

United Nations *Dream Chaser®* Mission

United Nations/UAE High Level Forum

“Space as a Driver for Socio-Economic Sustainable Development”

Dubai – November 7th, 2017

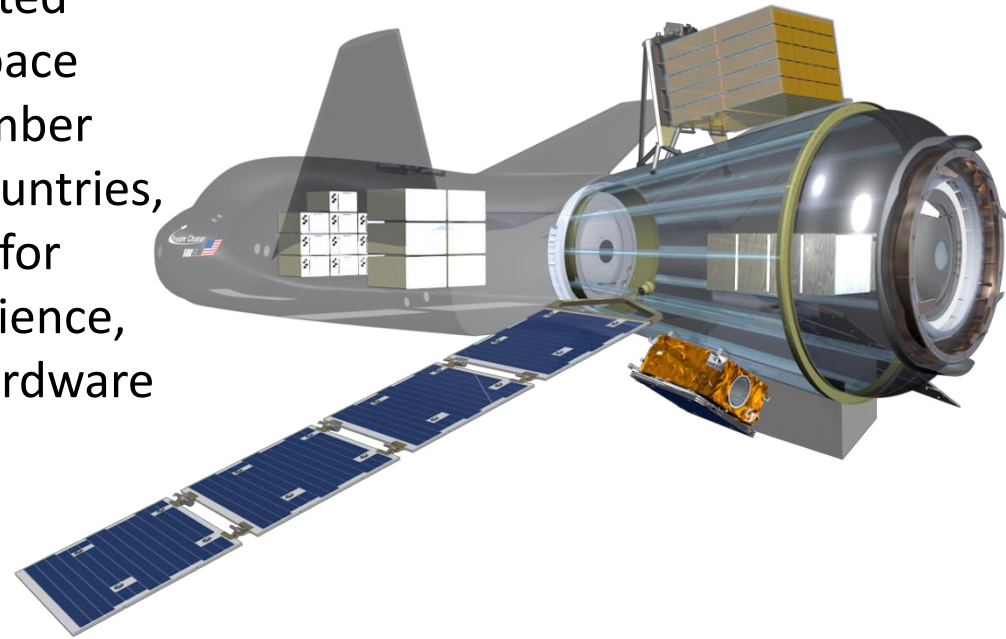
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Senior Director, Business Development

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United Nations Dream Chaser Mission

The most ambitious Program under UNOOSA Human Space Technology Initiative (HSTI) is to fly the first United Nations sponsored multi-country space mission. It will provide the 193 Member Countries, especially developing countries, the ability to build and fly payloads for applications such as microgravity science, remote earth sensing, and space hardware qualification.

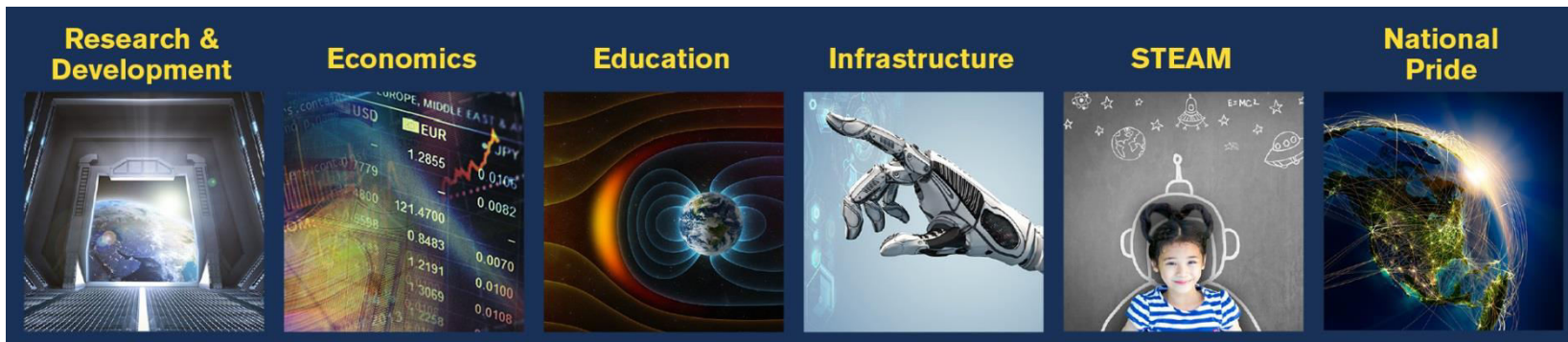


MOU executed between the United Nations and SNC in June 2016 to utilize SNC's Dream Chaser space vehicle as the host to up to 25 country's payloads

