Sierra Nevada Corporation- Access to Space: Dream Chaser and Inflatable Habitat

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World Space Forum
Access to Space for All

SNC AND SPACE EXPLORATION

NASA Gateway

Reusable Lunar Lander

Dream Chaser for Cargo and Crew Transportation

Gateway Logistics Services

Free Flying Dream Chaser for Science

In-Situ Resource Utilization

Dream Chaser for Low g payload return to Runway

New Commercial LEO Platform(s)

ISS Primary Platform for Human Habitation

A10195-001.4_PPT

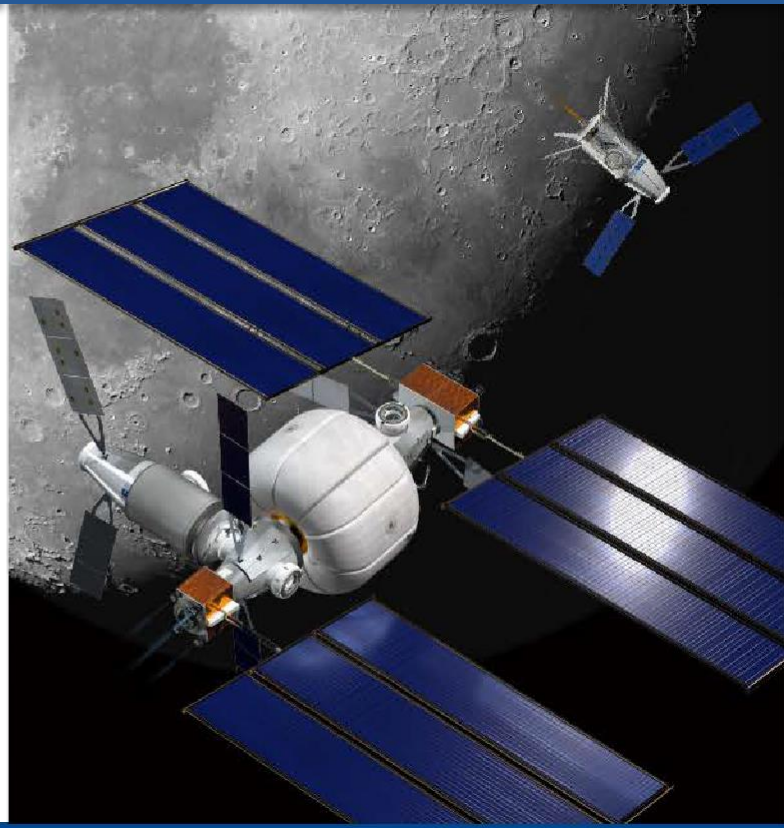
Space Exploration Systems

Space Transportation & Space Missions

Crewed and Uncrewed Dream Chaser Space Vehicle

- Cargo Services to ISS
- Science
- Servicing
- Observation
- Exploration Support

