

APPLYING STRATEGIC VISUALIZATION® TO LUNAR AND PLANETARY MISSION DESIGN.

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Abstract: NASA teams, such as the NASA Exploration Team (NEXT), utilize advanced computational visualization processes to develop mission designs and architectures for lunar and planetary missions. One such process, STRATEGIC VISUALIZATION® [1], is a tool used extensively to help mission designers visualize various design alternatives and present them to other participants of their team. The participants, which may include NASA, industry, and the academic community, are distributed within a virtual network. Consequently, computer animation and other digital techniques provide an efficient means to communicate top-level technical information among team members.

Furthermore, once the team has developed a sound mission design, STRATEGIC VISUALIZATION® is used to communicate that concept to the general public. This is a vital step that Dr. Wernher von Braun used to enhance public support for space exploration. In 1952, for example, Chestly Bonestell and others working under the direction of Dr. von Braun, created the *Collier's Magazine* series of eight articles known as "the *Collier's* space program." Unlike previous works of science fiction, these articles were based on rigorous science and technology. Virtually every aspect of space flight was considered: astronaut training, space stations, lunar expeditions and missions to mars. [2] Space exploration was greatly advanced as a national priority when *Collier's* presented the American public with a bold and feasible vision of excursions to Moon and other planets.

Today, STRATEGIC VISUALIZATION® is used extensively both in the mission design process within the technical community, and to communicate the value of space exploration to the general public. Movies and digital images have been generated and shown on nationally broadcast television and the Internet, as well as in magazines and digital media.

In our presentation will show excerpts of a computer-generated animation depicting the reference Earth/Moon L1 Libration Point Gateway architecture. The Gateway serves as a staging corridor for human expeditions to the lunar poles and other surface locations. Also shown are crew transfer systems and current reference lunar excursion vehicles as well as the Human and robotic construction of an inflatable telescope array for deployment to the Sun/Earth Libration Point.

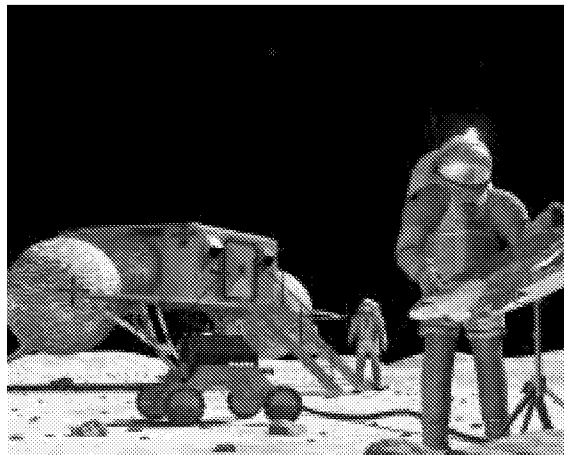


Figure 1. Computer generated illustration showing astronauts deploying a communication satellite link.

References:

- [1] J. Zukowsky. *Space Architecture, The Work of John Frassanito & Associates for NASA*
- [2] R. Miller. (2002) *American Heritage of Invention & Technology* summer 2002