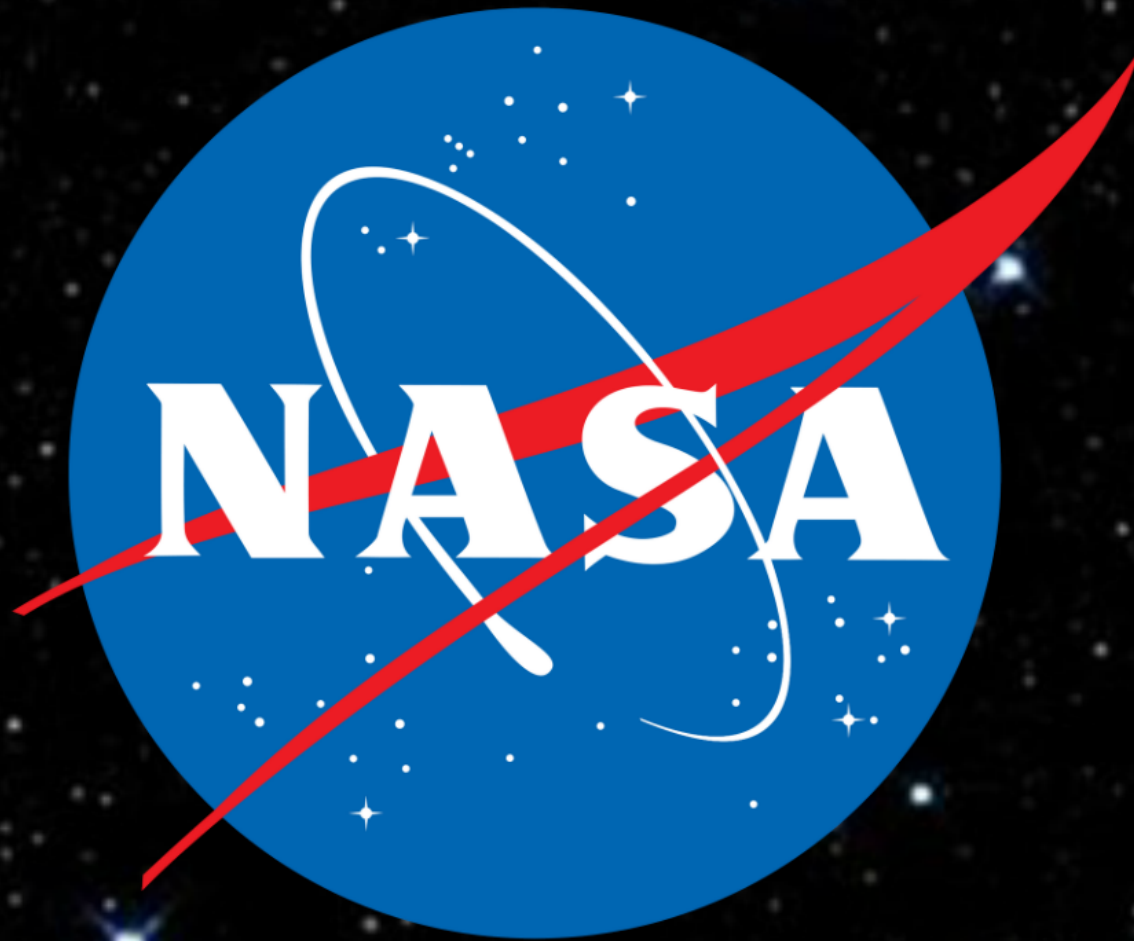
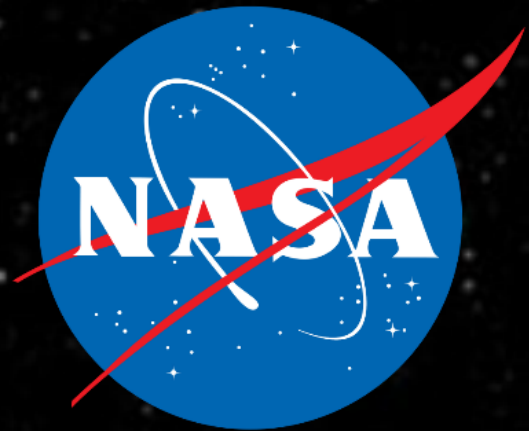


Get more information at  
[www.nasa.gov](http://www.nasa.gov)  
 Gerard Valle  
 Juan Carlos Lopez  
 @jlopeznasa  
**Thank You!**



ving in a Space Balloon





**Living in a Space Balloon**  
*From cartoon to reality*

**Comicpalooza**

5.24.2015

# Extra! Extra!

## History in the making...



This will be the first man-rated inflatable structure to be attached to the International Space Station!

Living in Space



March 12, 2015

### New Expandable Addition on Space Station to Gather Critical Data for Future Space Habitat Systems

[f](#) [t](#) [g+](#) [p](#) [+](#)

NASA and Bigelow Aerospace are preparing to launch an expandable habitat module to the International Space Station this year. The agency joined Bigelow Thursday at its Las Vegas facility to mark completion of the company's major milestones.

The Bigelow Expandable Activity Module, or BEAM, leverages key innovations in lightweight and compact materials, departing from a traditional rigid metallic structure. In its packed configuration aboard SpaceX's Dragon spacecraft launched on a Falcon 9 rocket, the module will measure approximately 5 feet in diameter. Once attached to the space station's Tranquility Node and after undergoing a series of hardware validations, the module will be deployed, resulting in an additional 565 cubic feet of volume — about the size of a large family camping tent — accessible by astronauts aboard the orbiting laboratory.

Expandable habitats could be a new way to dramatically increase the amount of volume available to astronauts while also enhancing protection against radiation and physical debris. Innovative advances in efficiency provided by expandable habitats may give the nation new options for extending human presence farther into the solar system, both in transit and on the surface of other worlds, while also supporting the development of innovative platforms for commercial use in low-Earth orbit.

In the next decade, NASA plans to extend human spaceflight from low-Earth orbit operations to "proving ground" operations in cis-lunar space orbiting the moon. In the proving ground, NASA and its partners will validate vital hardware, including deep space habitats, as well as operations and capabilities necessary to send humans on long-duration missions to Mars or other deep-space destinations in which they must operate independently from Earth. The International Space Station serves as the world's leading laboratory for conducting cutting-edge research and is the primary platform for technology development and testing in space to enable human and robotic exploration of destinations beyond low-Earth orbit, including asteroids and Mars.

"We're fortunate to have the space station to demonstrate potential habitation capabilities like BEAM," said Jason Crusan, director of Advanced Exploration Systems at NASA Headquarters in Washington. "Station provides us with a long-duration microgravity platform with constant crew access to evaluate systems and technologies we are considering for future missions farther into deep space."

Once BEAM is attached to the Tranquility Node, the space station crew will perform initial systems checks before deploying the habitat. During the BEAM's minimum two-year test period, crews will routinely enter to take measurements and monitor its performance to help inform designs for future habitat systems. Learning how an expandable habitat performs in the thermal environment of space and how it reacts to radiation, micrometeoroids, and orbital debris will provide information to address key concerns about living in the harsh environment of space.

The BEAM is an example of NASA's increased commitment to partnering with industry to enable the growth of the commercial use of space. Bigelow Aerospace is building on technology NASA conceived in the 1950s and licensed to the company. NASA and Bigelow Aerospace are each benefitting from the sharing of expertise, costs, and risks to pursue mutual goals.

The module is scheduled to launch on SpaceX's eighth cargo resupply mission to the space station later this year.

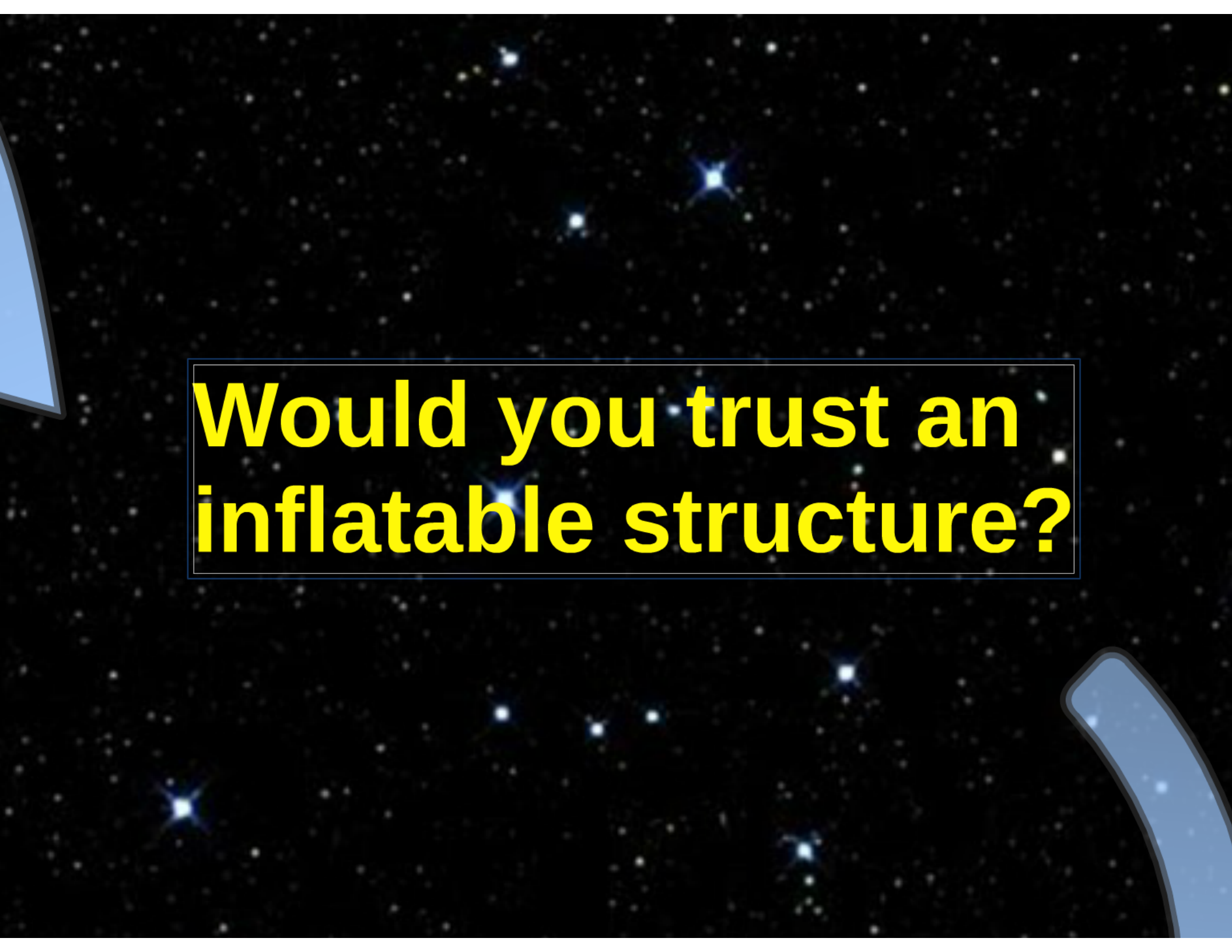
Read NASA Administrator Charles Bolden's blog about BEAM.



