

GSAW 2015 Tutorial H:

Introduction to Space Domain Task Force (SDTF) Specifications – XTCE, GEMS, SOLM, XUSP

Length: Half day

Overview:

Course Outline

- I. Introduction
 - a. What is the Space Domain Task Force?
 - b. Who are your instructors?
- II. XML Telemetry and Command Exchange (XTCE)
 - a. Where Does XTCE fit in satellite commanding and telemetry?
 - b. Programs that have benefited from using XTCE and are currently using XTCE.
 - c. Overall Structure of an XTCE document
 - d. Parameter Types, Parameters, Arguments, and Containers
 - e. The Telemetry Side of an XTCE document
 - f. The Command Side of an XTCE document
- III. XTCE US Government Satellite Conformance Profile (XUSP)
 - a. Why Does XTCE need a Conformance Profile?
 - b. Structure of the XUSP specification
 - c. Using Xpath to test conformance
 - d. Other methods for testing conformance
 - e. The XUSP template XTCE document
 - f. Extending the telemetry definitions in the XUSP template
 - g. Extending the command definitions in the XUSP template
- IV. Ground Equipment Monitoring Service (GEMS)
 - a. What kinds of ground equipment use or could use GEMS?
 - b. The GEMS monitoring model
 - c. Controllers, Proxies, Devices and Targets
 - d. Using the ASCII GEMS protocol
 - e. Using the XML GEMS protocol
 - f. Security Considerations
- V. Satellite Operations Language Metamodel (SOLM)
 - a. What is a Language Metamodel?
 - b. What are the benefits of using SOLM?
 - c. The basic elements of SOLM: Procedure, Activities, Parameters, Commands, Actions.
 - d. Mapping an existing scripting language to SOLM
 - e. The SpacePython definition and mapping in SOLM
- VI. Putting it All Together
 - a. All of the specifications contribute to a maintainable ground system
 - b. What other specifications are needed?
 - c. Web Links, Contacts, Specification Acceptance and Usage

Instructors: Brad Kizzort, Harris Corporation; Gerry Simon, Kratos Integral Systems; Rob Andzik, AMERGINT Technologies

Biographies:

Brad Kizzort – has been building ground operations and I&T systems for spacecraft for over 25 years. He is currently chief systems engineer for the Harris' OS/COMET product and is responsible for insuring that OS/COMET evolves to meet new and existing customers' requirements 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 1.1, XUSP 1.0, and SOLM 1.0.

Gerry Simon – has 28 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.

Rob Andzik – 20 years experience in development and deployment of space communications equipment. Rob was one of the original contributors to the GEMS specification and is a current co-chair 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.

What can Attendees Expect to Learn:

Attendees will be introduced to the concepts behind each of the Object Management Group (OMG) Space Domain Task Force (SDTF) published specifications.

- XML Telemetry and Command Exchange (XTCE)
- Ground Equipment Monitoring Service (GEMS)
- Satellite Operations Language Metamodel (SOLM)
- XTCE US Government Satellite Conformance Profile (XUSP)

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

They will learn what types of satellites and 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.