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AEROSPACE

A M E R I C A

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Year in review

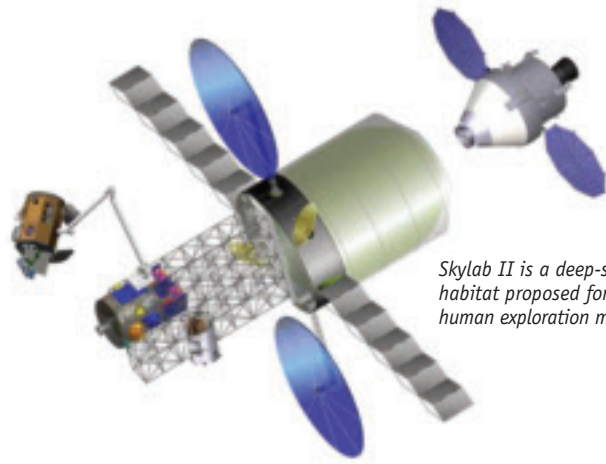
Space architecture

This year witnessed a diversity of projects by architects working in the space architecture field. Skylab II, following in the footsteps of the single-launch Skylab experimental space station of the 1970s, is an advanced concept for using the upper stage hydrogen tank of the Space Launch System as a deep space habitat. Skylab II focuses on human missions to asteroids or Earth-Moon Lagrangian points.

Conceived by Brand Griffin with David Smitherman, Kriss Kennedy, Larry Toups, Tracy Gill, and Scott Howe, Skylab II offers 495 m³ of pressurized volume for a four-person crew. Its tank, like that of Skylab I, can be launched fully provisioned for a 500-day mission. Solar arrays, radiators, and a multipurpose truss structure project from the tank's aft ring segment, which contains avionics, communications, and an EVA airlock. With a two-launch configuration featuring technology that is twice used, Skylab II could offer an economical and early vehicle for the next generation of human exploration missions.

Habitat prototypes and mockups are very useful educational tools, and the Crystal inflatable habitat is aimed at stimulating student participation in development of space inflatables. The Crystal prototype was designed and fabricated by Ondrej Doule and Vratislav Saleny in Europe and was on display at an International Space University summer program in Florida. Low-pressure airwalls rigidize the habitat's simple hedron structure. An integrated fan delivers continuous airflow through a triple-layer wall envelope that includes a solar radiation-resistant layer. The habitat deployment takes less than a minute, and the fan runs for 3-4 hr off a single battery.

Carolyn Sumners, vice president for astronomy and the physical sciences at the Houston Museum of Natural Science, has been leading a project for the design of a lunar settlement. Participating in the effort are faculty members Olga Bannova and Larry Bell and students at the University of Houston's Sasakawa International Center for Space Architecture. Sumners has developed a 3D interactive environment of a lunar colony for 80 persons. The concept is displayed in the museum's Discover Dome, where full-dome video presentations on the solar system, Earth science topics, and the human body take visiting student groups

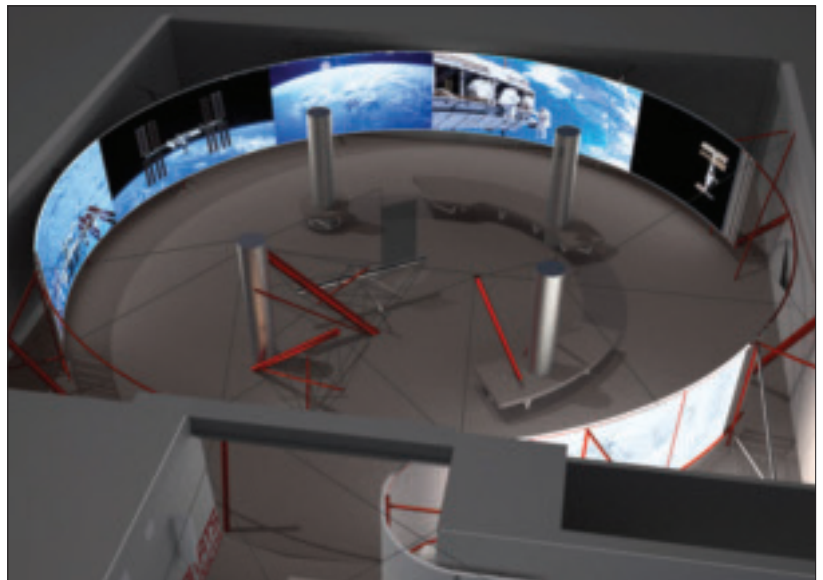


Skylab II is a deep-space habitat proposed for new human exploration missions.

on learning adventures. The project envisions the need for an international effort in the distant future to deliver a lunar colony with an emphasis on economic feasibility and operational sustainability.

Another museum, this time in Europe, held an exhibition that showed how space architecture has now established itself as a design field alongside terrestrial architecture. "Building Technological Habitats" is the name given to the first of four exhibitions under the theme title, "Inhabiting Cosmos." Curated by Raul Polit Casillas, it

"Building Technological Habitats" is one of a series of exhibitions at the Instituto Valenciano de Arte Moderno in Valencia, Spain.



opened in March at the Instituto Valenciano de Arte Moderno in Valencia, Spain. The exhibition is an audiovisual display of continually changing images on multiple screens arranged in a circle. It offers visitors a dynamic panorama of leading-edge construction technology for structures ranging from office buildings to space stations. Plans are afoot to bring the exhibition to museums in the U.S. in 2014. ▲

by David Nixon