Commercial LEO and Deep Space Missions



Dream Chaser Vehicle

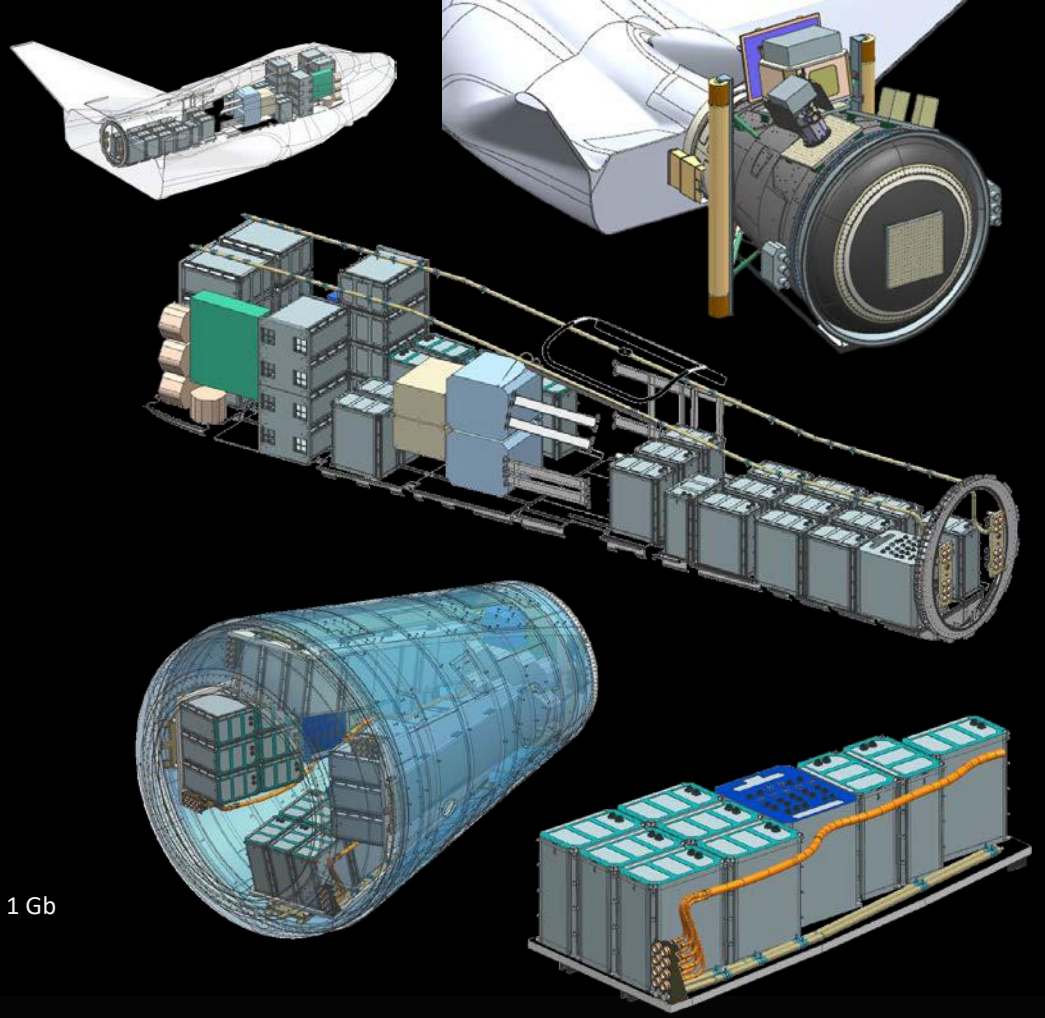
- Only runway-landing Space Vehicle actively in development
- Crewed or un-crewed transportation to and from Low Earth Orbit (LEO)
- Non-toxic propulsion for launch abort, orbital translations, attitude control, deorbit
- < 1.5g re-entry profile and >1,500 km cross-range capability
- Designed to launch on a variety of launch vehicles
- Can land at any runway that supports a B737 or A320 aircraft.
- Basic runway landing
  - Nominal 3,000 meter
  - >1,000 nmi cross-range capability
- Tri-landing gear configuration:
  - Two main landing gear with wheels
  - One nose landing gear with a nose skid

Cargo Configuration for NASA CRS2 Program

Cargo Up to Space Station, Disposal and Rapid Cargo/Science Return

Free Flyer Configuration

- Key features
  - 30 – 90 days LEO orbits
  - 5500 kg upmass, 1750 kg downmass
  - Late access prior to launch
  - Low g reentry and soft runway landing for return
  - Fast access upon return
- Payload & rideshare accommodations
  - Pressurized internal 35+ mid-deck locker (MDL) equivalents
    - 2 ft^3
    - 33 kg, 75 W average power per
  - Unpressurized external and deployment (ESPA, Cubesats)
    - 3 locations, > 7 m^3 total & 450 W
  - Conformal passive
- Utilities service
  - Deployment
  - Power- > 6 kW total across payloads
  - Thermal management- > 10 kW rejection from payloads
  - Communications- X / Ka, 51 / 200 minutes per day, command & 1 Gb downlink per payload per day