Benefits for Participating Countries



- **Research & Development:** of new space-related knowledge-based industries to support space science understanding and development of experiments in diverse economic sectors.
- **Economic:** growth in high technology fields.
- **Education:** formation of academic centers of excellence to study various aspects of space: space sciences, environmental sciences, atmospheric physics, etc.
- **Infrastructure:** creation of the supporting infrastructure for development of experiments, robotics for manipulating experiments and providing ground operations for (their) space missions.
- **STEAM:** inspire participation in the space program, encouraging education and work in science, technology, engineering, arts and mathematics (STEAM).
- **National Pride:** of supporting international cooperation and global promotion of peaceful uses of outer space.



The UN Dream Chaser Mission Timeline

- ✓ Sep 17, 2017: Issue Call for Interest (CFI to UN Member Countries)
- **Nov 15, 2017: CFI responses due**
- Jan 10, 2018: Bidder's briefing
- Mar 2018: Release of Announcement of Opportunity (AO)
- Sep 2018: AO responses due
- Dec 2018: Payload selections
- Late 2021/Early 2022
 - Launch to low-Earth orbit
 - Stay on orbit for up to 14-21 days
 - Perform runway landing in a selected country
 - ... and start all over again?



Call for Interest released during the IAC in Adelaide.

Major points:

- The mission is open to all of the 193 Member States of the United Nations.
- Institutions from emerging and developing countries are particularly encouraged to participate.
- Dream Chaser will carry experiments, payloads, or satellites provided by institutions in the participating countries.
- The mission will last 2-3 weeks.
- The interested parties have been asked to provide a summary of their proposed experiment/payload.



- This mission will be the first space mission devoted to addressing the 17 Sustainable Development Goals.
- The experiments, payloads, and satellites to be deployed are required to address at least one of the 17 Sustainable Development Goals.

Responses to the UN Dream Chaser Mission CFI

The deadline for the presentation of the responses to the CFI has been extended to November 15th because of requests from interested proposers.

After preliminary screening, as of today UNOOSA received:

- Around 140 acceptable Responses to the CFI
- From more than 40 different Countries
- All Continents are represented (except Arctic and Antarctica, but ...)

All categories of payloads/experiments have been proposed:

- Powered Pressurized Payload to be returned/not-returned to Earth
- Unpowered Pressurized Payload to be returned/not-returned to Earth
- Unpressurized External Mounted Payload not to be returned to Earth (deployed or disposed)



About Dream Chaser

Selected by NASA to perform cargo service missions to the International Space Station starting in 2019

- Contract awarded January 2016
- IDIQ Contract with \$14B ceiling
- Guaranteed minimum of 6 missions 2019-2024

Can be launched from the U.S., Europe or Japan

Only commercial runway landing space vehicle in existence. Can land at any commercial airport able where a Boeing 737 or an Airbus 320 can land

