2023 Humans to Mars Summit

Development Efforts to Support Crewed Deep Space Exploration

LOCKHEED MARTIN

Eleanor Morgan
Program Manager & Habitation Architecture Lead
Lockheed Martin Space

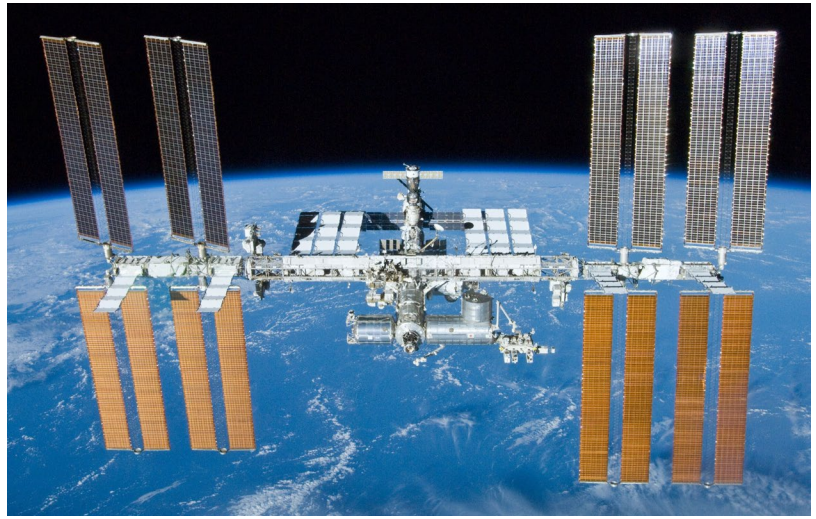
Creating the foundational architecture for a building block approach

Earth - Moon - Mars

NASA

Image courtesy of NASA

Why Expandable Habitats?

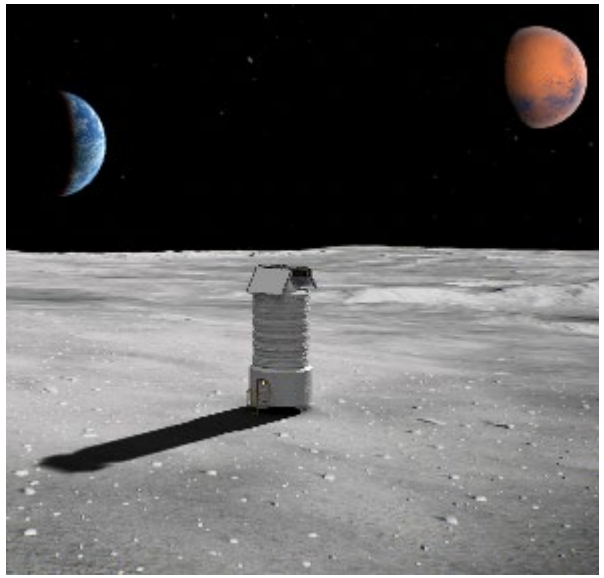


ISS after undocking of STS-132. Photo // NASA

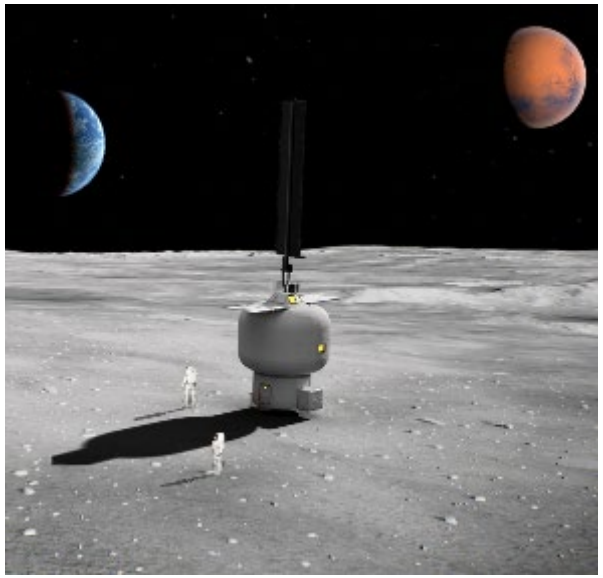
~1000m3 pressurized volume – 35+ assembly flights	~300m3 pressurized volume – 1 launch on current launch vehicles	~1000m3 pressurized volume – 1 launch on future launch vehicles

Expandable habitats offer more volume at lower mass and with more launch flexibility than traditional habitats

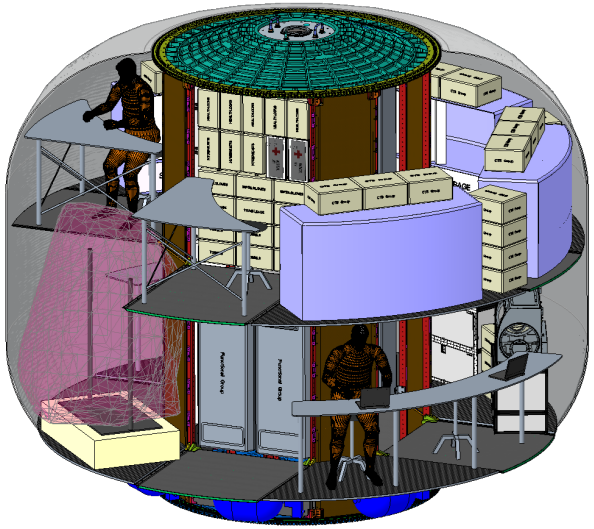
Necessary Technology to move from the Moon to Mars



