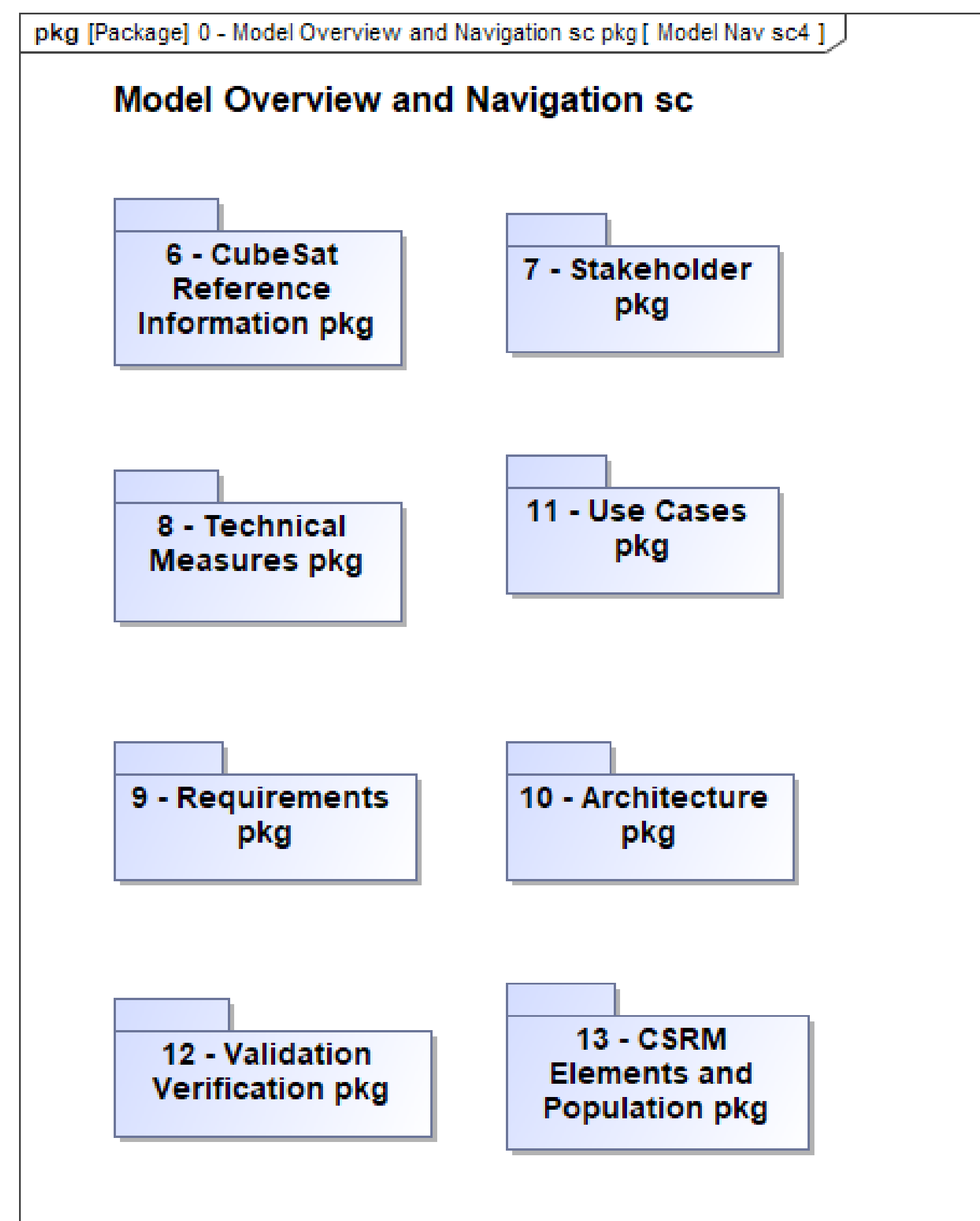
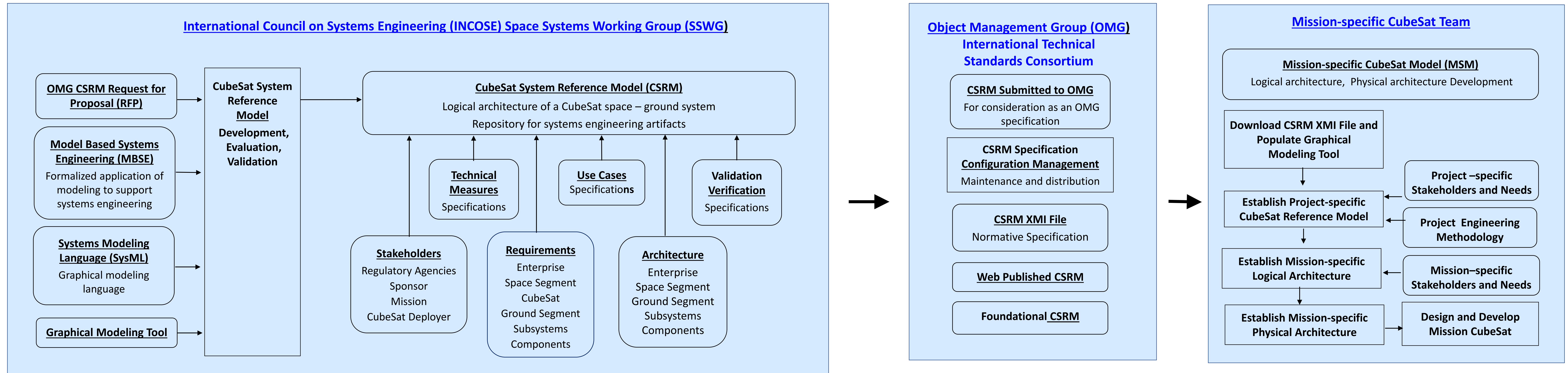