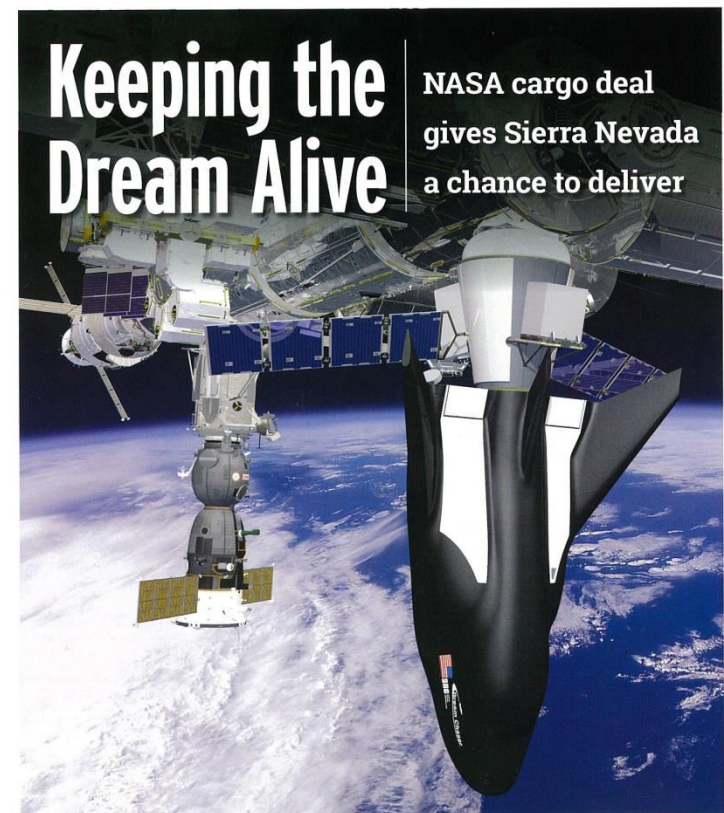
Anywhere in the World!

