

# Scaling the Payload w/ OSAM-2 – On-Orbit Manufacturing and Robotic Assembly Drives the Future Economies in Space

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## Abstract

A regular cadence of low cost launch opportunities coupled with government and commercial investment in the areas of on-orbit manufacturing and robotic operational capabilities are enabling hi-bandwidth communication networks, increased imagery fidelity, and point to point space tug and transport. The OSAM-2 mission, primed by Made In Space (MIS), will demonstrate on-orbit manufacturing capabilities from a free flying spacecraft by 3D printing and extruding primary structures for a large solar array system. MIS has been developing on-orbit 3D printing technologies for nearly a decade and have successfully demonstrated additive manufacturing aboard the ISS. MIS selected Motiv Space Systems as its space robotics partner to enable the assembly operations of the OSAM-2 system on orbit. Motiv is utilizing its modular, 7-DOF robotic manipulation architecture, xLink, as a disruptive solution for this revolutionary mission with an eye towards future orbital construction mission needs. This presentation will address material selection, capabilities, and challenges associate with the on-orbit manufacturing process. In addition, a breakdown of the intrinsic SWAP benefits on introducing a modular and distributed robotic manipulator architecture and how these are deployed for the OSAM-2 mission will be discussed.

