FACT SHEET

UNITED STATES AIR FORCE

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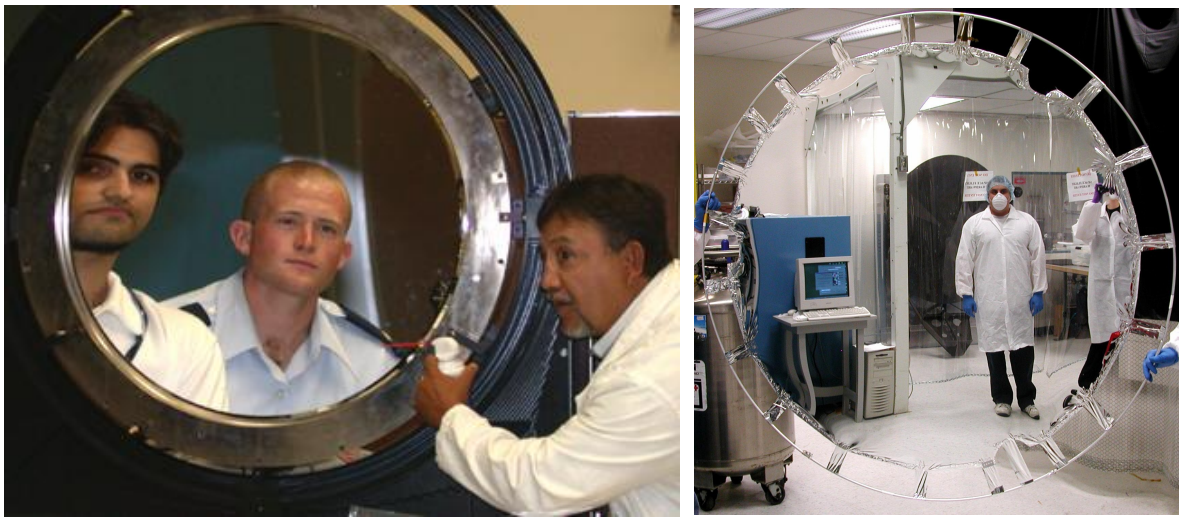
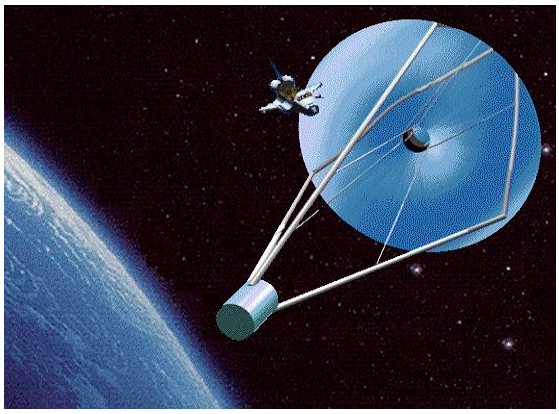
LARGE MEMBRANE MIRRORS



Researchers working with prototype thin-film membrane mirrors

The U.S. Air Force Research Laboratory's Directed Energy Directorate at Kirtland Air Force Base, New Mexico, has taken the lead in investigating the use of new lightweight polymer membrane materials in large optical quality telescope designs. This program will demonstrate the performance of a revolutionary approach to a large aperture, high-resolution, space-deployable laser projection system that will reduce optics payload weight by at least 50% and launch costs proportionately. It will demonstrate space optics and projection technologies required for very large aperture, long-dwell systems used for situational awareness.

Key technology challenges include the development of extremely lightweight, large apertures, including deployable and inflatable optics, space erectable structures, advanced wavefront controllers for maintaining good optical quality, and autonomous technologies for on-board processing. The integrated performance of deployable space structures, extreme lightweight optics, and advanced wavefront controller systems will be evaluated using optical quality, information delivery and packaging efficiency as metrics.



Large space-based deployable optics

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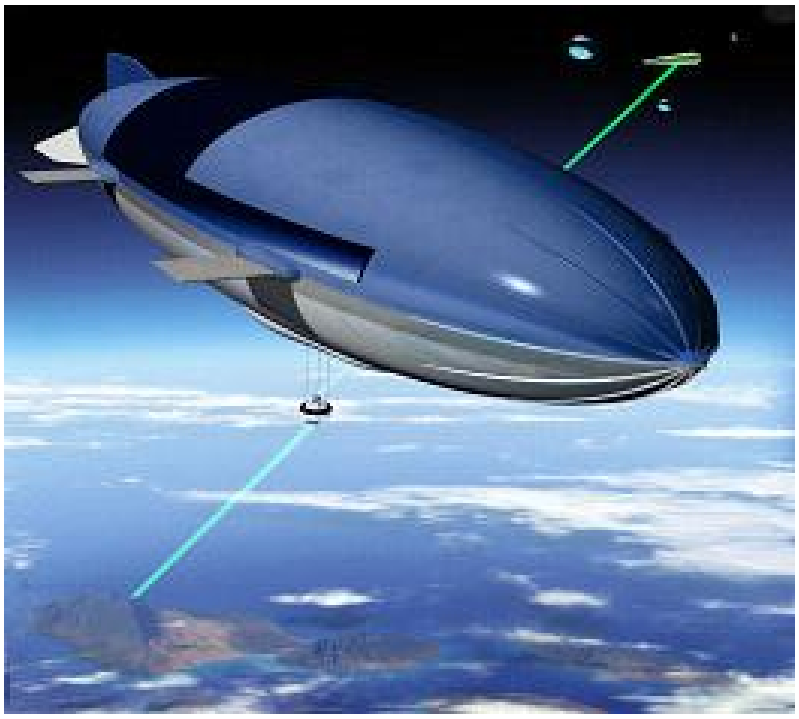

The principle outlets for this technology will likely be a space-based surveillance satellite or a high-altitude imaging platform on a dirigible.

High-altitude imaging platform

The majority of support for this work comes from Small Business Innovation Research contracts that allow the government to take advantage of unique ideas offered by America's small businesses.

- AFRL -

Current as of February 2004