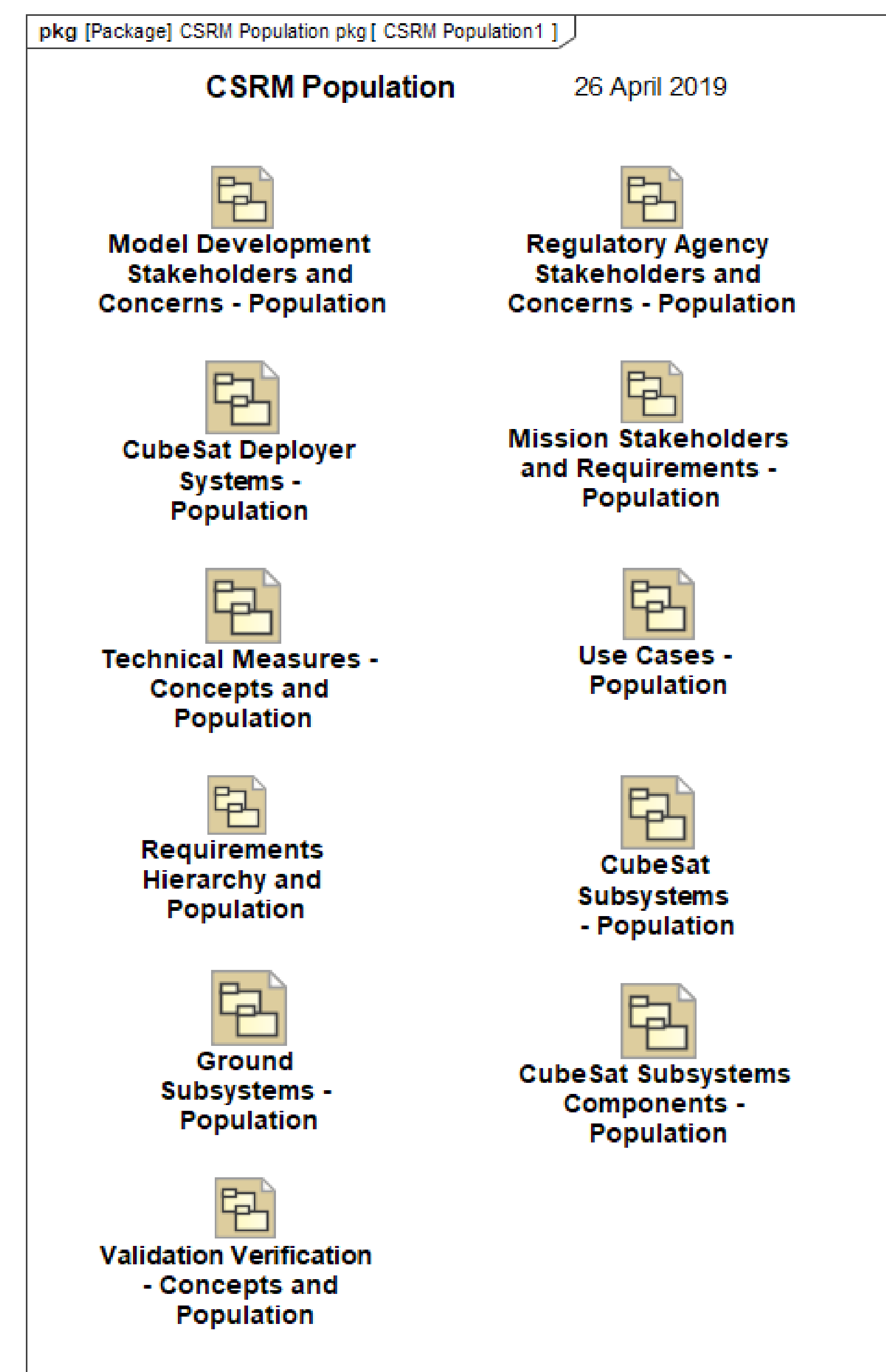
SSWG has investigated the applicability of MBSE for designing CubeSats since 2011.

