rodriguez – has over 16 years of experience developing and delivering solutions in the space communications industry. He is currently the front-end software architect at AMERGINT Technologies focusing on evolving solutions to meet customers' needs with new technologies. Luis opened Amergint's first expansion office in Broomfield, CO. Luis was one of the original authors of the GEMS specification and a current co-chair of the Space Domain Task Force (SDTF) within Object Management Group (OMG).

Jay Bugenhagen – has over 20 years experience building software and systems for the space and aviation industries. He is ASRC Federal Technical Services' system engineer on the Goddard Mission Systems Evolution Center (GMSEC) project at NASA Goddard Space Flight Center. He was a principal contributor for the C2MS submission to OMG and chaired the Finalization Task Force for publication of C2MS 1.0.

Justin Boss – has over 15 years of experience in the satellite ground system industry. He has supported the design, implementation, and support of many civilian, DoD, and commercial programs. Justin manages a product development team within Kratos RT Logic. He is an active contributor to the XTCE and C2MS specifications and is a current domain member of the SDTF.

Description of Intended Students and Prerequisites:
Some familiarity with spacecraft operations would be helpful in understanding the purpose of each of the specifications. The tutorial assumes no prior knowledge of any of the specifications. The tutorial will be useful for program managers and system engineers interested in understanding the scope and applicability of the specifications.

What can Attendees Expect to Learn:
Attendees will be introduced to the concepts behind specifications published by CCSDS and OMG.

They will learn the requirements covered by each of the specifications.

They will learn how satellite programs can benefit from adopting each specification, how to apply the specification to a specific satellite program, and how the specifications can work together to reduce satellite ground system acquisition and maintenance costs.