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JANUARY 18, 2016

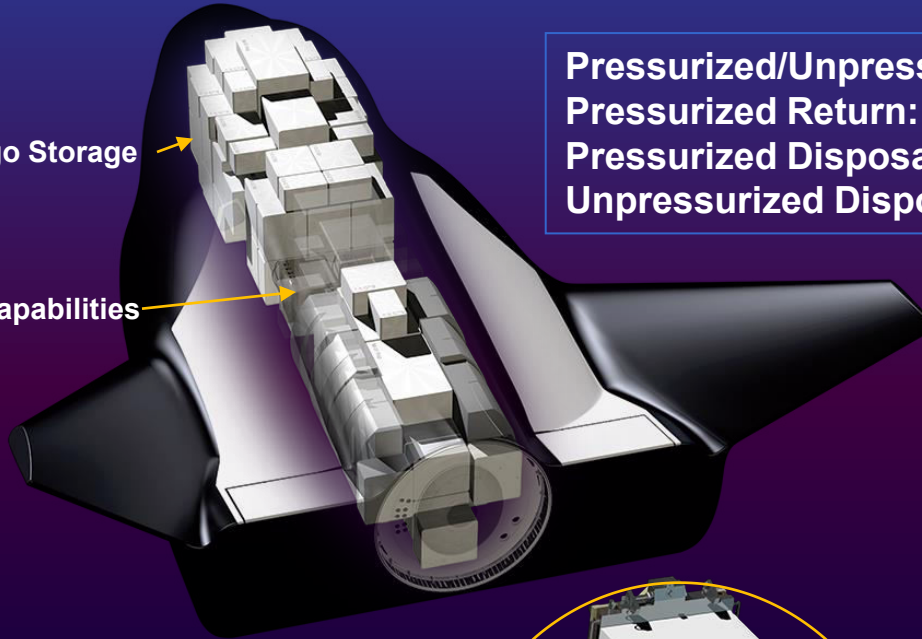


NASA CRS2 Dream Chaser Configuration

Pressurized Cargo

Pressurized Cargo Storage

Powered Payload Capabilities



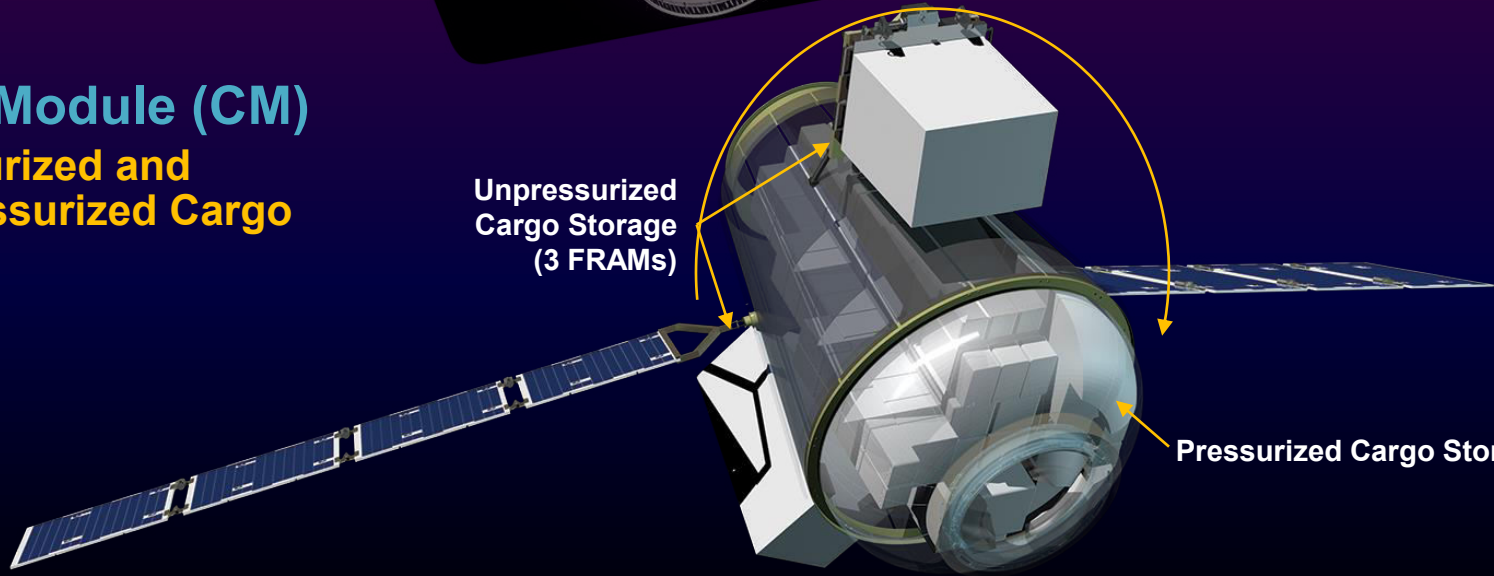
Pressurized/Unpressurized Upmass:	5,500 kg
Pressurized Return:	1,750 kg
Pressurized Disposal:	3,250 kg
Unpressurized Disposal:	1,500 kg

Cargo Module (CM)

Pressurized and
Unpressurized Cargo

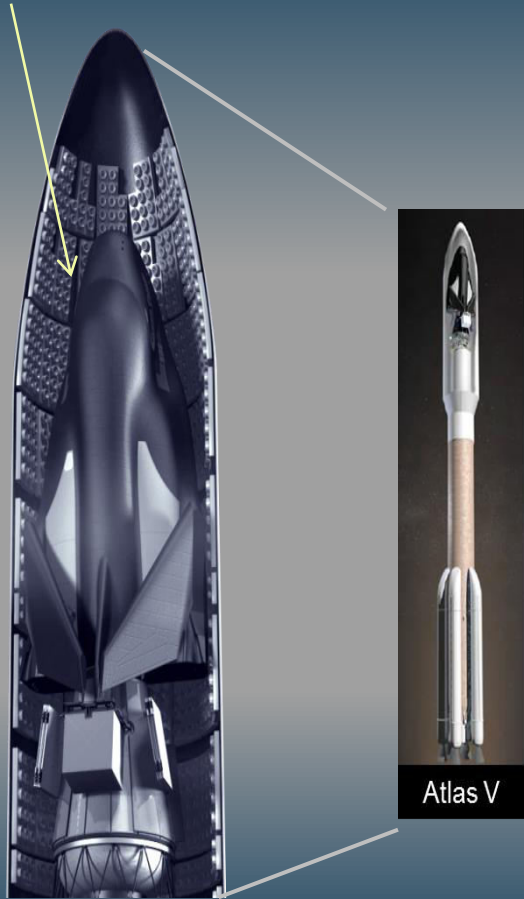
Unpressurized
Cargo Storage
(3 FRAMs)