Bigelow Aerospace employees who built the Bigelow Expandable Activity Module (BEAM) are recognized during an event March 12. BEAM will be added to the International Space Station in 2015. Credit: Bigelow Aerospace



Robert Bigelow, president and founder of Bigelow Aerospace, and William Gerstemeier, NASA's associate administrator for Human Exploration and Operations, talk to media about the company's Bigelow Expandable Activity Module (BEAM) during an event at Bigelow's facility in Las Vegas on March 12. Credit: Bigelow Aerospace

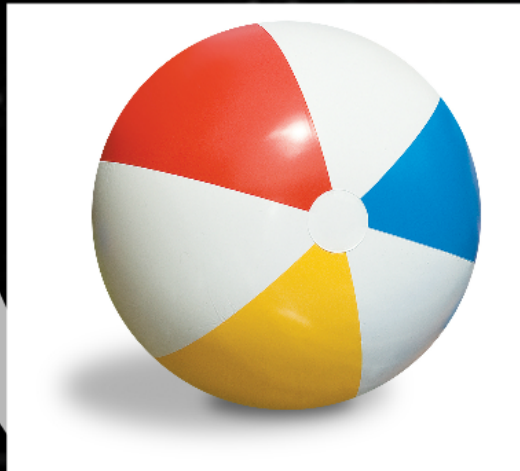


**Would you trust an inflatable structure?**





**VS**









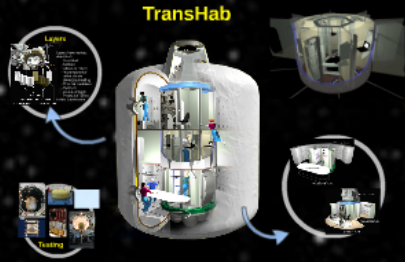
Bigelow Expandable Activity Module (BEAM)

**Genesis I and Genesis II**



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In 2006 and 2007, Bigelow launched Genesis I and Genesis II, respectively



**TransHab**

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First inflatable station concepts developed by NASA

Built in collaboration with Goodyear

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NASA simultaneously developed concepts on stations made with aluminum shells

**1961**



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Apollo

**SPACE RACE**



**Inflatable Paraglider for Gemini**



**Inflatable Moon Base Concept**

**Satelloons (1960s)**

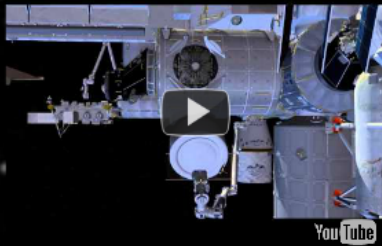
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YouTube

**von Braun Space Station (1952)**

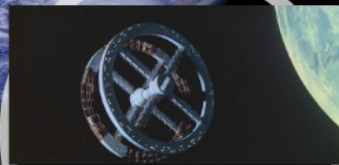


- Dimensions: 75 meters in diameter (160 ft)
- Capacity: 18,400 cubic meters (up to 80 crew)
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- Donut-shaped inflatable sections made of reinforced rubber
- Artificial gravity generated by rotation
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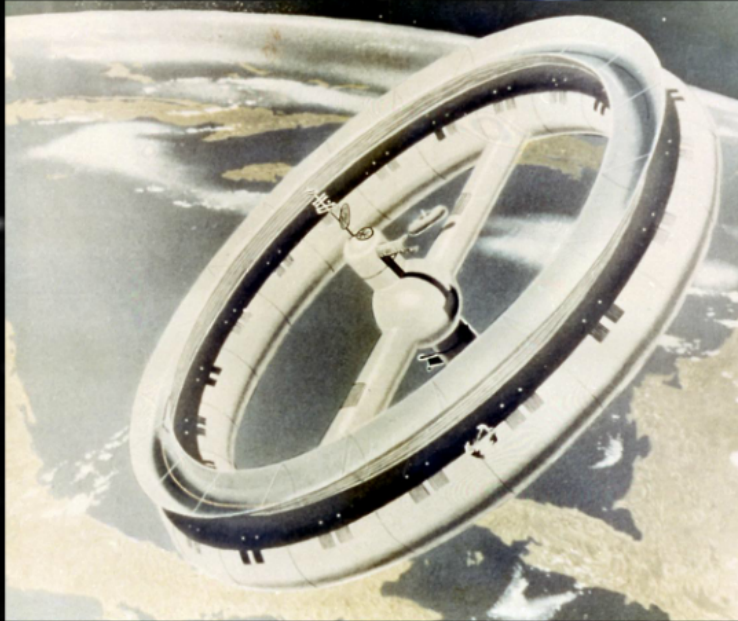
**2001: A Space Odyssey Space Station V (1968)**



