

New Business Models for Space Exploration (14)  
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## REUSING EXISTING ON-ORBIT ASSETS TO EXTEND MISSION CAPABILITIES, REDUCE COSTS AND ENABLE BUSINESS CASES

### **Abstract**

Satellite servicing promises to extend mission duration through refueling, repair and replacement while reducing overall fleet cost. These same technologies are directly applicable to the construction and assembly of large structures both on on-orbit and on-planet, the in-space refueling of spacecraft for cis-lunar travel or travel between outposts at Lagrangian points, and to capture and remove defunct satellites and rocket bodies to lessen the risk of orbital debris.

The technology to accomplish these tasks exists and has been proven during space flight. In the 1990's, MDA began developing the necessary technologies required to perform on-orbit satellite servicing. In 2007, autonomous on-orbit satellite servicing was demonstrated on the DARPA Orbital Express mission. Nearly all of the International Space Station's robotic operations are performed from the ground.

This paper will summarize efforts to date and describe current, planned and potential projects in the areas of satellite servicing, refueling, orbital debris and large spacecraft assembly.