First phase developed a SysML model of a CubeSat and applied it to the Radio Aurora Explorer. The second phase included modeling behaviors and the third phase included carrying out trade studies. The current phase is the development of a CubeSat System Reference Model (CSRM).

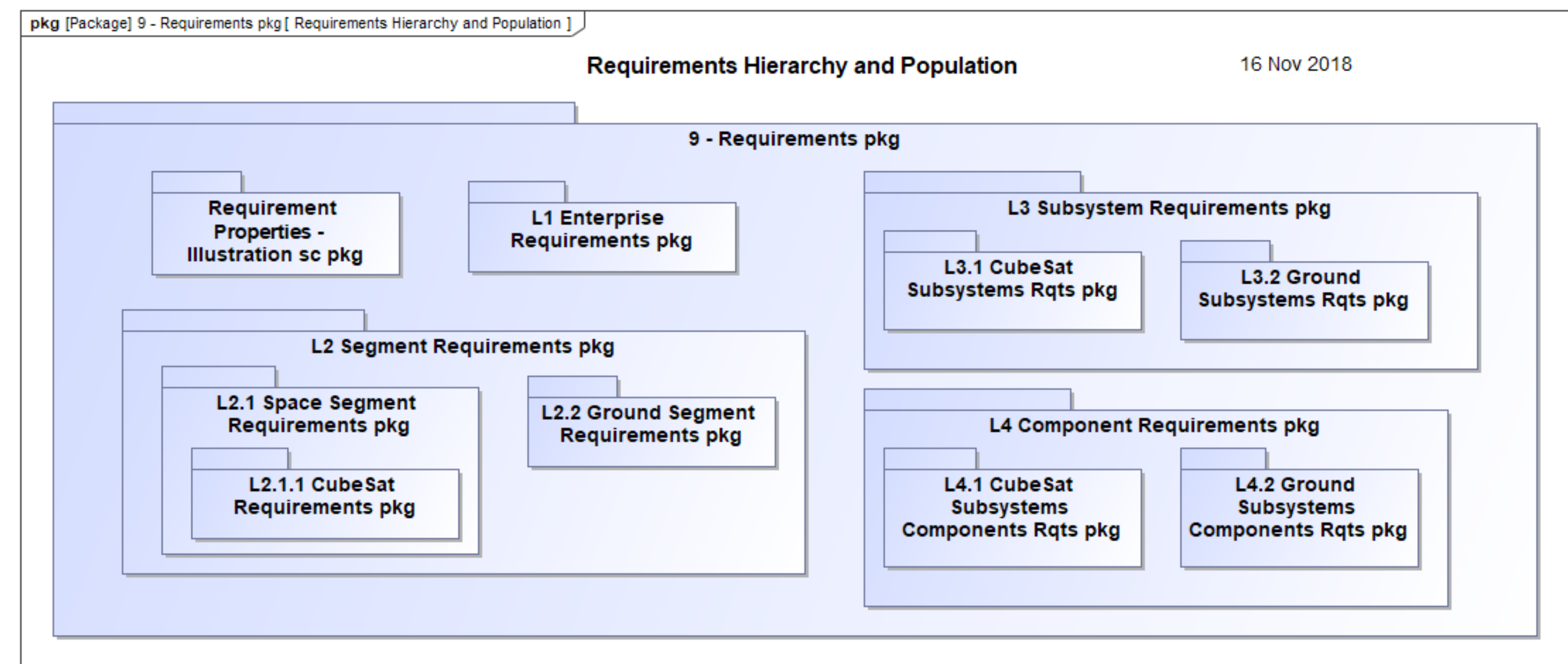
The CSRM provides the logical architecture of a CubeSat space and ground system. The CSRM logical components are reused as a starting point for a mission-specific CubeSat logical architecture followed by the development of the physical architecture during CubeSat development. The mission-specific team is free to adopt a different logical architecture and modify the CSRM to accommodate the change.