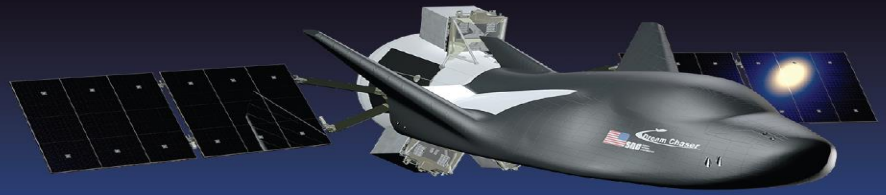
Designed for Science Missions

Biotech and Pharmaceuticals

Biology and Life Science

Material and Fluid Science

Technology Demostration



- **Selection of:**
  - Launch Vehicle
  - Desired Landing Site
  - Orbit and Inclination
  - Mission Duration
  - Standard or Customized Hardware
  - Crewed, Uncrewed, or Tele-operational
- **Frequent Flight and Re-Flight Opportunities**
- **Expedited and Cooperative Payload Integration**
- **Flexible Operating Requirements and Environments**
- **IP Control**

CIM-025.1

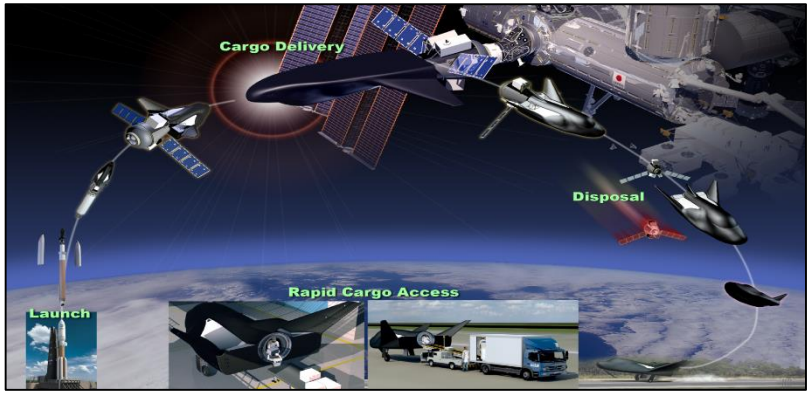
Free Flyer CONOPS

Dream Chaser Orbital Vehicle Integration

Pressurized Vessel arrived last month to the SNC Lousville-Taylor facility in Colorado

Integration has already started

Flights schedule



CRS2 first flight -> 2021

Free Flyer

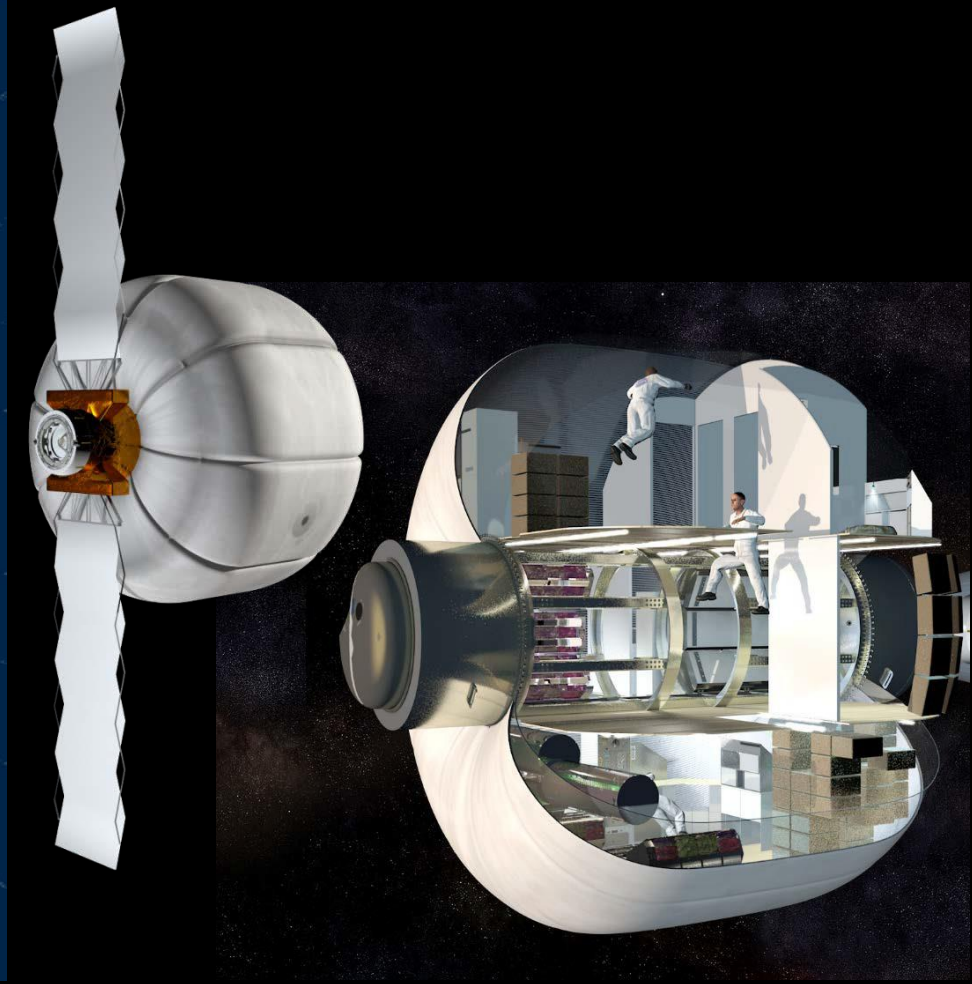
Orbital Space Mission in support of the SDGs