**Elysium (2013)**





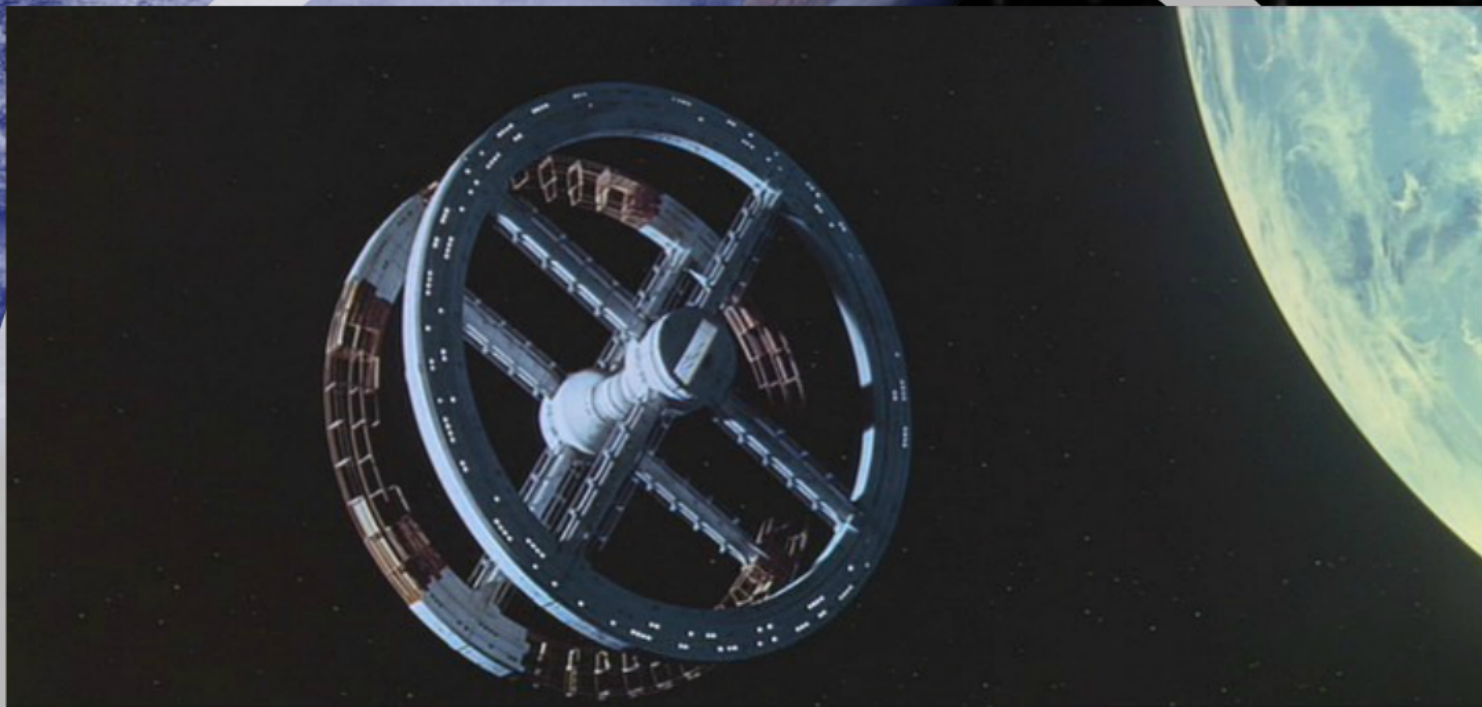


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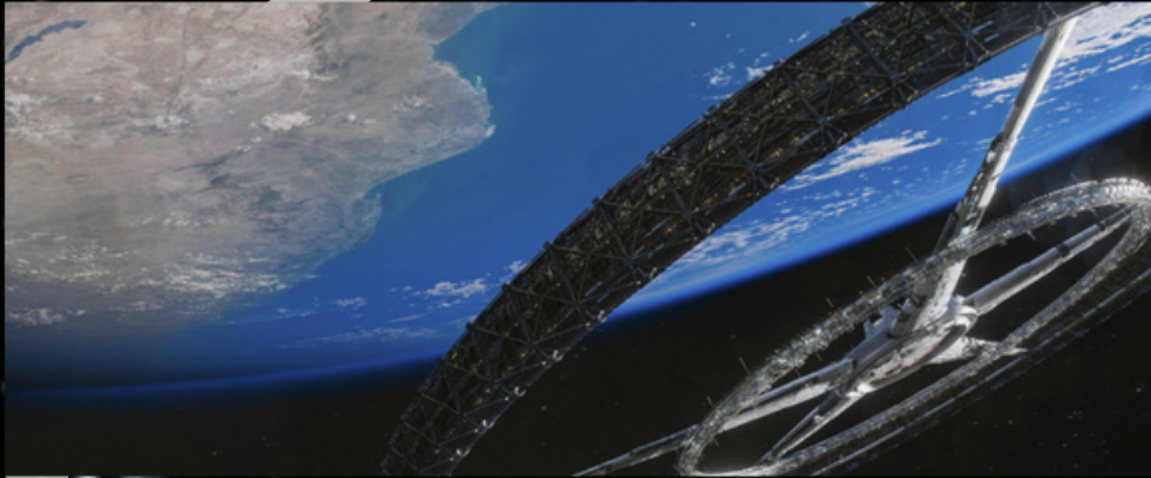
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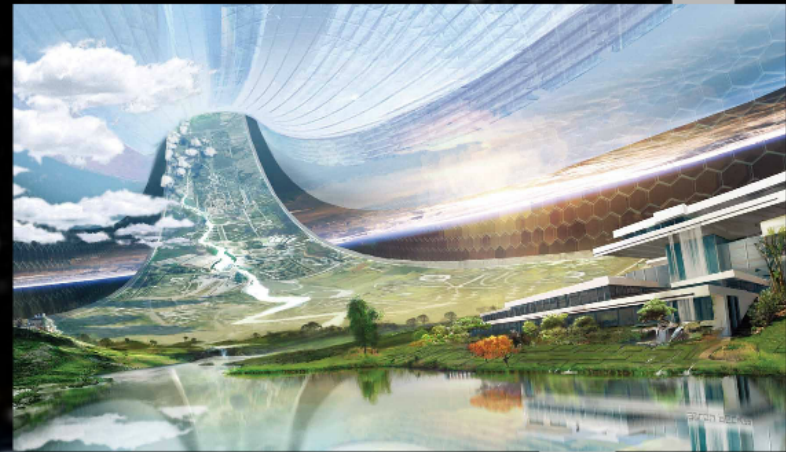


**2001: A Space Odyssey**  
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# Elysium (2013)





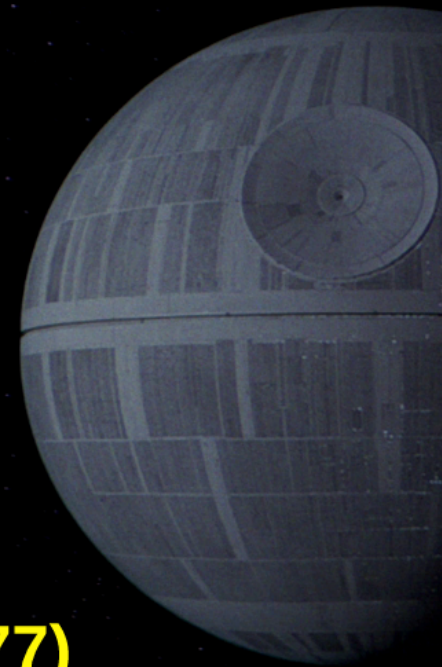
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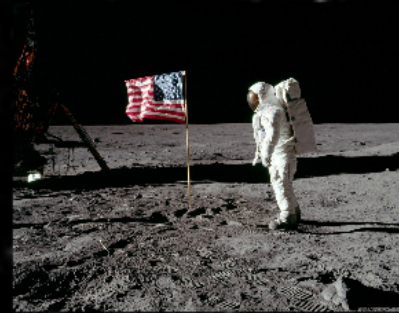
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SPACE RACE

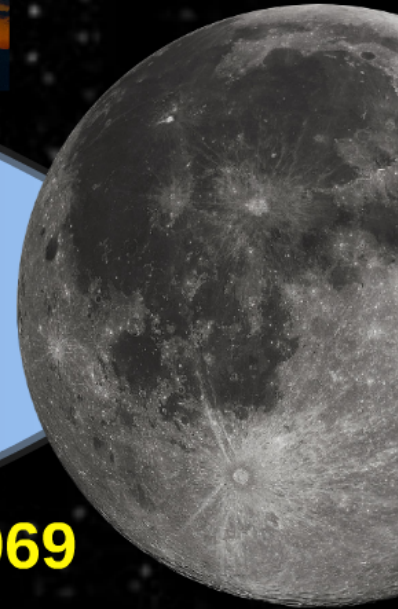
1969



Inflatable Paraglider for Gemini

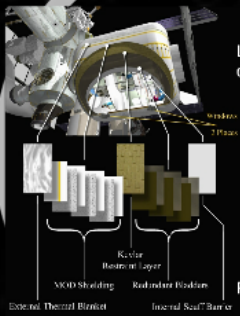


Infatable Moon Base Concept

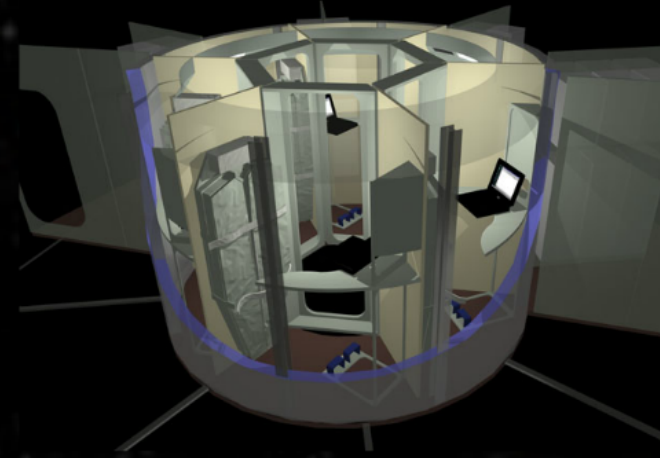


# TransHab

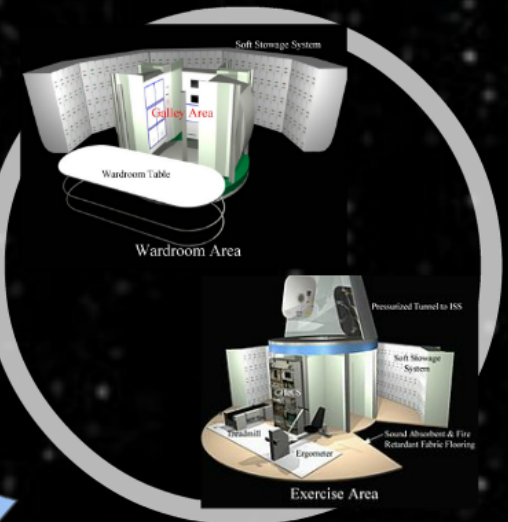
## Layers



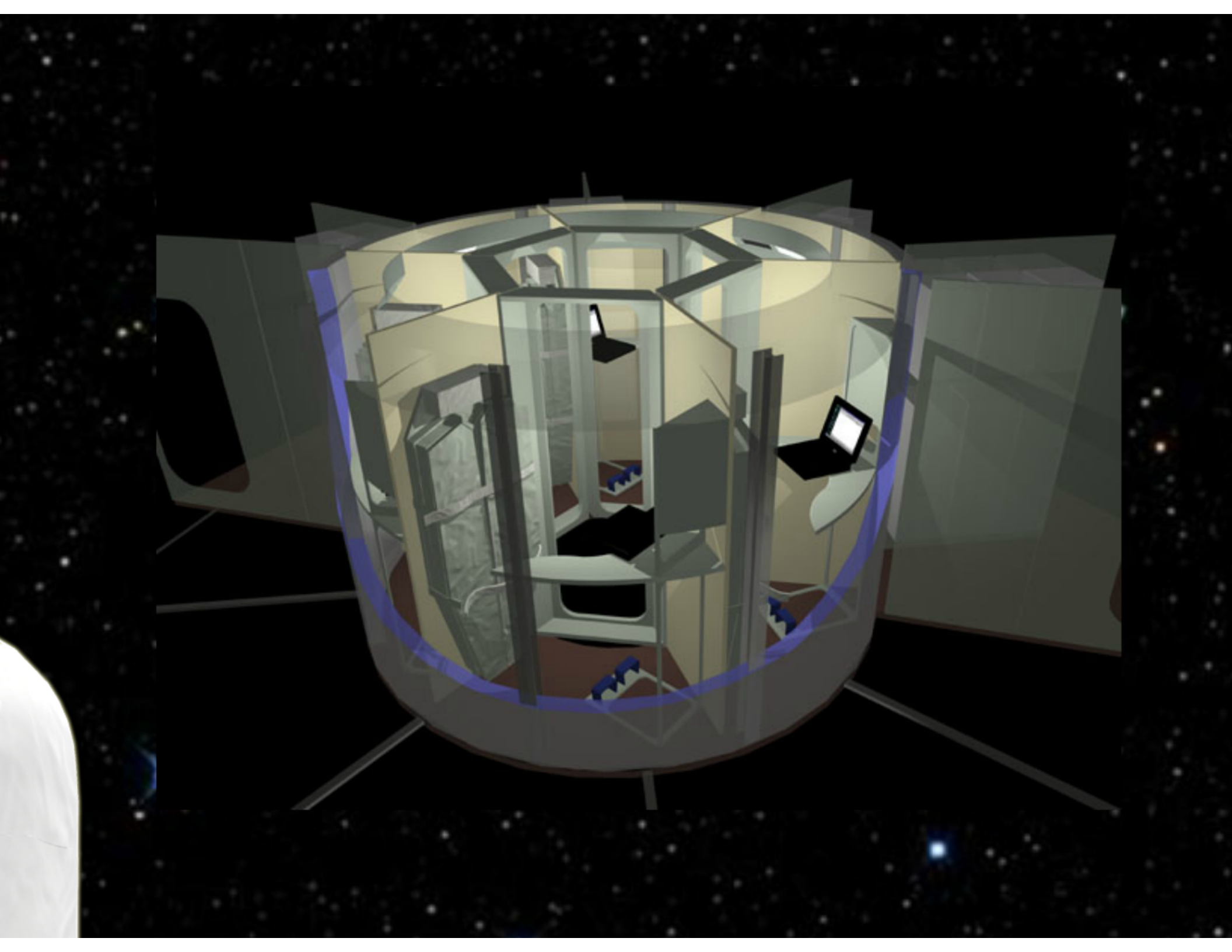
- Layers have various objectives:
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  - Thermal Insulation
  - Restrain
  - Atomic Oxygen Protection (LEO)
  - Fabric construction

