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A FRAMEWORK FOR EVALUATING CHALLENGES AND WAYS FORWARD IN ON-ORBIT SERVICING, ASSEMBLY, AND MANUFACTURING

Abstract

In May 2018, the Science and Technology Policy Institute (STPI) facilitated a roundtable event in conjunction with the White House Office of Science and Technology Policy to discuss on-orbit servicing, assembly, and manufacturing (OSAM). Over 40 participants from government, industry, and academia with expertise in OSAM technologies and regulations, representing both user and provider perspectives, were invited. In the weeks leading up to the event, STPI designed a survey asking participants to identify challenges to, drivers of, and ways forward in OSAM technology development to help guide the discussions. Through the synthesis of the survey responses and the roundtable discussions, STPI developed a visual framework to express the wide-ranging survey responses, as well as topics discussed during the event, and compare them to existing and planned OSAM programs and efforts, both private and public. The visual framework is divided into eight primary categories: policy, program, system, technology, verification and validation, standards, regulations, and collaboration. Using the survey responses, discussions notes, and existing and planned OSAM programs within the framework, STPI identified potential gaps in current global OSAM efforts. STPI then offered ten policy options for the U.S. government to consider in order to advance the state of the art of OSAM technologies and further contribute to the economy in space. These options include: conducting analyses to assess value propositions of OSAM; revisiting space systems concept selection methods; promoting rideshare and developing other policies to encourage OSAM adoption; streamlining licensing; and coordinating government efforts in OSAM. The framework discussed in this paper not only offers a clear foundation for discussing many areas and aspects of OSAM, but it can also be used to guide discussions around, identify gaps in, and develop ways forward in other challenging, multi-disciplinary technology development effort as well as identify appropriate roles for government and industry stakeholders.