- Responses to Landing Site CFI due by April 2020
- AO -> Stay Tuned
- **Mission Execution -> 2024**

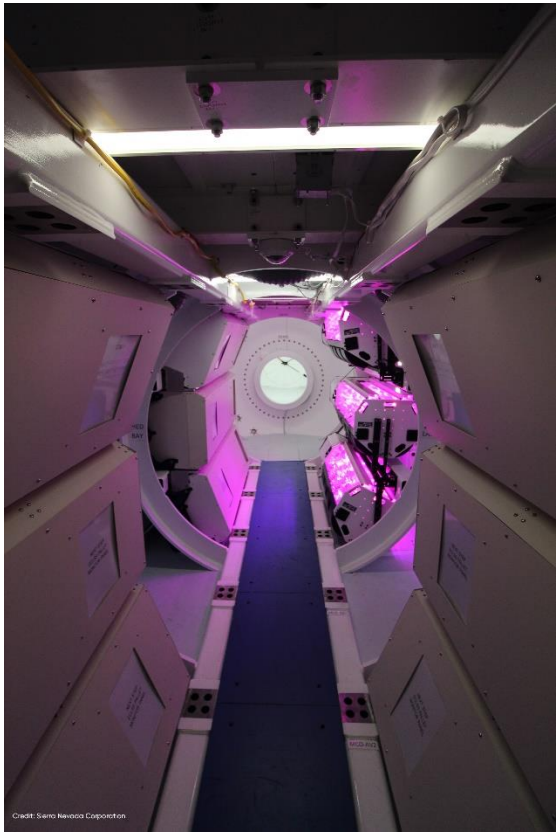
LIFE Inflatable Module

LIFE Element

- Inflatable soft goods structure with rigid core
  - Internal attachment on both rigid structure and soft goods
  - Provides excellent radiation protection and secondary radiation shelter
  - Flexible to launch on 5-meter commercial LV or SLS
- Inflatable design provides ample space for all planned Gateway activities including:
  - On-board experimentation
  - Crewed and Autonomous Operations
  - Dedicated and independent work stations for lunar surface ops
- Single habitat supports functions needed for crewed missions
  - Pressurized volume of ~300 m^3
  - Allows for 4 crew habitation
- Supports crewed missions
  - LEO Destination
  - Lunar Orbit
  - Designed to support 1100 day Mars class missions



LIFE Inflatable Module Hallway and Work Stations



LIFE Inflatable Module Sleeping Quarter

Thank you
Questions?

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