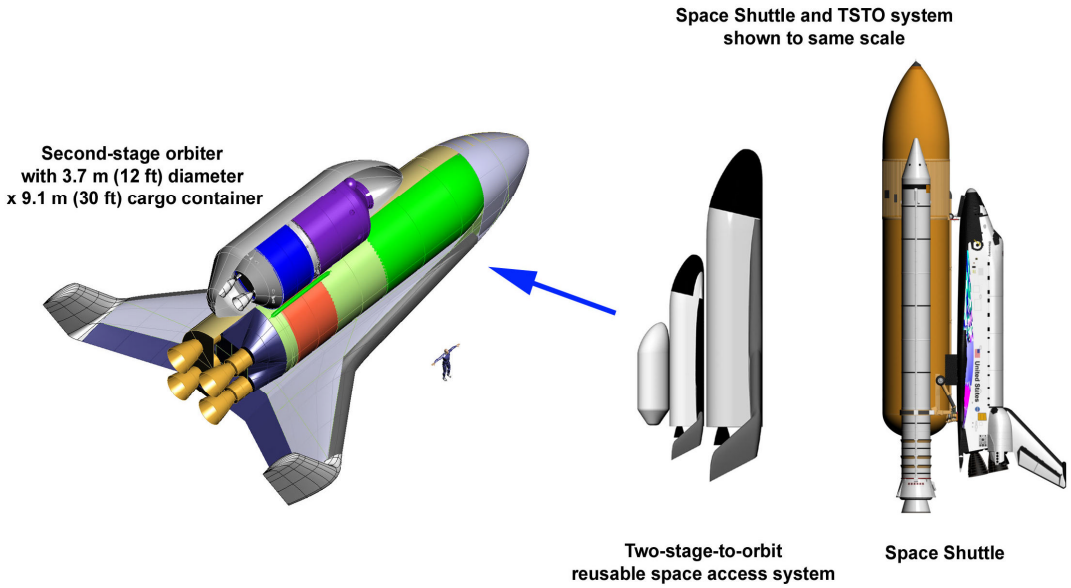
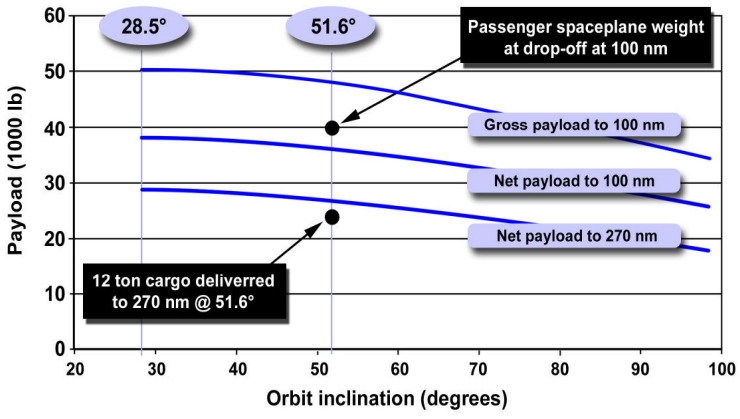
Spacefaring Logistics Infrastructure Fact Sheet



1. System name: **Aerospaceplane (Gen 1)**
2. Infrastructure phase deployed: 1
3. Function: Provide transport to and from low Earth orbit (LEO) for passengers and cargo
4. 2007 Technology Readiness Level: 6-9
5. Description:
   - Fully-reusable, two-stage booster-orbiter system.
   - Vertical takeoff / horizontal landing; rocket-propelled.
   - Cargo carried in external container on orbiter; system operates unmanned; cargo can be returned to Earth in container on orbiter.
   - Passengers transported in spaceplane carried in place of cargo container; spaceplane deployed in 100 nm circular orbit; spaceplane delivers passengers to LEO space facilities; spaceplane returns to Earth on its own.
6. Technical data (based on Air Force conceptual sizing analysis):
   - Gross weight: 2.93 M lb
   - Booster empty weight (booster): 234,700 lb
   - Orbiter empty weight (w/o payload): 78,800 lb
   - Staging velocity: 10,077 fps
   - Booster T/W: 1.35
   - Orbiter T/W: 1.27
   - Booster length/diameter: 139.5/23.3 ft
   - Orbiter length/diameter: 76.3/15.3 ft
   - Empty wt (w/o engines) design margin: 15%
   - Gross payload (100 nm @ 28.5°): 50,400 lb (1.72% of GW)
   - Booster/orbiter propellants: LOX/kerosene
   - Booster no. of engines: 4
   - Orbiter no. of engines: 4
   - Booster /orbiter nominal maximum engine thrust setting: 92%
   - Passenger spaceplane weight: 40,000 lb (initial estimate)
   - No. of passengers: 10 + 2 crew
   - Max cargo size for return: 12 ft diameter x 30 ft length
   - Max cargo size for no-return: 15ft diameter x 30 ft length
   - Turn-around time per system (IOC): 4 weeks
   - Turn-around time per system (FOC): 2 weeks



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