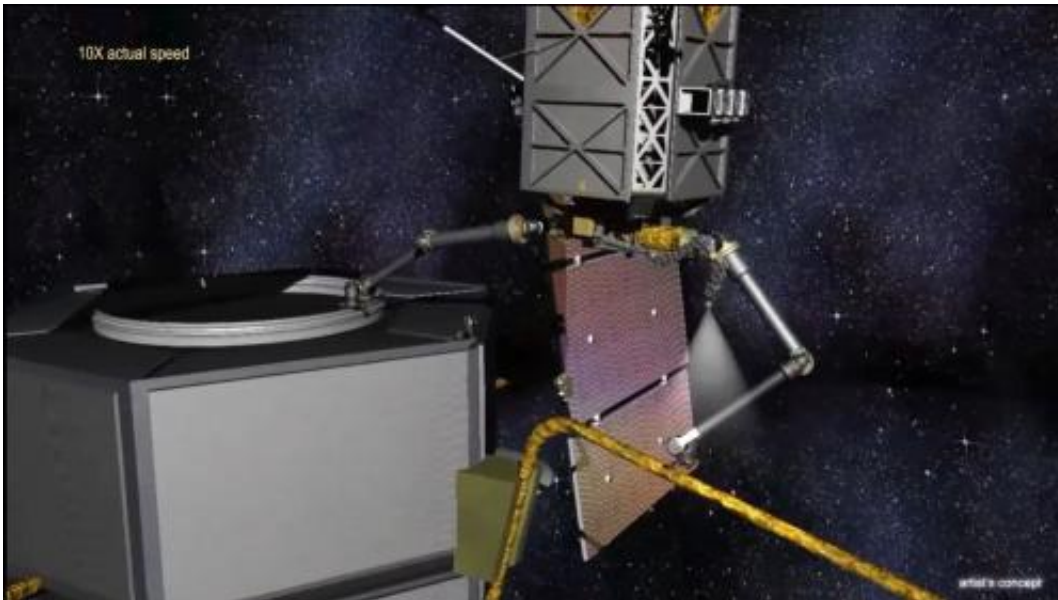


Phoenix rising: New video shows advances in satellite repurposing program

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Inserting new capabilities into a satellite is no simple task. Doing so as that satellite hurdles through space 22,000 miles above the Earth is a bit more challenging still. DARPA's Phoenix program, which hopes to repurpose retired satellites while they remain in orbit, seeks to fundamentally change how space systems could be designed here on earth and then sustained once in space.

This video illustrates some of the program's technical progress since it

began in July 2012. As performers demonstrate the progress of their work in the lab, an artist's simulation of a fully-realized Phoenix demonstration scenario runs in the background to help illustrate how the technology would be applied. Demonstrations include flight-capable [robotic arm](#) manipulation with simulated space contact dynamics, tool development for the robotic arm with unique gripping and adhesion capabilities, autonomous robotic control software and hyperdexterous conformable robot modules in operation, among others.

"Today, satellites are not built to be modified or repaired in space," said Dave Barnhart, DARPA program manager. "Therefore, to enable an architecture that can re-use or re-purpose on-orbit components requires us to create new technologies and new capabilities. This progress report gives the community a better sense of how we are doing on the challenges we may face and the technologies needed to help us meet our goals."

An upcoming Broad Agency Announcement (BAA) will seek additional technologies and capabilities, including low cost software and hardware for rendezvous and proximity operations, the interlinking of multiple number of [degrees of freedom](#) (N-DOF) test facilities, virtual ground station operations to support the unique flight requirements of Phoenix on orbit, and a hosted launch—a ride to space—for the Phoenix-developed payload orbit delivery (POD) modules. A Proposers' Day for those interested in submitting proposals will be held on the 8th of February.

"Our ultimate goal for the [Phoenix program](#) is to increase the return on investment of high value space assets by reusing components from nonfunctioning satellites that have already been placed in space through permission from their owners and techniques and technologies that allow for responsible, transparent, and safe processes and behaviors," said Barnhart. "We have a long way to go, but we are laying the foundation

for improving how we build space systems, with the goal of changing the economic model for [space](#) operations."

Provided by DARPA

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