Pressurized Cargo Storage

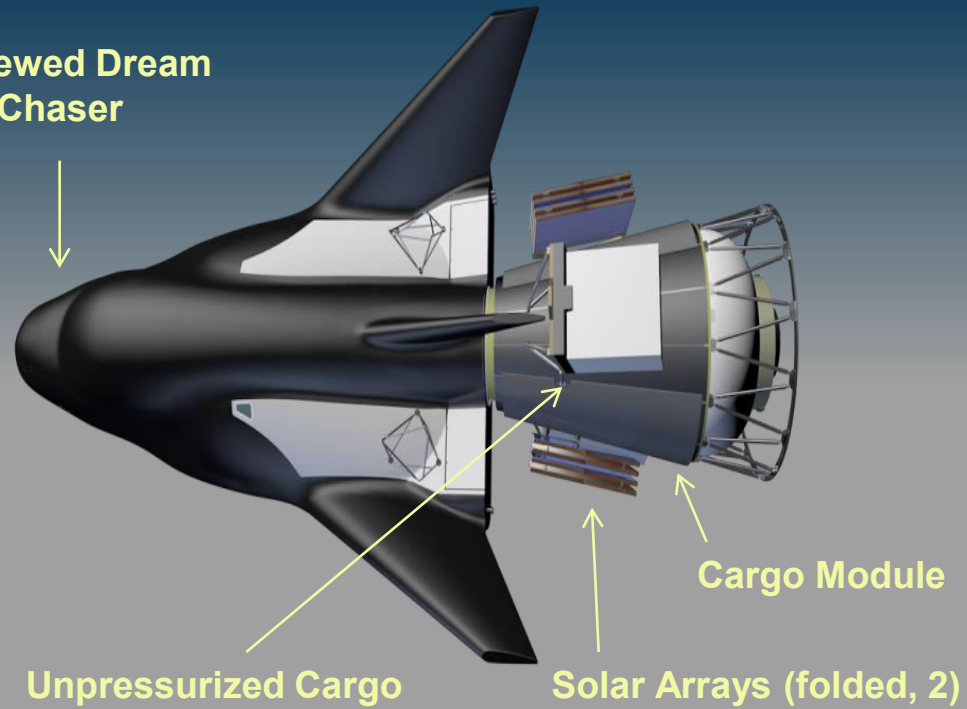


UN Mission Dream Chaser Free Flyer

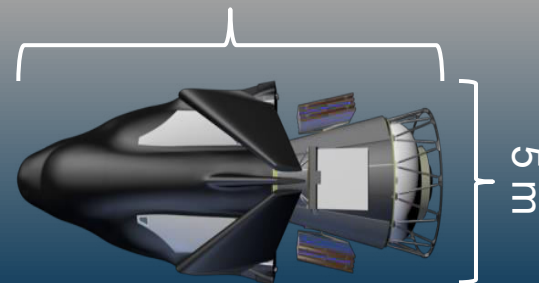
Faired Launch Configuration



Uncrewed Dream Chaser



13.8 m



LV Options:

