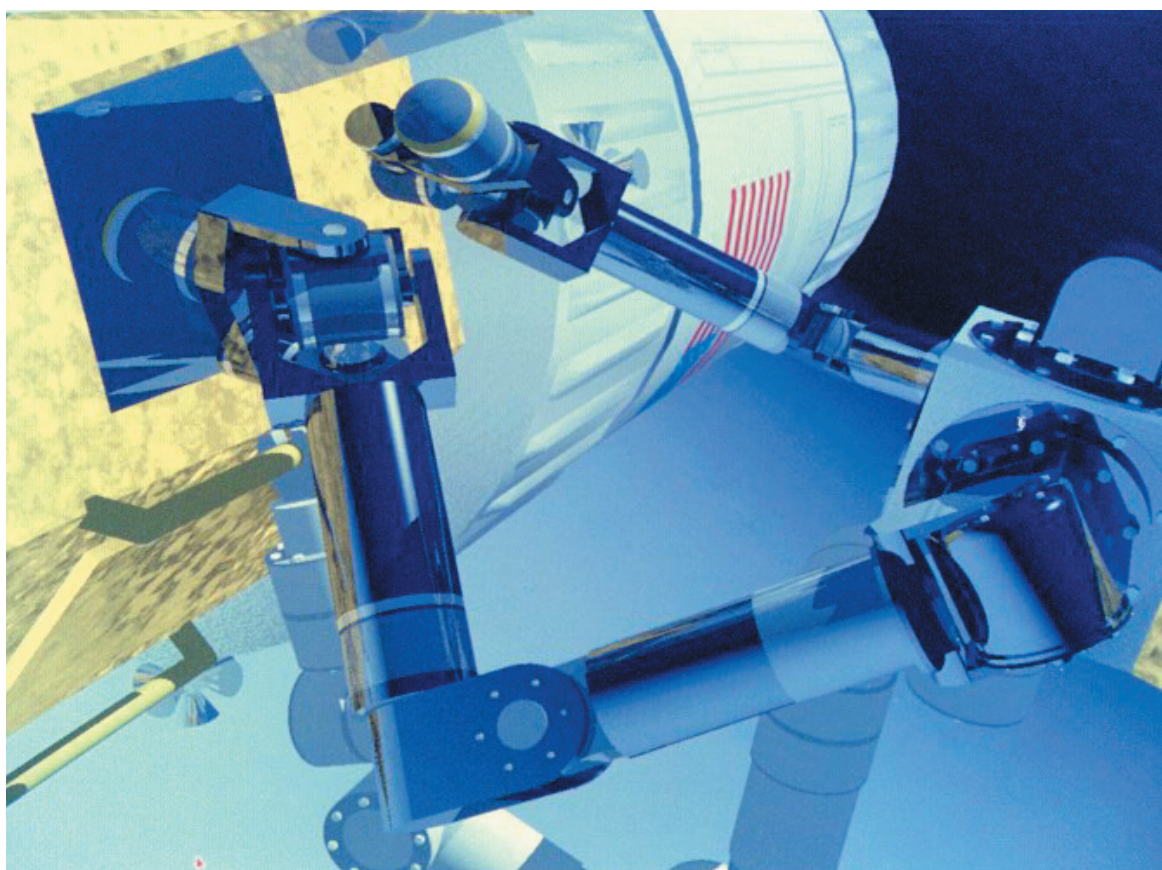
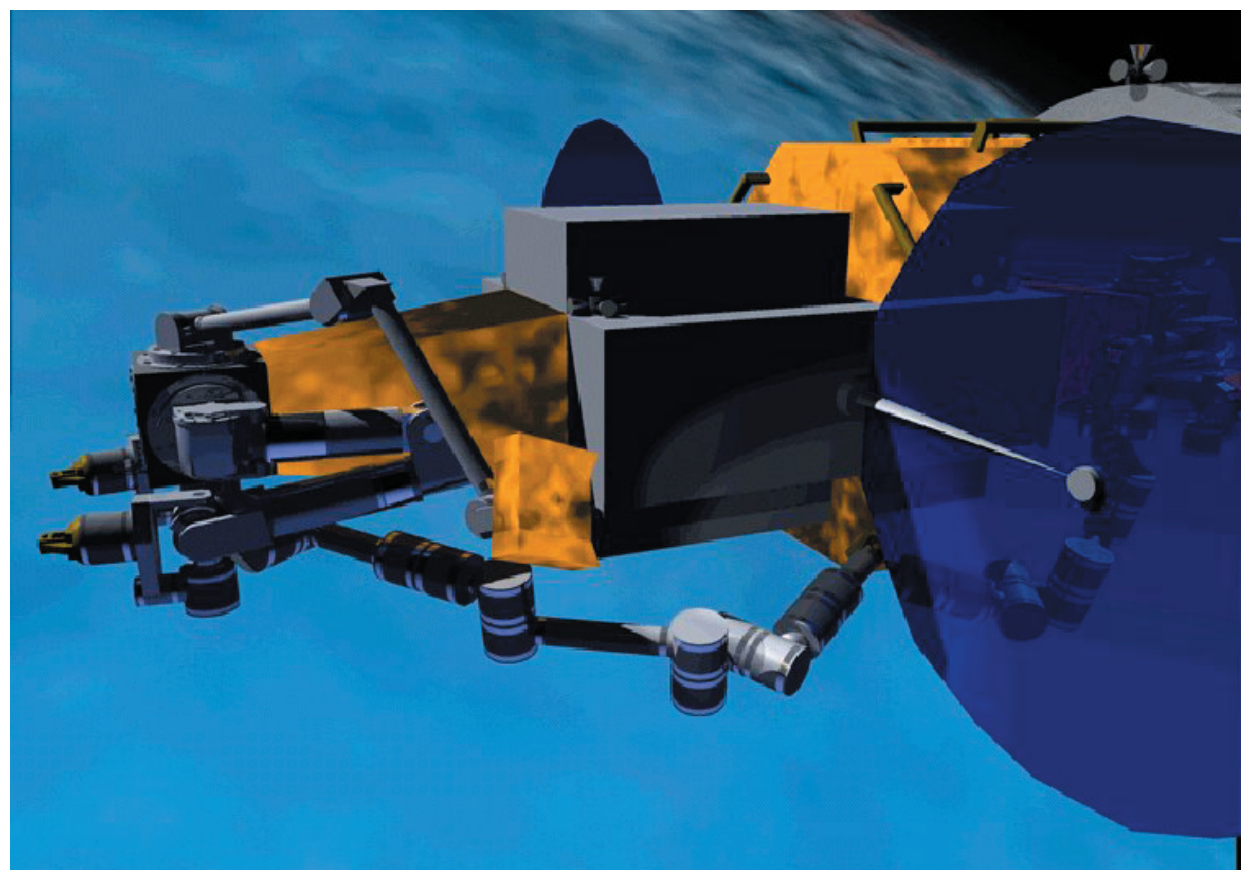
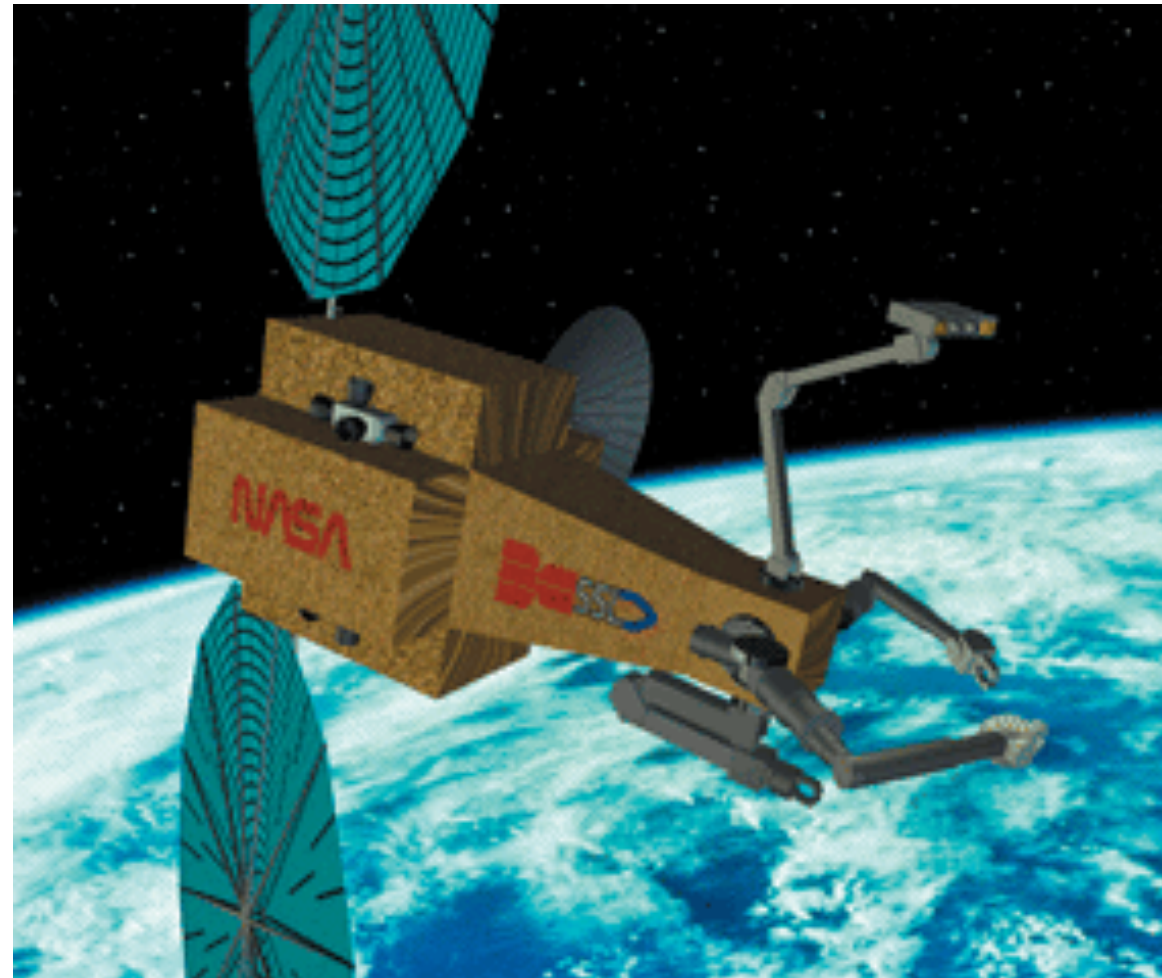
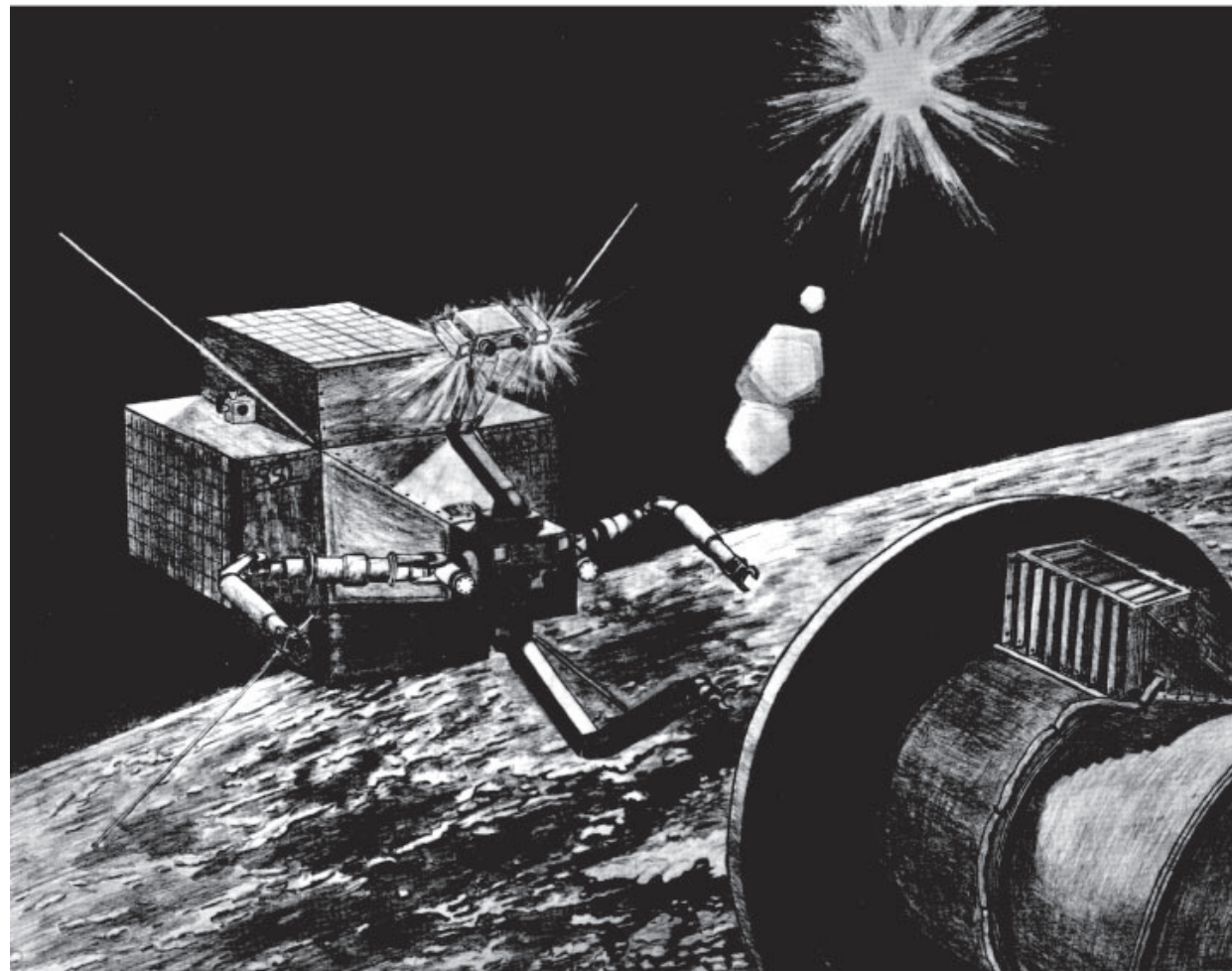


Telerobotic Flight Experiment (TFX)



Upon arrival at the University of Maryland in 1990, the Space Systems Laboratory began the design process for the next generation of space telerobot. The approach taken, based on the SSL experience and results at the time in both EVA and telerobotics, was to design a servicing vehicle capable of flying on a Pegasus launch vehicle, then constructing the neutral buoyancy equivalent. More detailed analyses showed the potential benefits of actually conducting the flight experiment, and in 1992 NASA awarded the University of Maryland a cooperative agreement for the development and flight of the Ranger Telerobotic Flight Experiment (TFX).

The Ranger TFX concept was a free-flying spacecraft bus mounting a pair of dexterous manipulators, a stereo camera pair on a positioning manipulator, and a grapple arm for attachment to the target spacecraft. Approximately human-scale, the manipulators were mounted together on a minimal support structure to allow access into restricted volumes. The vehicle would be launched into a ~1000 km circular orbit, and commanded while in line-of-sight of a single ground station at Wallops Island. Solar arrays would provide sufficient power to recharge batteries between communications passes. While the design was well developed, the lack of launch vehicle funding led to the termination of this project.