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The Most Beautiful Way to Clean Up Space Junk: A G

BY [KIT EATON](#) Tue Aug 3, 2010



[Space junk](#) is everything from spent rocket upper-stages that measure meters across, to lost bags of astronauts, to shattered Chinese satellites to flecks of paint moving at 25 times the speed of sound. Any piece of junk could kill a perfectly good satellite or even an unlucky space-walker. How should we be adding to this dangerous cloud of debris?

Dr. Kristen Gates [has one idea](#), and it's beautiful and simple. It's dubbed GOLD--the Gossamer Orbital Debris Collector. The idea has been revealed at the "Artificial and Natural Space Debris" session of the AIAA Astrodynamic Special

GOLD is not much more than a football-field sized balloon (made of gossamer-thin but super-tough material) that is flown into orbit deflated in a suitcase-sized box and then fastened to a dead satellite. It's the huge bulk of the balloon that massively increases the atmospheric drag that satellites experience up t

to the rare molecules of gas that hover around above the fringe of the atmosphere, and it's the same drag that resulted in the premature deorbiting of the famous [Skylab](#) satellite in the 1970s, when the mechanics of orbital drag weren't as well understood. The drag acts to slow a satellite in its orbital path, and then simple orbital mechanics means the satellite descends into the atmosphere where the denser air heats it to the point it burns up.

GOLD has numerous advantages: It's cheap, it can be built into rocket upper-stages before they're launched so that new rockets never pose a space junk threat, and its proposed material is tough enough that even though the balloon envelope will definitely be damaged by space junk itself, it'll never tear and generate more junk by itself.

[Images via flickr/[keithfiore](#); Global Aerospace Corp.]

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