- Ariane 6
- H-III
- Atlas V
- Falcon Heavy
- New Glenn
- NGLV

Conceptual UN Dream Chaser Mission



Standard Science Payload Locker

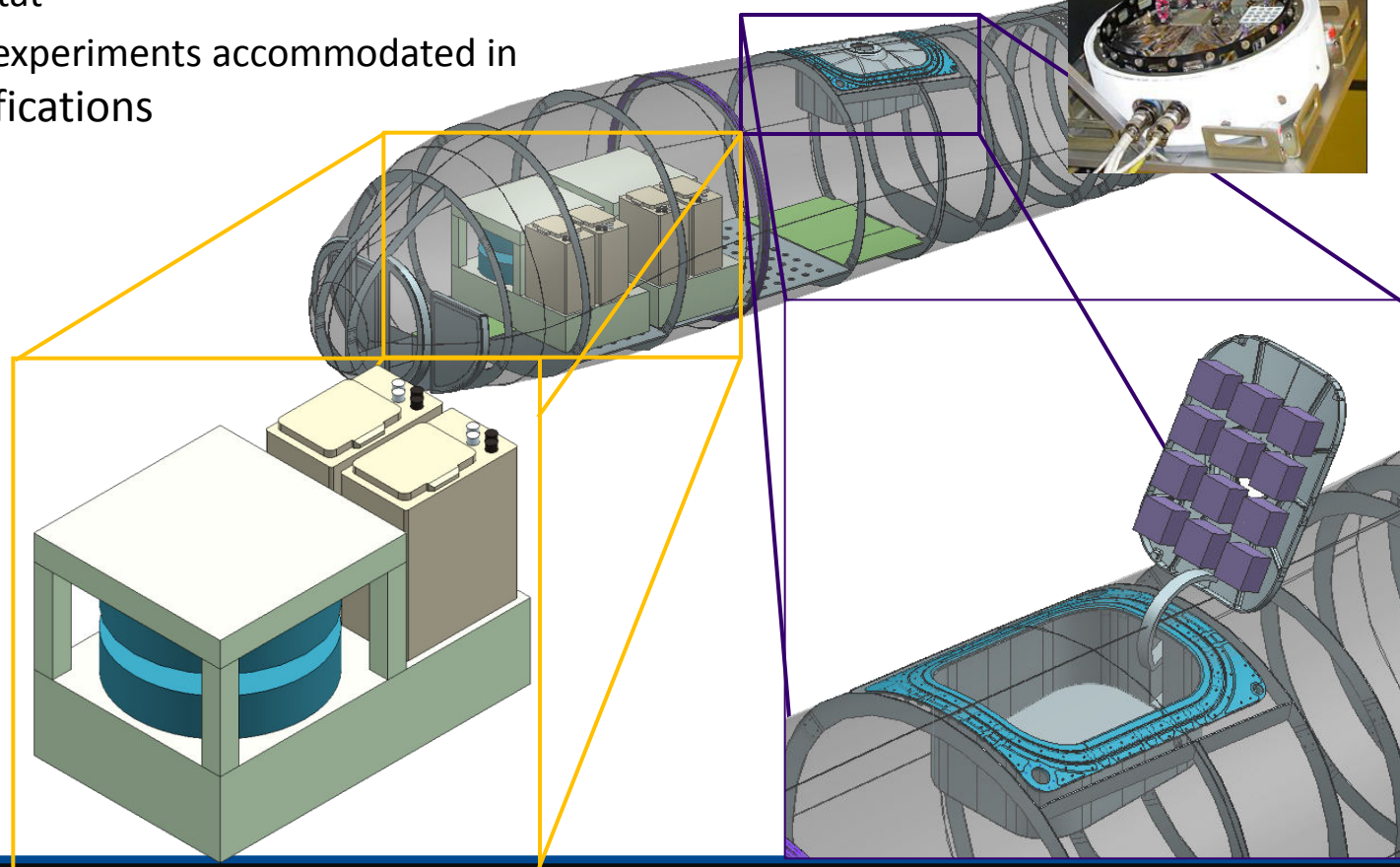
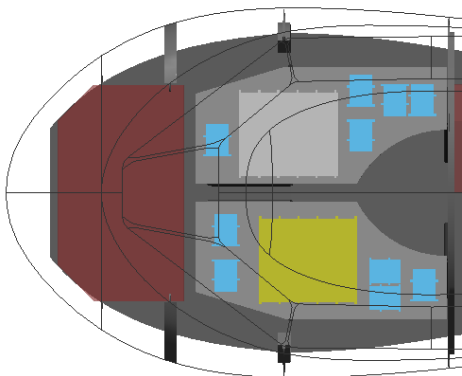
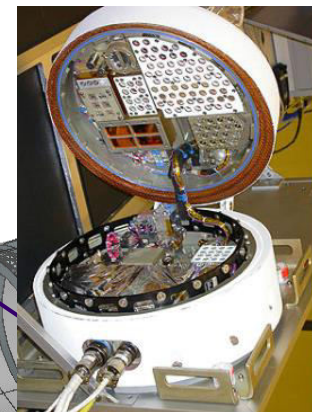
- Current microgravity science is standardized to “mid-deck locker equivalents” (MLEs)
 - Heritage from shuttle, currently broad standard used on ISS
- Single locker:
 - 20.32 x 18.1 x 10.8 in
 - 75 W power @ 28 V and cooling budget
 - Ethernet data
 - Commanding
- Double locker is the equivalent of 2 single lockers\
- Custom payloads are possible but these are used as a well defined starting point.



