

# Prototype capture system, mock asteroid help simulate mission sequence

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potential capture target.

Inside the ROC, engineers can use industrial robots, a motion-based platform, and customized algorithms to create simulations of space operations for robotic spacecraft. The ROC also allows engineers to simulate robotic satellite servicing operations, fine tuning systems and controllers and optimizing performance factors for future missions when a [robotic spacecraft](#) might be deployed to repair or refuel a satellite in orbit.

Provided by NASA

Credit: NASA

A prototype of the [Asteroid Redirect Mission \(ARM\)](#) robotic capture module system is tested with a mock asteroid boulder in its clutches at NASA's Goddard Space Flight Center in Greenbelt, Maryland. The robotic portion of ARM is targeted for launch in 2021.

Located in the center's Robotic Operations Center, the mockup helps engineers understand the intricate operations required to collect a multi-ton boulder from an asteroid's surface. The hardware involved here includes three space frame legs with foot pads, two seven degrees of freedom arms that have with microspine gripper "hands" to grasp onto the boulder.

NASA and students from West Virginia University built the asteroid mockup from rock, styrofoam, plywood and an aluminum endoskeleton. The mock boulder arrived in four pieces and was assembled inside the ROC to help visualize the engagement between the prototype system and a

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