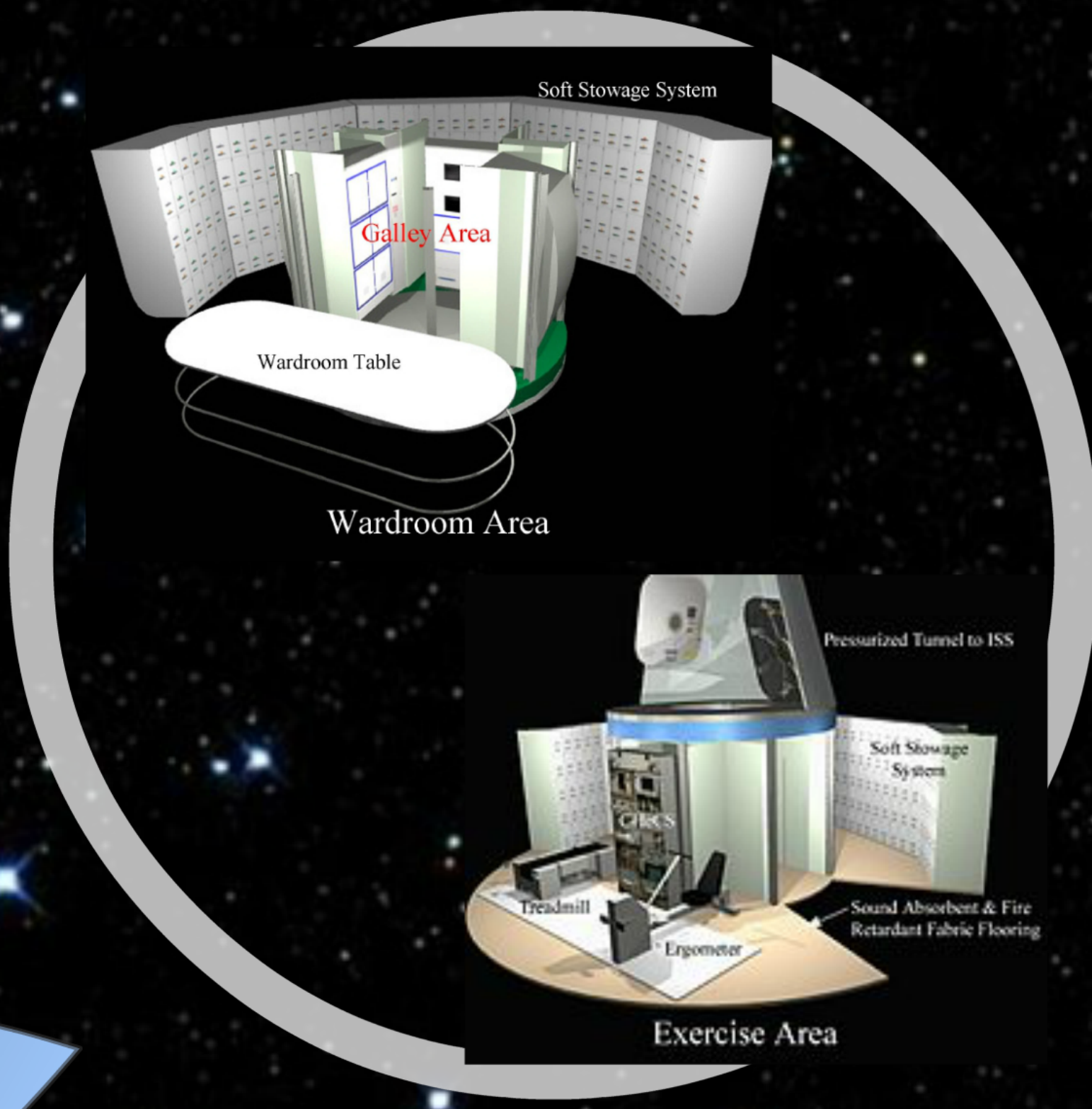


## Testing



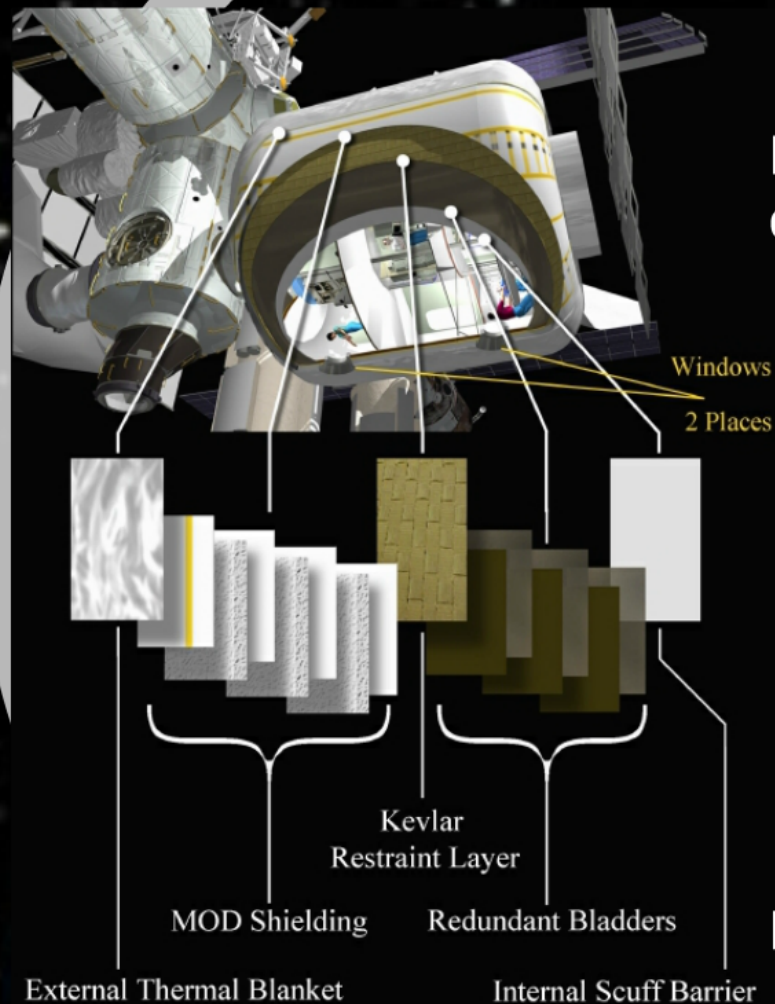








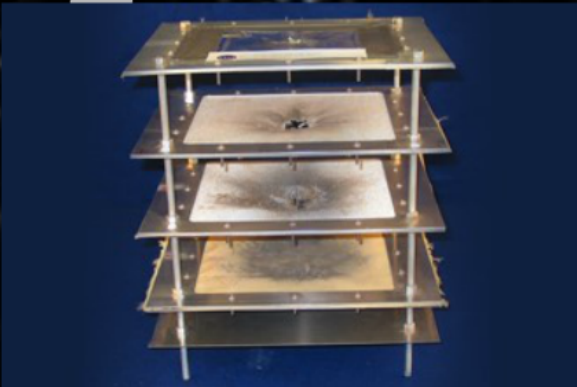
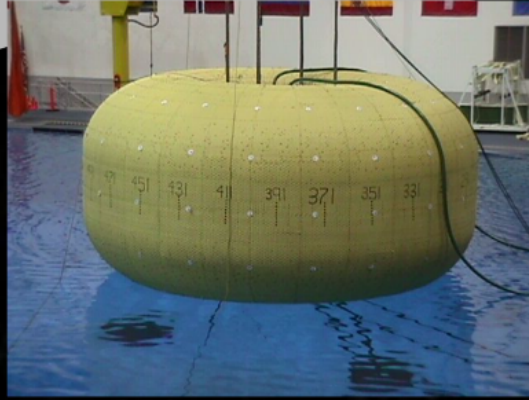
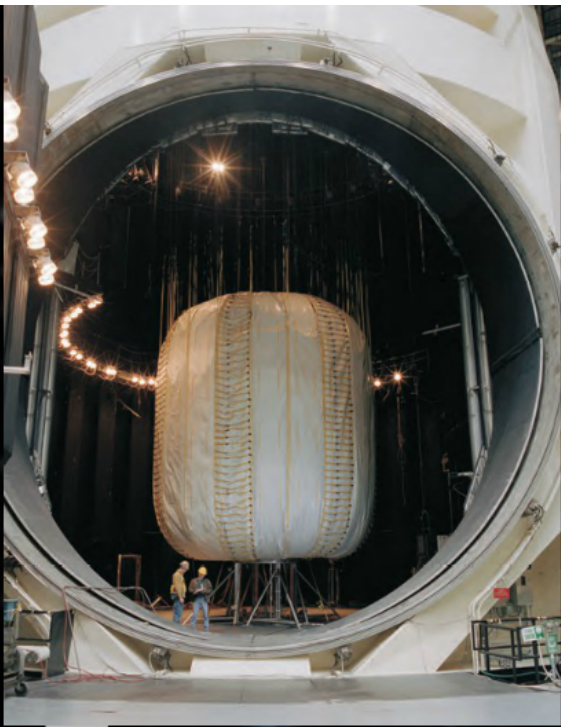
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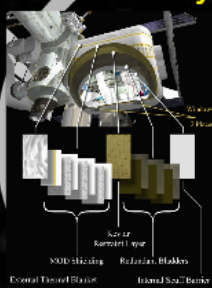


