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DRIVERS OF TECHNOLOGIES AND MARKETS FOR ON-ORBIT SERVICING, ASSEMBLY, AND
MANUFACTURING

Abstract

On-orbit servicing, assembly, and manufacturing (OSAM) is a growing field with many interconnecting technologies, capabilities, regulations, and market applications. In this paper, we discuss factors that drive OSAM technology and market maturity based on our independent research and interviews with over 50 experts around the world. We identified over 50 total drivers in six overarching categories: technologies, economics, government activity, regulations, and discrete events. We then mapped the strength and direction of the relationship between drivers and OSAM technology and market maturity in a Design System Matrix. Using this matrix, we identified the strongest global drivers as well as potential feedback loops and combinations of relationships that would have counterintuitive effects on global OSAM technology and market maturity. Some driver relationships have time and magnitude dependencies that produce both positive and negative effects on the same market activity at different times. Other relationships between drivers can switch from positive to negative in the presence of other drivers, further complicating the ability to predict a growth trend. This model can be used to better predict how different global events and trends could impact the growth of future OSAM activities.