Credit: SNC

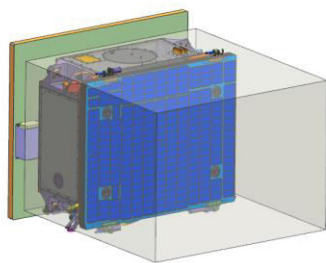
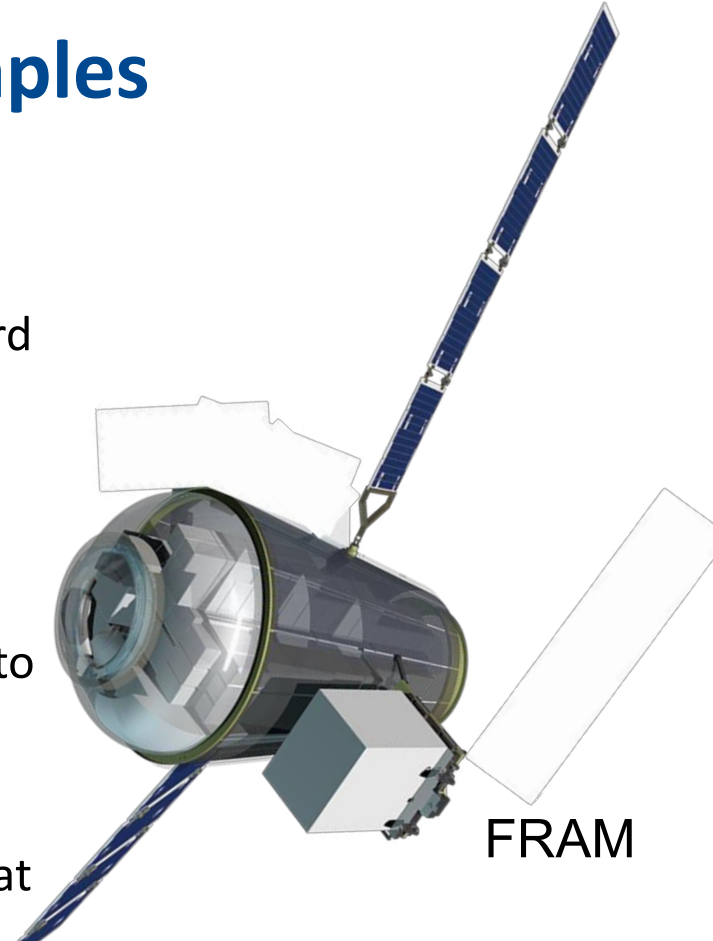
Non-Standard Payloads Examples

- Payload Examples
 - Custom structures and mounting
 - VEGGIEs
 - Advanced Plant Habitat
 - Rodent habitat
 - BIOPan like experiments accommodated in hatch modifications

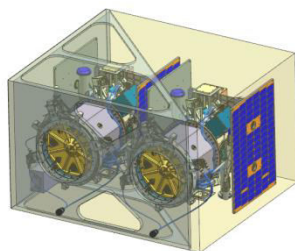


External Payload Examples

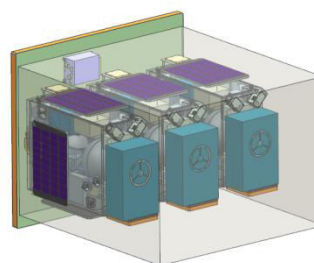
- External Accommodations:
 - Cargo Module (CM) supports three external, unpressurized payloads that attach via standard Flight Releasable Attachment Mechanism (FRAM)
 - External Volume = ~ 256 ft³
 - 102"x81"x35" at upper location
 - 49"x34"x46" at each of 2 lower locations
 - FRAM power and data interfaces can be used to support a secondary satellite deployment mechanism
 - Up to 150 W per location, 450 W total
 - Multiple small sat / cube sat configurations that meet FRAM mass/volumetric constraints



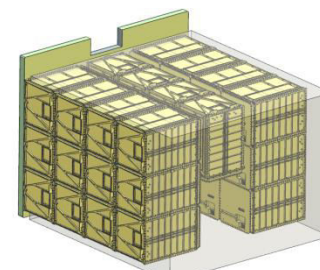
200 Kg Satellite



2 X 100 Kg Satellites



3 X 75kg Satellites



Cubesat Class
28x 12U Volume constraint)

The UN Dream Chaser Mission Timeline – Next Milestone

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Thank you
Questions?

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