

# Manifesting Challenges effecting ISS Operations

- 2008/2009 – 6 person crew (requires 4 Soyuz vehicles per year)
- 2010 – Shuttle retirement
- 2010 – 2016ish
  - Up mass availability per year
    - 4 Progress vehicles (NASA has manifested about 400kg on 3 2006 Progress vehicles)
    - 2? ATVs (½ the manifesting space of a progress?)
    - 2? HTVs (½ the manifesting space of a progress?)
  - Down mass availability per year
    - 4 Soyuz vehicles (NASA has manifested 20kg on 11S return and 30kg on 12S return)
      - 16 of 17 TLDs are being returned on 11S in a few days (0.01kg)
- Operations/Science Investigations
  - Hardware build and burn philosophy post Shuttle retirement
  - Should integrate operations/science investigations and limit/eliminate duplication of hardware between International Partners and Science Investigators
- Stowage
  - Increasing problem onboard since Columbia accident
  - Current stowage is above operational limits but below crew habitability and safety limits
  - Stock piling of used hardware awaiting return on Shuttle flights
  - After Shuttle retirement this is not possible