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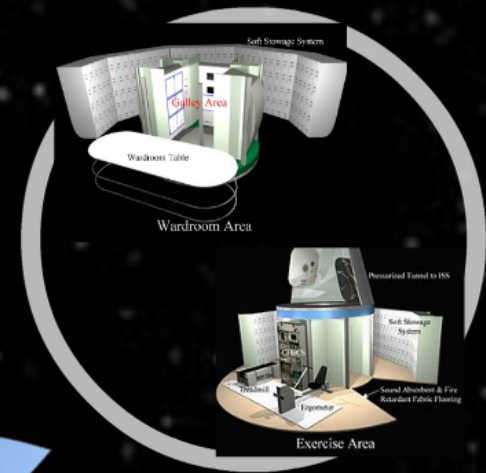
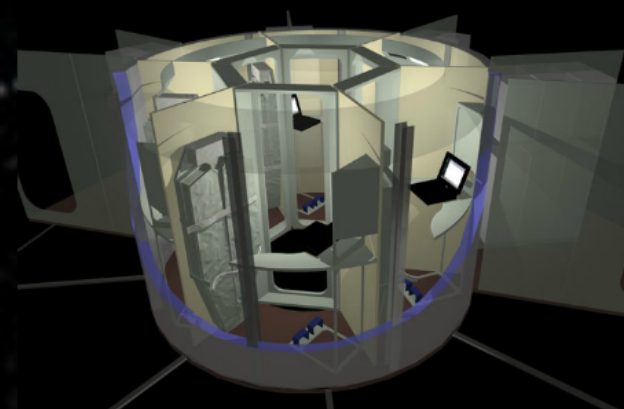
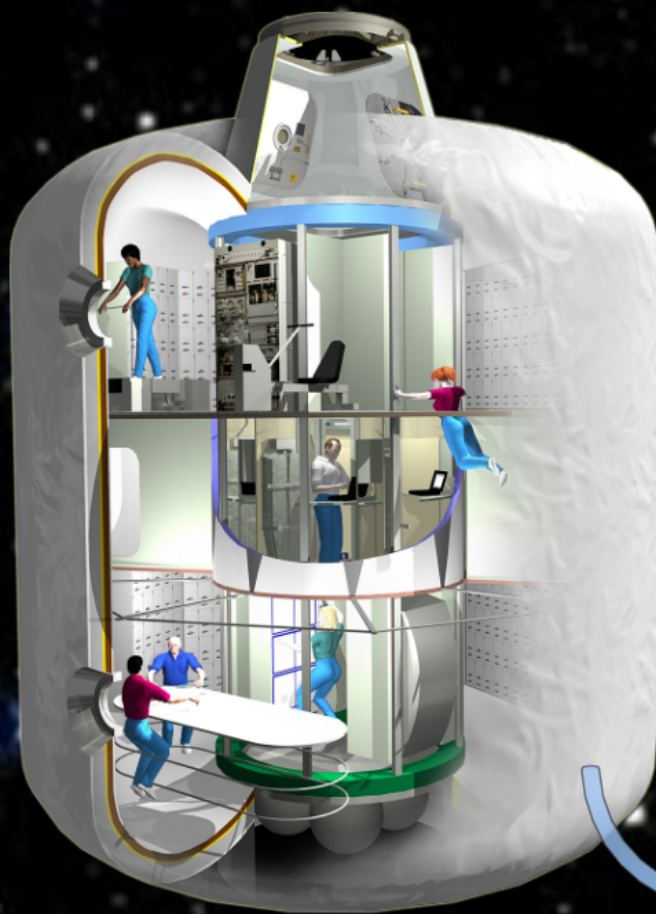


# TransHab

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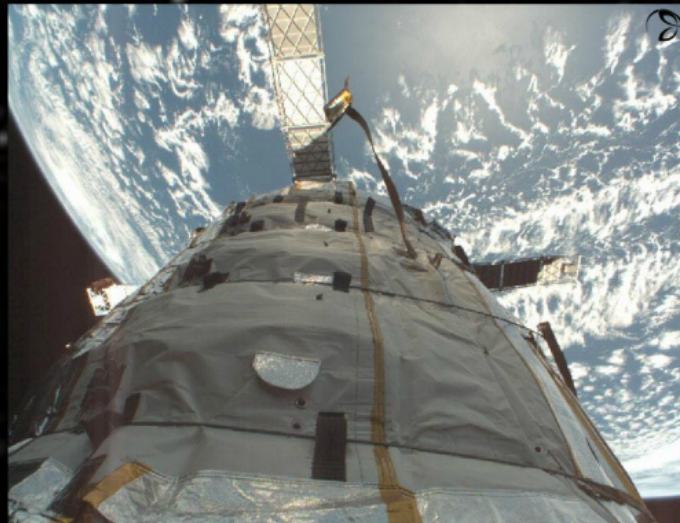


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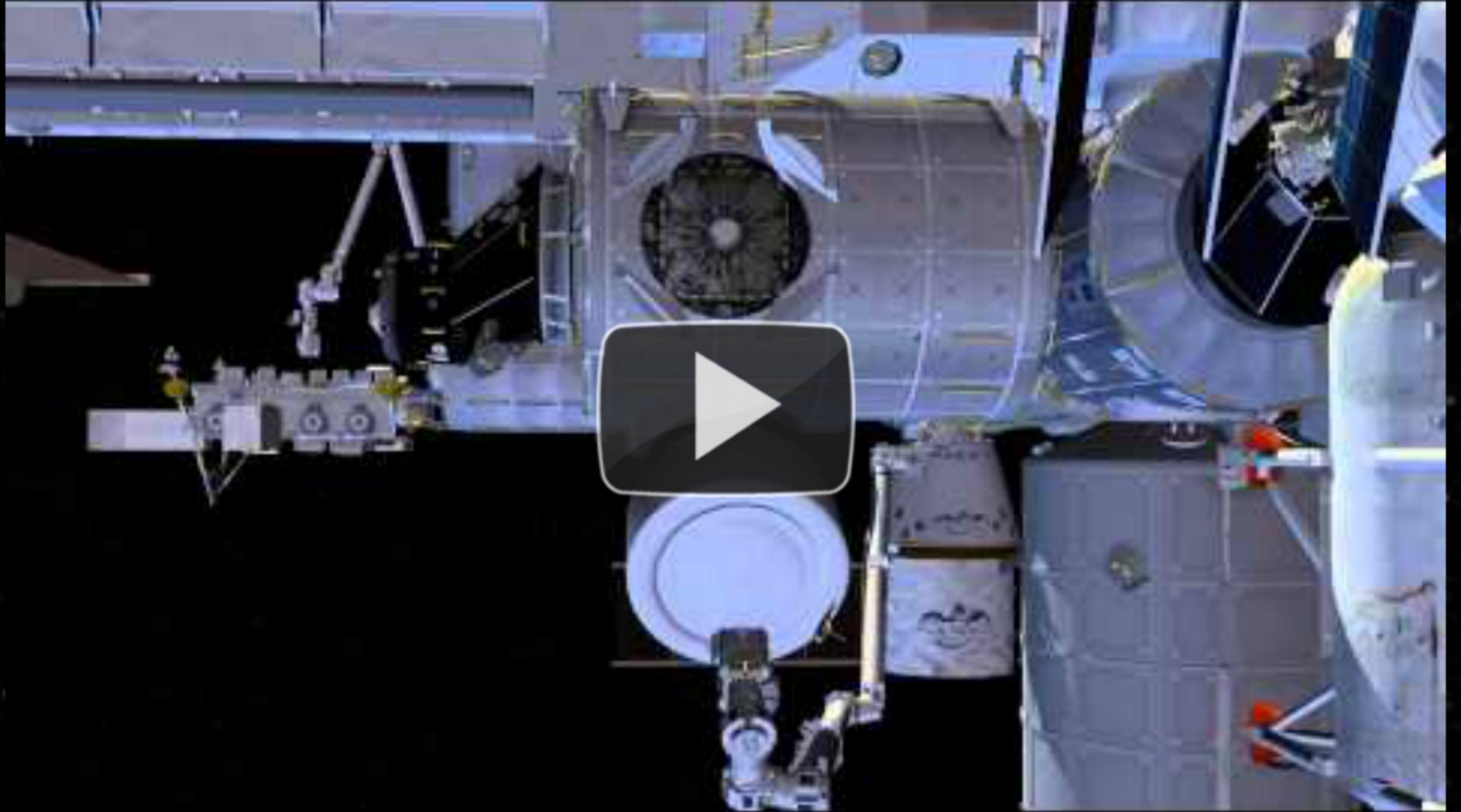


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YouTube





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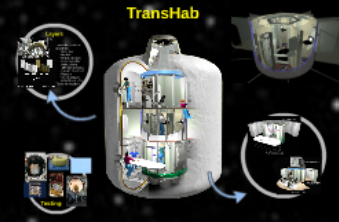
SPACE RACE



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Inflatable Moon Base Concept