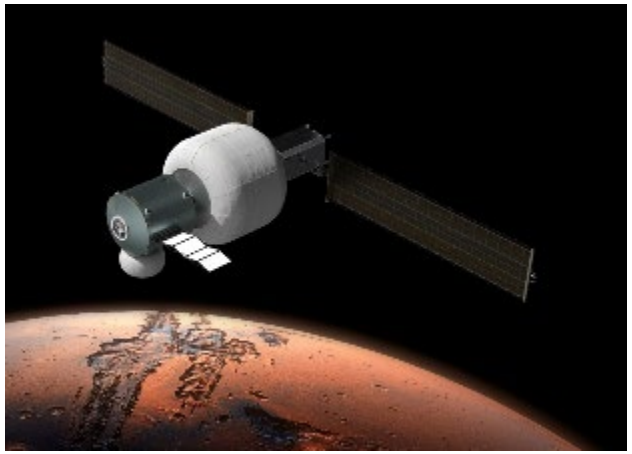
Small packed volume for launch and lander vehicle flexibility



High volume to mass ratio - increased habitable volume and science capability



Configurable for LEO, surface, or transit operations



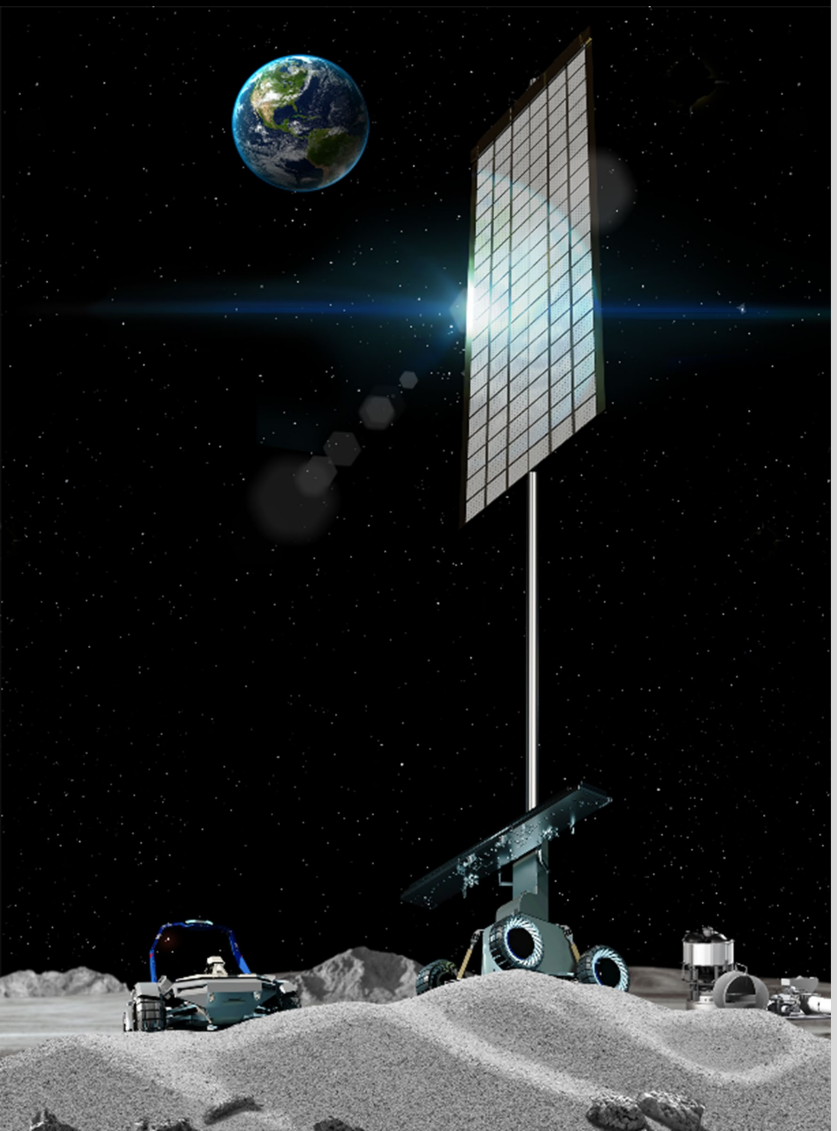
Increased micrometeoroid and orbital debris protection. Better radiation protection.

