Pentagon researches new life for dead satellites

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LOS ANGELES (AP) -- Call it space grave robbery for a cause: Imagine scavenging defunct communication satellites for their valuable parts and recycling them to build brand new ones for cheap.

It's the latest pet project from the Pentagon's research wing known for its quirky and sometimes out-there ideas. The Defense Advanced Research Projects Agency is spending $180 million to test technologies that could make this possible.

When satellites retire, certain parts - such as antennas and solar panels - often still work. There's currently no routine effort to salvage and reuse satellite parts once they're launched into space.

DARPA thinks it can save money by repurposing in orbit.

"We're attempting to essentially increase the return on investment ... and try to find a way to really change the economics so that we can lower the cost" of military space missions, said DARPA program manager David Barnhart.

Work on DARPA's Phoenix program - named after the mythical bird that rose from its own ashes - is already under way. The agency awarded contracts to several companies to develop new technologies, and it is seeking fresh proposals from interested parties next month.

A key test will come in 2016 when it launches a demonstration mission that seeks to breathe new life to an antenna from a yet-to-be-determined decommissioned satellite. DARPA has identified about 140 retired satellites that it can choose from for its first test.

Here's the vision: Launch a robotic mechanic outfitted with a toolkit that can rendezvous with defunct satellites and mine them for parts. The plan also calls for the separate launch of mini-satellites. The robotic mechanic would then string together the mini-satellites and old satellite parts to create a new communication system.

It's like doing robotic surgery in zero gravity.

DARPA officials said one way to keep costs down is for the mini-satellites to hitch a ride aboard available space on commercial rockets.

Harvard astrophysicist Jonathan McDowell, who tracks the world's space launches and satellites, called it "an interesting idea" that may reduce costs in the long-term.

"The first few times you do this, it'll definitely be more expensive than just building

the new antenna on your satellite from scratch. But in the long run, it might work out," he said in an email.

McDowell said the biggest challenge in the upcoming demo test is separating the antenna from the retired satellite without breaking it and then successfully integrating it with the mini-satellites.

DARPA is used to funding blue-sky research and a few projects are slowly becoming reality.

In 2011, it dangled seed money to jumpstart a way to rocket people to a star within a century in what's known as the 100-year Starship program.

Long before Google tested self-driving cars, DARPA sponsored a robotic road race in which university-designed autonomous vehicles eyed for the finish line without human help.

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