PAYLOAD TYPES SUPPORTED ON THE UN / DREAM CHASER MISSION
Payload Types

- Dream Chaser can support a variety of Payloads on this mission:
  - Internal Powered Payloads – Return
  - Internal Powered Payloads - Disposal
  - Internal Unpowered Payloads - Return
  - External Payload Deployment
    - CubeSats
    - Micro Satellite
  - External Power Payloads - Disposal
Internal Powered Payloads – Return

- Powered Payload Lockers
  - Single or Double
- Payload *returned* to Earth in the Dream Chaser
- Data recorded and downlinked
CFI Results

• The CFI showed that there were several payloads interested in the following:
  o Smaller experiments hosted together in a locker location
  o Plant Growth
Example Payload Hosting Capabilities on Dream Chaser

Typical Mission profile:

- Experiment Cubes accommodated in the ICE Cubes facility on ground before launch in the Dream Chaser;
- Launch of the ICE Cubes facility with Experiment Cubes powered;
- Performance of Experiment Cubes mission with control & monitoring from user home bases in real time via our ICE Cubes Mission Control Centre. ICE Cubes provides power / data up & down / facility thermal cooling.
- Return to ground and delivery of the Experiment Cubes to the respective users.
Advanced Plant Habitat

- **Plant Habitat (PH) → Installed in EXPRESS Rack 5 on ISS in 2017**
  - PH is quad-locker payload designed for mounting in ISS EXPRESS Rack
  - PH will be largest plant growth chamber yet developed for ISS
  - The PH design is open architecture
    - Allow critical subsystems to be removed and replaced on-orbit
    - Accommodate future updates for custom applications
  - PH contains more than 188 sensors in baseline configuration
  - PH designed to facilitate interaction between crew on-orbit or scientists on the ground with plant specimens and their environment
GreenWall – Apply Space Food Production on Large Scale for Extended Missions

GreenWall Long-Duration Application

Plant Modules within GreenWall Section

Prototype for Test & Evaluation
Several CFI responses were received focused on plant growth

SNC is exploring an experiment platform that can host several plant experiments on the UN / Dream Chaser Mission
Internal Powered Payloads - Disposal

- Powered Payload Lockers
  - Single or Double
- Payload disposed in the CM on reentry
- Data recorded and downlinked

Powered Payloads inside the Cargo Module (CM)
Internal Unpowered Payloads - Return

- **Unpowered Payload**
  - Varying bag sizes
- Payload **returned** to Earth in the Dream Chaser
- **No** data recorded or downlinked
- Good for passive experiments that need exposure to microgravity
External Power Payloads - Disposal

- **Externally** Mounted Payload
  - Integrate on a standard plate

- Payload **disposed** on the CM during reentry

- Data recorded and downlinked
External Payload Deployment – CubeSats

- Externally Mounted deployer
- Payload Deployed on-orbit
- No data recorded and downlinked
- CubeSats launched in an ‘off’ mode
External Payload Deployment – Micro-Satellite

- Externally Mounted Micro-Satellite
- Payload Deployed on-orbit
- No data recorded and downlinked
- Micro-Satellite launched in an ‘off’ mode