National Aeronautics and Space Administration



SUPPLY CHAIN OBSERVATIONS

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Supply Chain Observations / Challenges

- Optical Inter-Satellite Links (OISLs): Satellite-to-satellite data transfer in proliferated constellations
- Switchgears / Transformers: Distribute, protect, and isolate ground electrical power systems
- Actuators: Enable precise motion control of satellite and ground-based robotics systems
- Composite Overwrapped Pressure Vessels: Store high-pressure gases for spacecraft propulsion systems
- Connectors: Provide vibration-resistant, radiation-tolerant electrical and signal interfaces
- Valves: Cryogenic fluid control flow and high-pressure, super-heated propellants for in-space use
- Rocket Motor Nozzles: Withstand extreme temperatures while directing exhaust for efficient thrust
- Field-Programmable Gate Arrays (FPGAs): Manage communication and control of spacecraft and satellites
- Post Processing: Enhance durability, corrosion resistance, and performance of flight hardware

Core Challenges Faced by Space Components

Lengthy and complex supply chains

Other industries dominate demand

Extensive testing and qualification

Limited capacity for processing

From: "Strengthening America's Space Supply Chain, March 2026. " https://www.pwc.com/us/en/industries/industrial-products/library/strengthening-space-supply-chain.html. Retrieved April 8, 2026.

Trends

- Multiple spacecrafts utilization:
  - Science enabling capability
  - Of interest for many years but seeing more proposals
- Spacecraft size increase:
  - Missions are taking advantage of the additional space offered by 12U and 16U
  - Companies are offering larger form factors
- Market utilization increase:
  - Science is the primary goal
  - More utilization of proven complete systems from industry
- Cost increase:
  - In general, missions are more expensive
  - This also includes spacecraft busses from industry

Further Reading

Strengthening America's space supply chain:
Built for yesterday, igniting momentum for tomorrow

PricewaterhouseCoopers. (March 17, 2026). *Strengthening America's space supply chain: PwC*. PwC. https://www.pwc.com/us/en/industries/industrial-products/library/strengthening-space-supply-chain.html

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