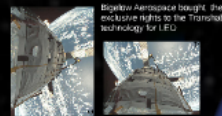
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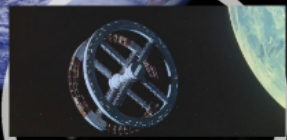
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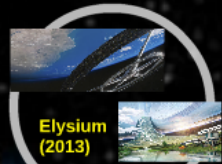
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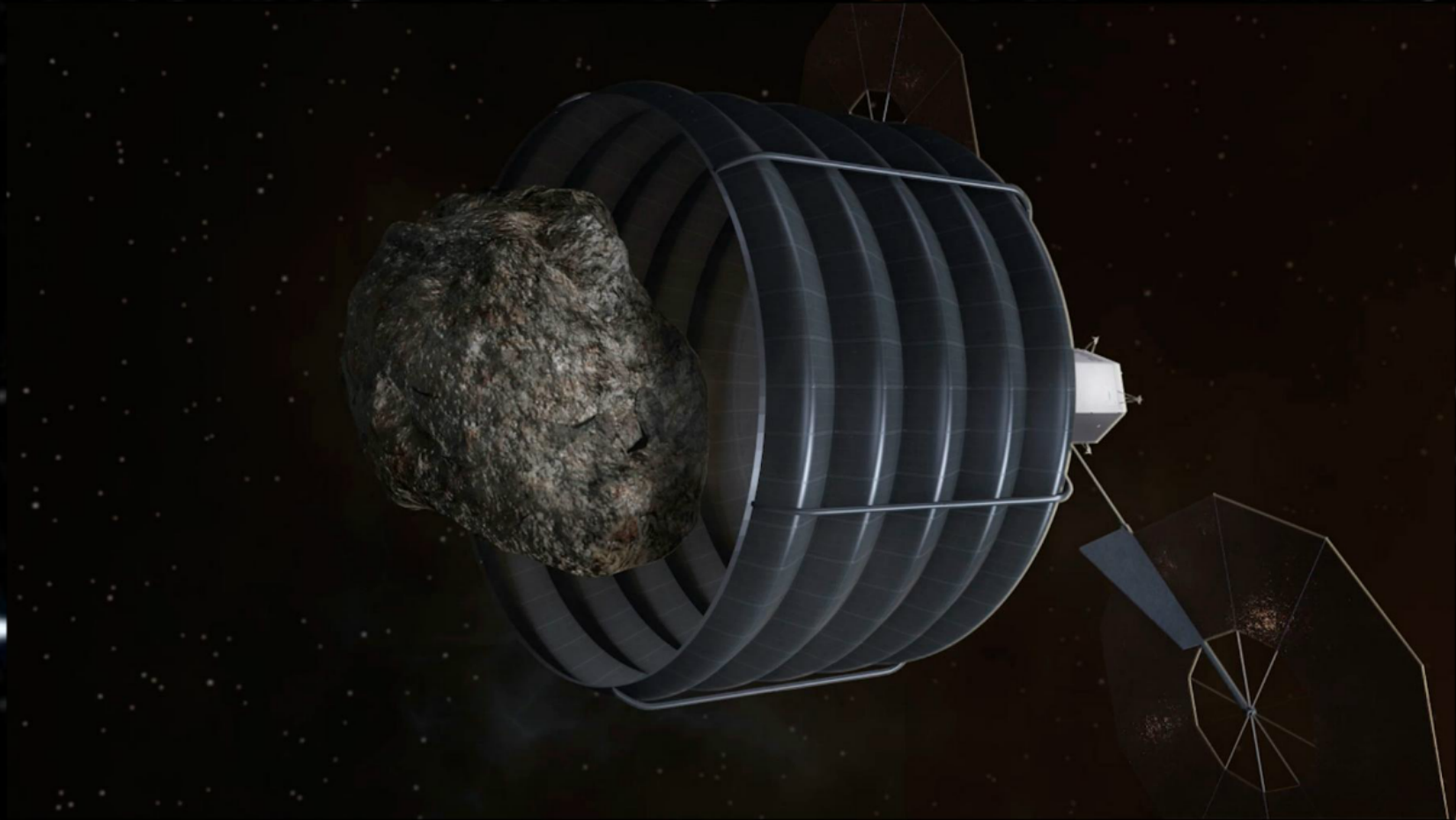


Elysium (2013)

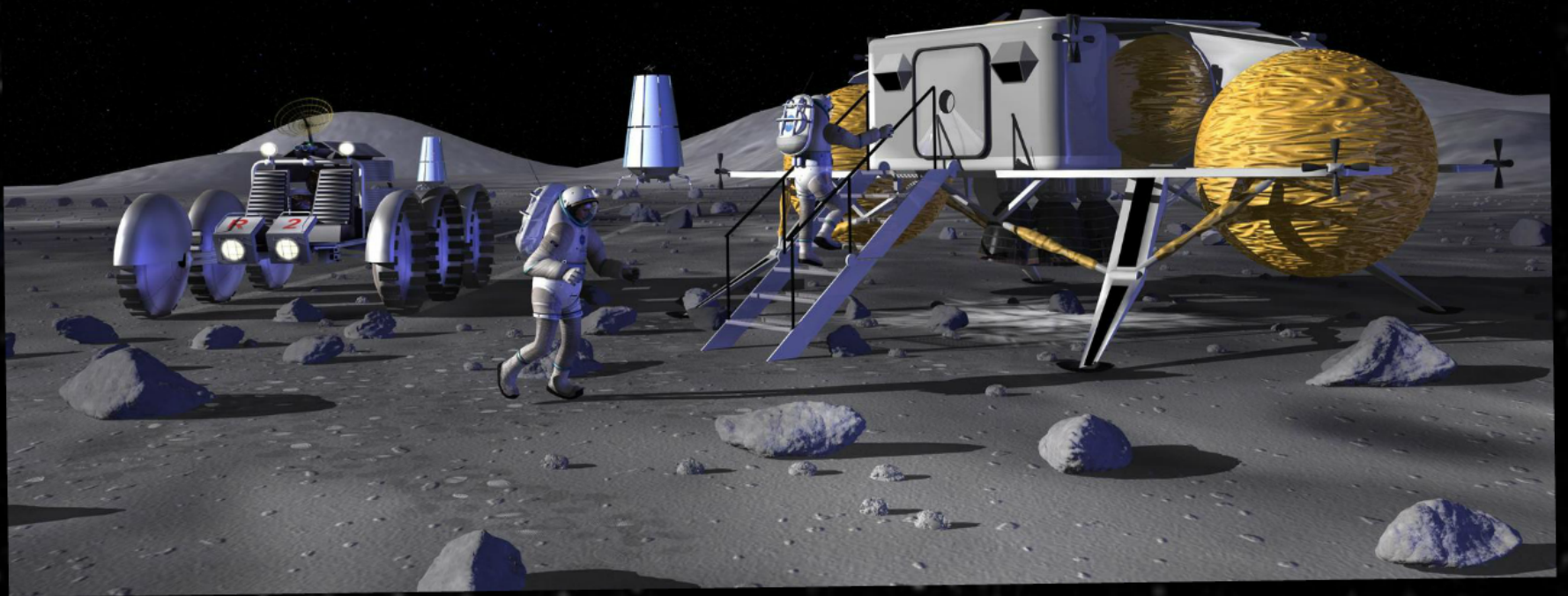


# Bigelow BA-330 Station & Olympus



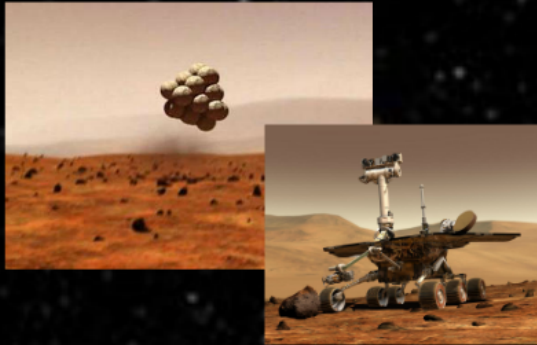


# Asteroid Capture Mission

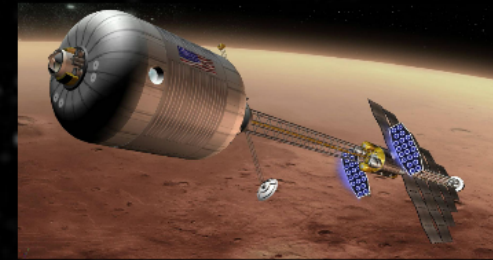


# Ground Base

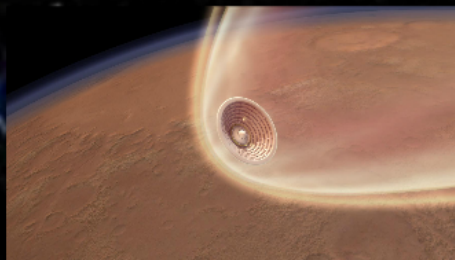




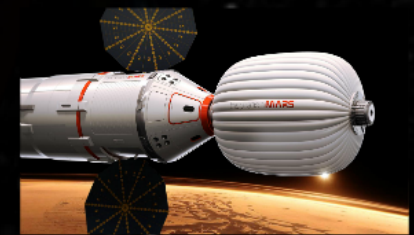
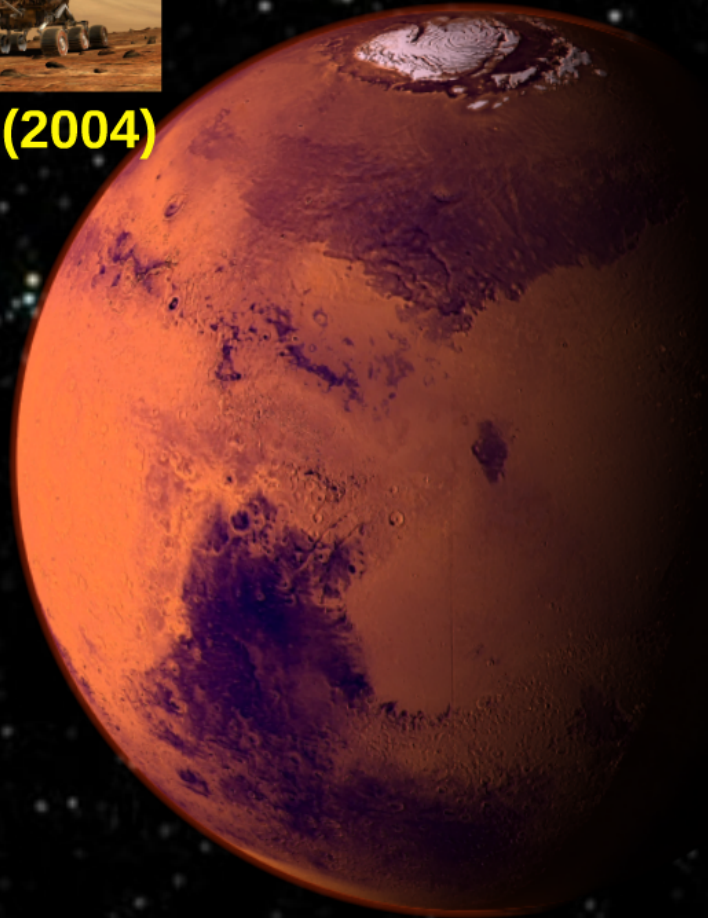
**Spirit Landing (2004)**



