

### **CSRM Composition and Purpose**

Object Management Group (OMG), an international standards organization, released a Request for Proposal (RFP) for a CubeSat specification in September 2018. OMG has a detailed process for identification of the need for a specification followed by the solicitation, development, approval, and distribution of a specification.

International Council on Systems Engineering (INCOSE) and several others responded to the OMG RFP. The INCOSE CSRM was selected to continue development

The CSRM is:

- The logical architecture of a CubeSat space and ground system
- An exo-structure for population with mission-specific elements
- A repository of systems engineering artifacts based on a foundation of stereotypes

A mission-specific team can modify existing elements, can create new elements based on existing stereotypes, or even create new mission-specific stereotypes

Retention of these logical elements provides a common baseline for comparing and evaluating different mission-specific implementations and for the sharing and reuse of design elements

The CSRM logical elements are intended to be reused as a starting point for a mission-specific logical architecture, followed by the development of physical architecture

The CSRM architecture can be applied to SmallSats

### **Model-Based Specification**

In the past, OMG specifications have been document-based. In this case the CSRM Specification consists of:

- Normative CSRM Specification document that is populated in part from the CSRM Model File
- Normative CSRM Profile XMI file for import into a graphical modeling tool

Supplementing the CSRM Specification are non-normative files:

- CSRM Model file since it is an implementation in a specific graphical modeling tool
- HTML Published file

The HTML file allows for exploration and evaluation of the CSRM without the need to acquire a graphical modeling tool. It provides sufficient guidance for establishing a mission-specific CSRM.

CSRM is founded on the normative CSRM Profile as described in the CSRM Specification PDF and captured in the CSRM Profile XMI file

## CSRM Nomenclature

<b>Normative</b> Normative content is the prescriptive part of the specification The normative content must be implemented to claim conformance with the specification
<b>CSRM Specification PDF</b> Contains descriptions of the CSRM Profiles, the CSRM SysML element stereotypes used to create the CSRM elements.
<b>CSRM Profile XMI file</b> Contains CSRM Profile SysML elements stereotypes
<b>XMI File</b> XML Metadata Interchange (XMI) supports the export of models between graphical modeling tools. such as Cameo Systems Modeler and Enterprise Architect
<b>CSRM Graphical Model Tool File</b> A static storage of a CSRM Model as saved by a graphical modeling tool and loaded/imported into a graphical modeling tool
<b>CSRM Model</b> A model of a CubeSat space ground system based on the CSRM stereotypes as dynamically instantiated in a graphical modeling tool
<b>CSRM HTML File</b> A static representation of a CSRM Model generated by a graphical modeling tool that can be explored/evaluated using a browser independently from any graphical modeling tool