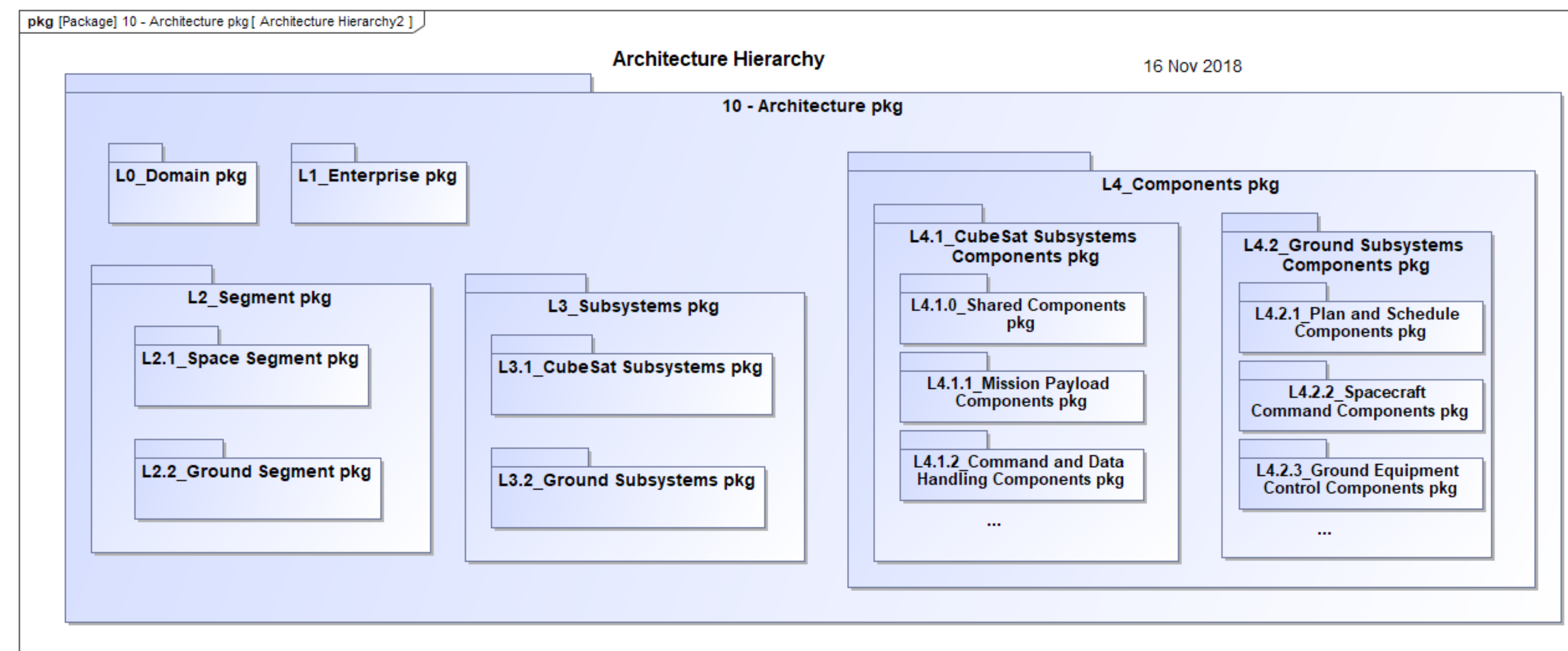
Packages for Navigation within the CSRM



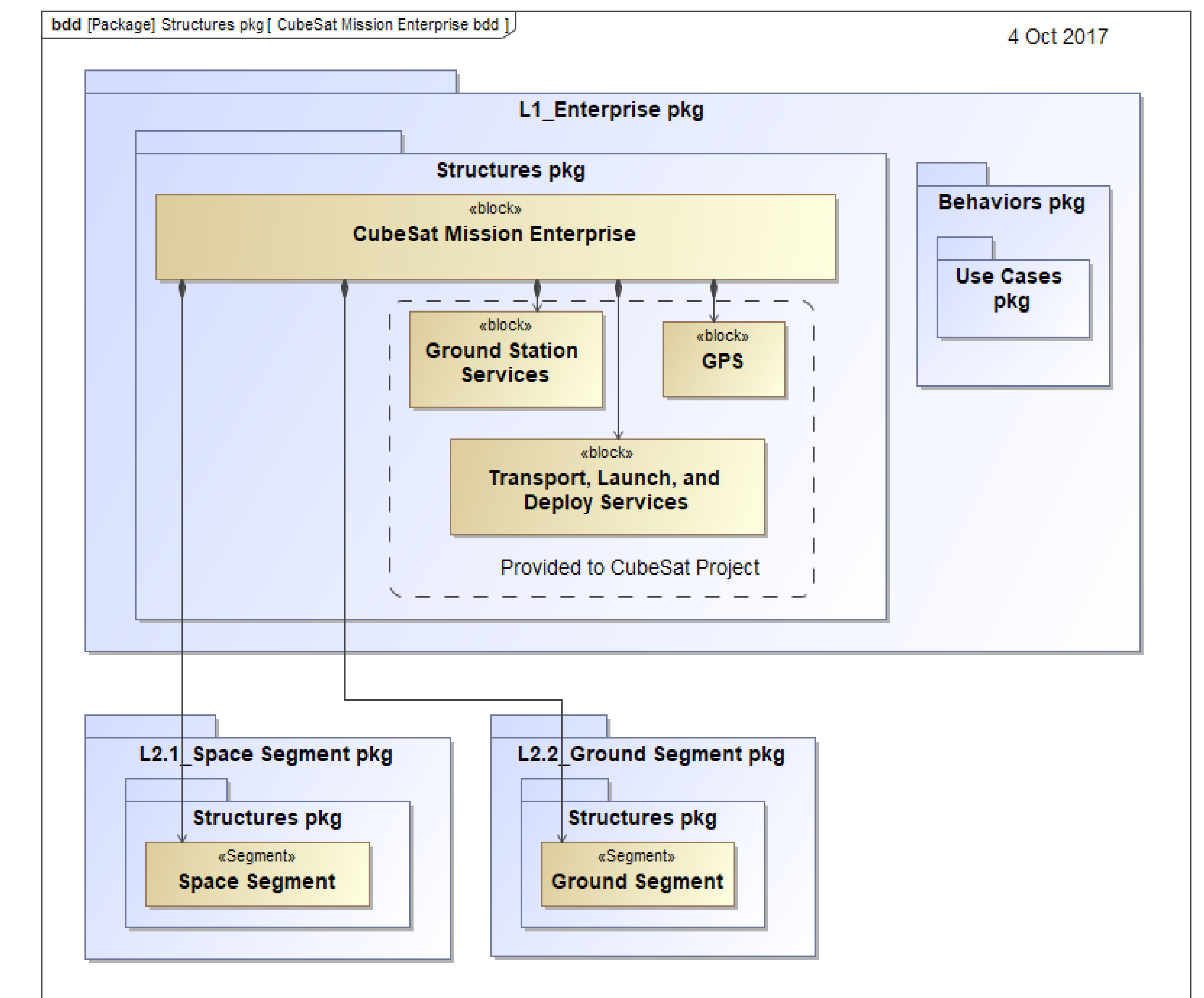
Packages for Population of the CSRM



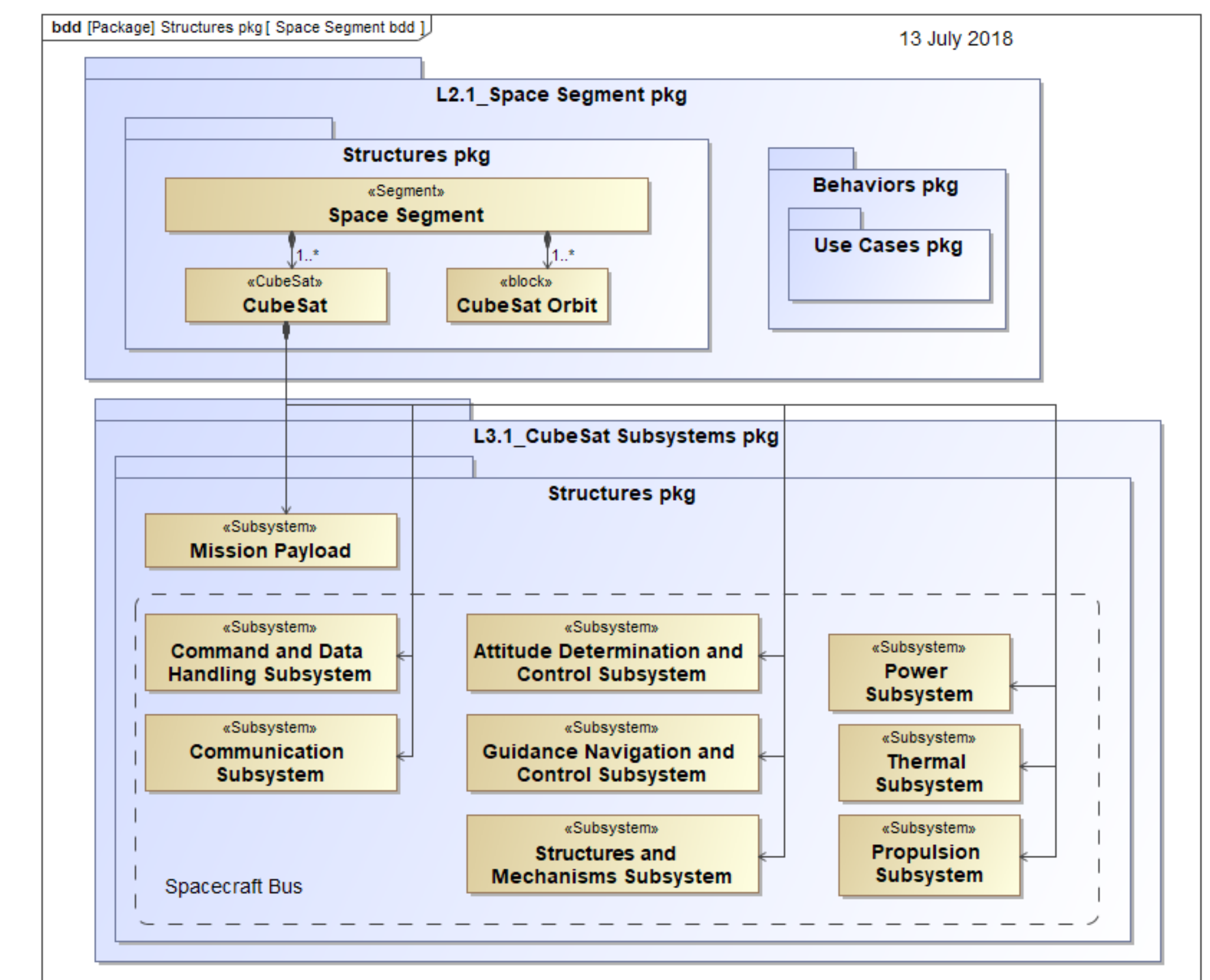
CSRM provides for defining and tracing requirements from stakeholders, use cases, technical measures down to subsystems and components and to validation and verification activities



CSRM logical architecture provides the starting point for a mission-specific team establishing their logical and physical architectures followed by mission-specific CubeSat development



CSRM provides for both space and ground capabilities and external services



CSRM provides the capability to add, delete, modify subsystems

- 2019 Small Satellite Conf - Developing a CubeSat System MBSE Reference Model – Interim Status #5
- 2018 AIAA Space Forum - Developing a CubeSat MBSE Reference Model - Interim Status #4
- 2018 IEEE Aerospace Conf - MBSE Approach for Technical Measurement with Application to a CubeSat
- 2017 CSER - Validation and Verification of MBSE-compliant CubeSat Reference Model
- 2017 IEEE Aerospace Conf - A Model-Based Systems Engineering (MBSE) Approach for Defining the Behaviors of CubeSats

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