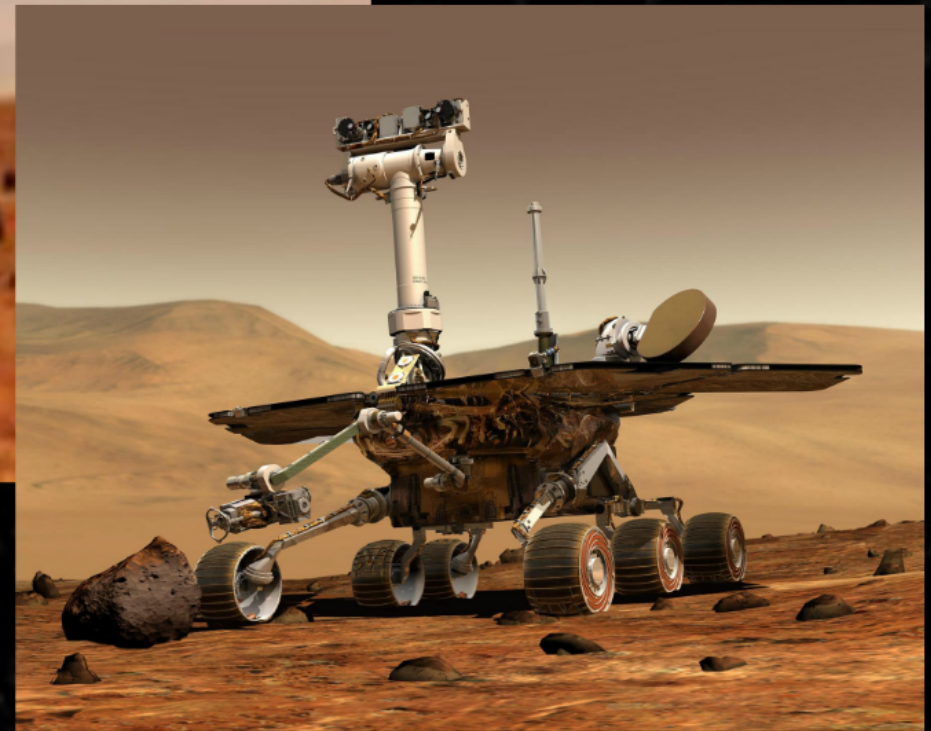
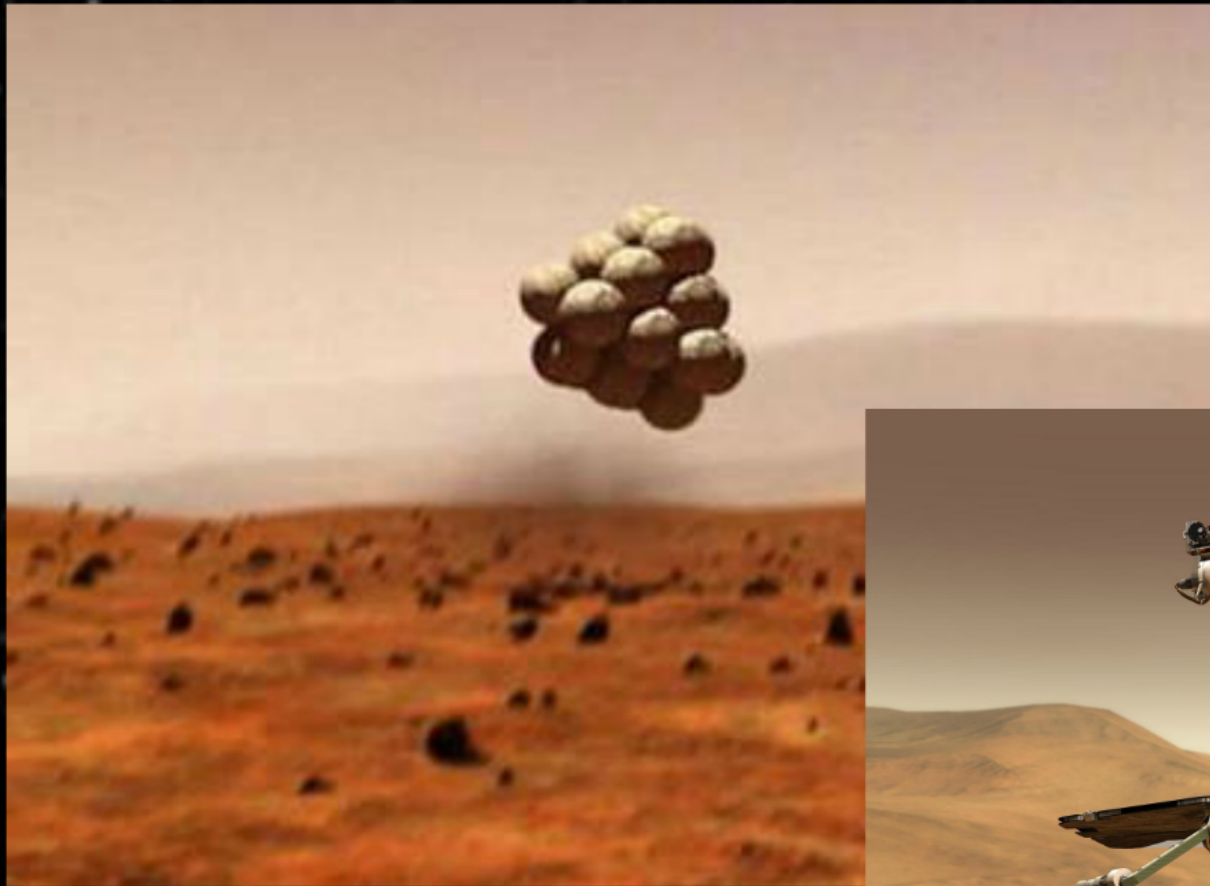
**Hermes from "The Martian"  
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**Mars Inflatible Aeroshell**