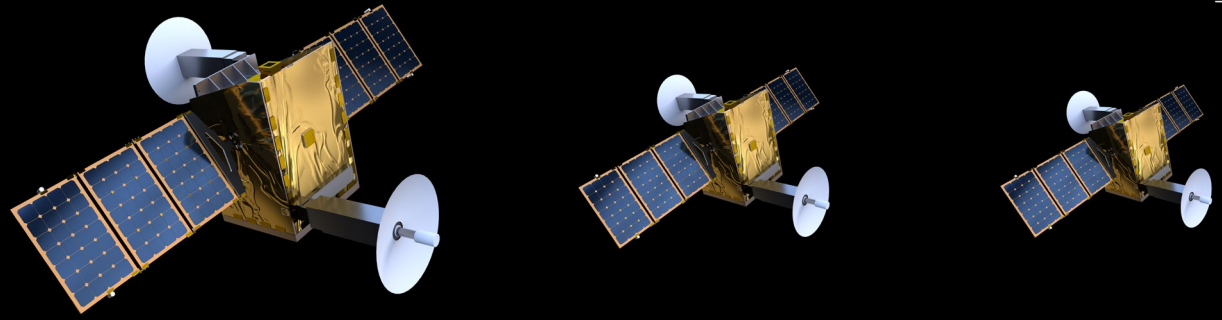
Critical technology to support future crewed deep space exploration objectives

Subscale Burst Test

Image courtesy of NASA

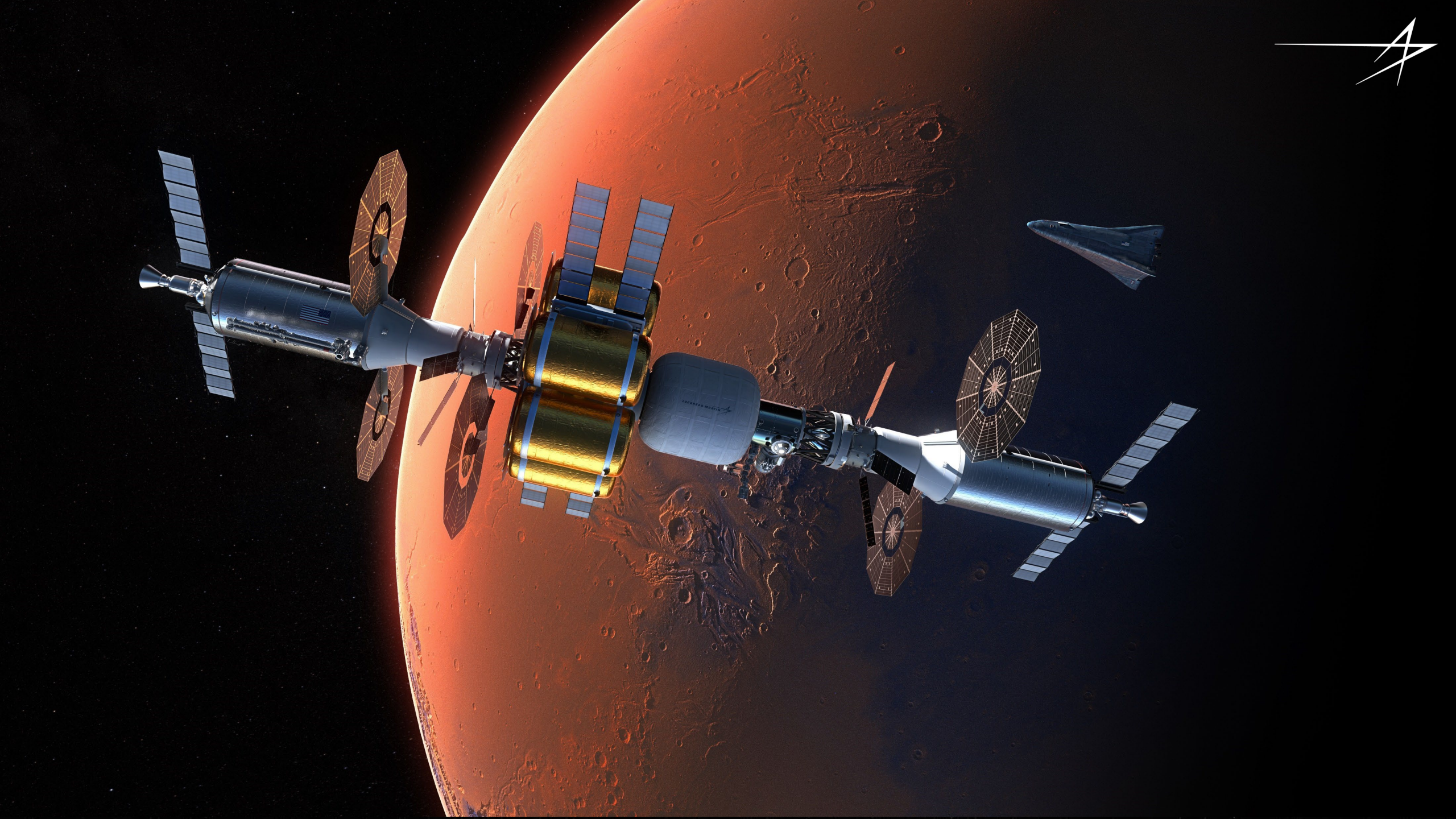
Power





Communications & Navigation

Mobility




MADV-I

LOCKHEED MARTIN