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SOFTWARE MAINTENANCE & DELIVERY TO SPACE ROBOTICS SYSTEMS

Abstract

As a partnering agency in the International Space Station (ISS), one of the Canadian Space Agency's (CSA) main objectives is to safely operate and maintain the robotic Mobile Servicing System (MSS). Comprised of the Mobile Base System (MBS), Space Station Remote Manipulator System (SSRMS) or Canadarm2, and the Special Purpose Dexterous Manipulator (SPDM) or Dextre, the MSS requires regular upgrades to its software in order to improve its performance and fix any problems that may occur. In addition, kinematics and dynamics parameters contained in reconfiguration files must be delivered for each major robotics mission such as the capture and maneuvering of a visiting vehicle. This presentation provides an overview of the MSS software upkeep process, the delivery of reconfiguration files for mission-specific needs, and the inherent verification and validation test activities within each. The roles of the CSA Mission Operations and Logistics Sustaining Engineering teams will be highlighted, and the use of simulators in the verification and validation process will be discussed. Finally, the presentation will be supported by real-world examples of problem resolution activities and mission-specific reconfiguration file deliveries for the JAXA HTV and SpaceX Dragon visiting vehicle missions.