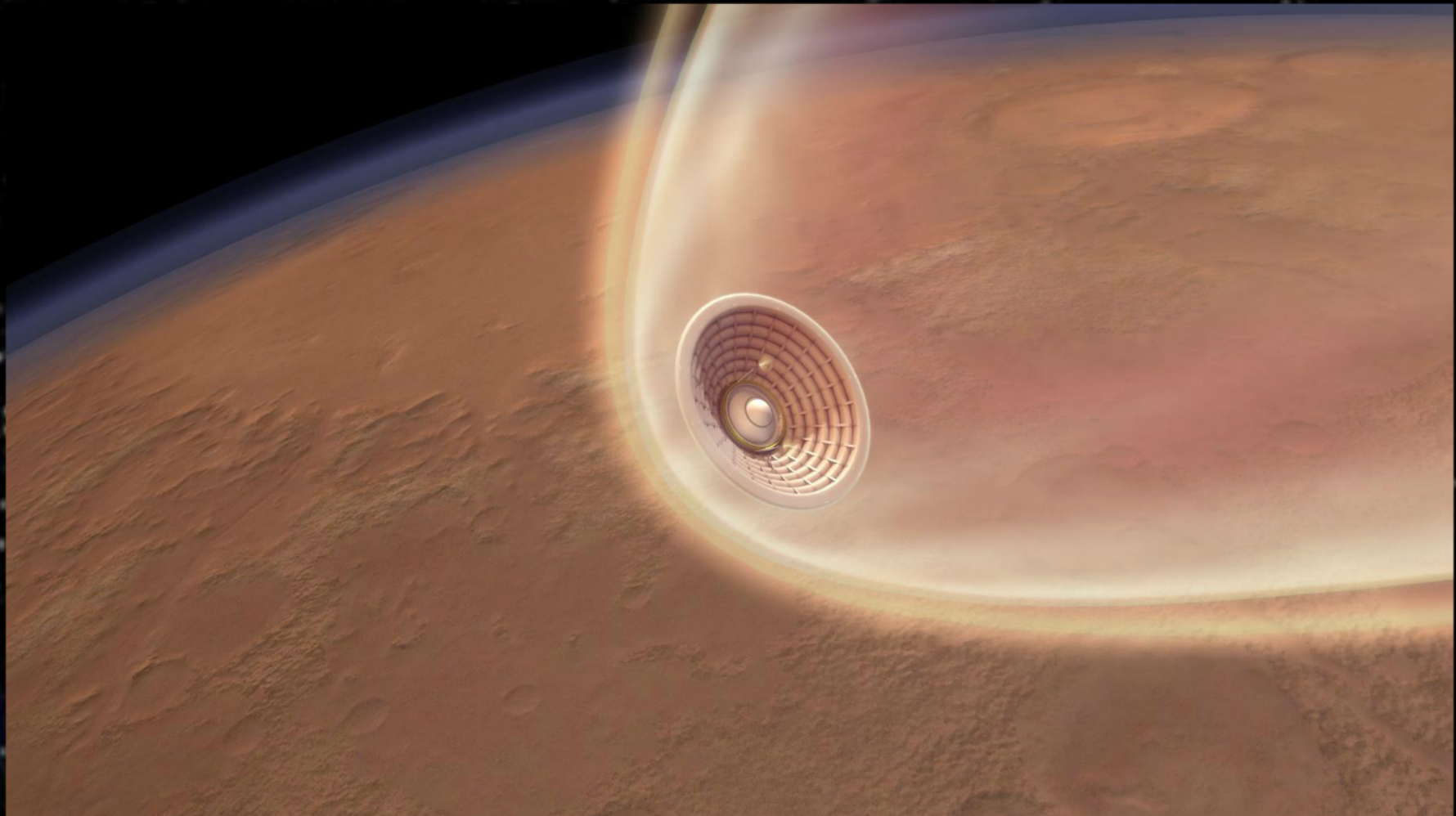


**Efforts by Private Companies:  
Inspiration Mars  
Artistic Concept**

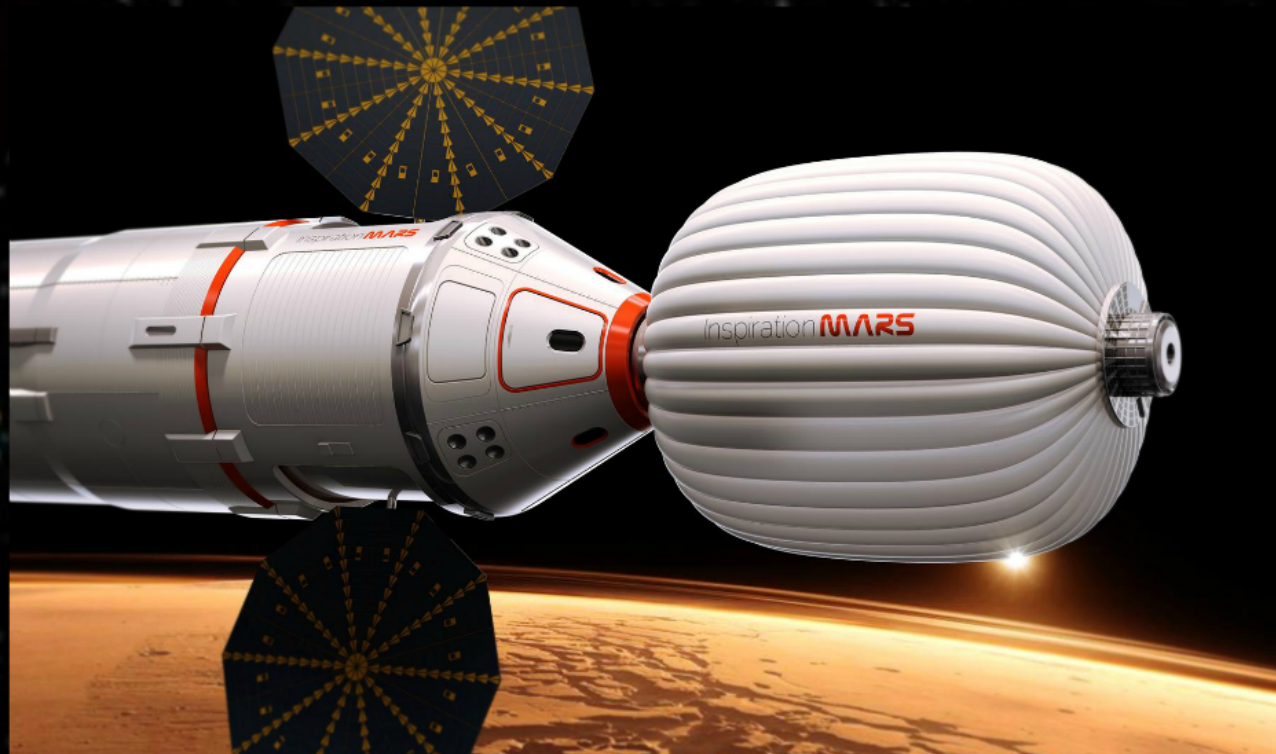


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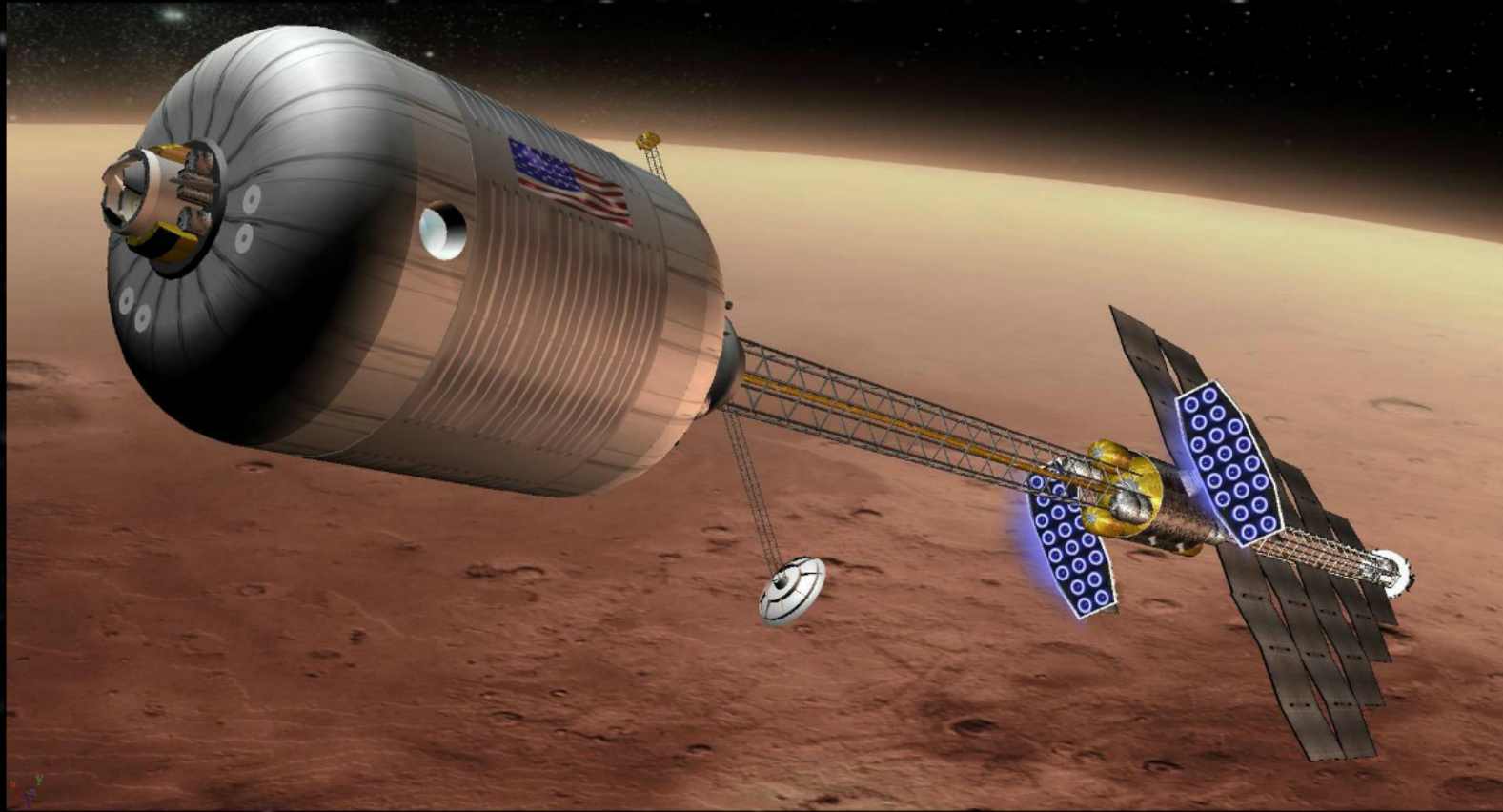


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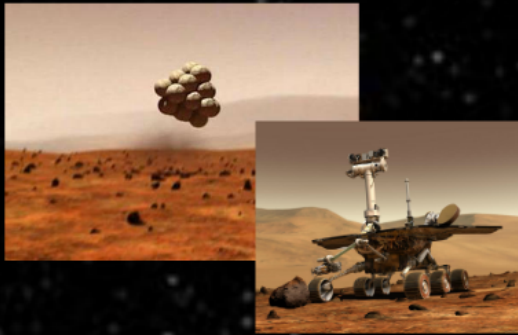


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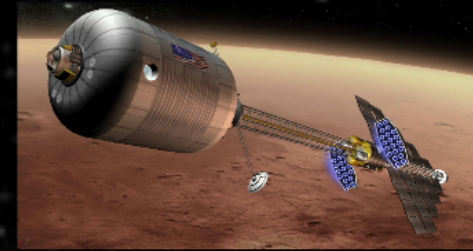




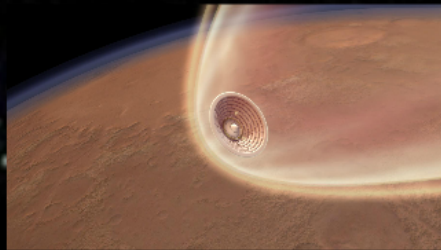
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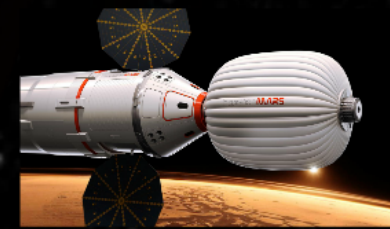
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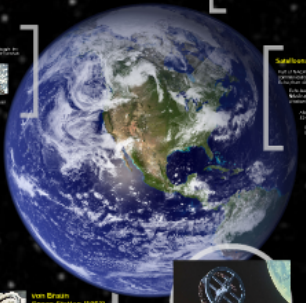
**NASA**  
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 Comicpalooza  
 5.24.2015

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Would you trust an inflatable structure?

vs



**Transit**

**Orion, T and Orion B**

**von Braun Space Station (1952)**

Designed by Wernher von Braun, the Space Station was a concept for a large, multi-module space station in Earth orbit. It was intended to be the first step in the development of a permanent human presence in space.

**2001: A Space Odyssey Space Station V (1988)**

**Elysium (2013)**

**Transhab**

**Satellites (2008)**

Used in many applications, satellites are essential for communication, navigation, and Earth observation. They are launched into orbit and can remain there for years.

**SPACE RACE**

1961: Inflatable rafts for Apollo moon landing

1969: Apollo 11 Moon Landing

Inflatable Parachute Air Gases

Inflatable Moon Base Concept

**Eligible ET-20 Satcom & Olympus**

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Get more information at [www.nasa.gov](http://www.nasa.gov)

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 Juan Carlos Lopez  
 @jlopezthasa

**Thank You!**

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**@jclopeznasa**

**Thank You!**