

SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)  
Launch Services, Missions, Operations and Facilities (2)

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LIBERTY™ TRANSPORTATION SERVICES FOR COMMERCIAL CREW

**Abstract**

An ATK led consortium is working to offer commercial crew launch services using the Liberty™ rocket. This new launch vehicle combines two of the world's most reliable propulsion systems, with a collective heritage of nearly 150 successful flights. ATK would supply the human-rated first stage, which it developed under NASA's Space Exploration Program. The five-segment solid rocket first stage is derived from the Space Shuttle's four-segment solid rocket boosters (SRBs) which are built by ATK and have flown 107 successful missions since 1989 (encompassing 214 SRBs). Astrium, the developer and manufacturer of the Ariane 5 launcher, working with Snecma (Safran Group), Europe's leading propulsion company, is providing Liberty's second stage based on the liquid-fueled cryogenic core of the Ariane 5 vehicle powered by the Vulcain 2 engine. The Ariane 5 Launcher, operated by Arianespace, has flown more than 45 consecutive successful missions over nearly eight years and has launched more commercial satellites than any other launch vehicle in the world during that time. The Ariane 5 enjoys the lowest launch insurance rates in the industry due to an unrivaled safety record in the commercial launch services market. Liberty™ commercial crew launch service would integrate a two stage launcher with a crew capsule to deliver both crew and cargo to the International Space Station. Both stages of the launch vehicle were designed for human-rating since inception and would enable unmatched crew safety. The advantages of the Liberty™ launch service are extensive. It is built on a solid foundation of human-rated launch technology, and leverages billions of dollars of investments by NASA and NATO-allied European Governments in the frame of the European Space Agency. This international effort—which embodies the spirit of global cooperation—will afford a readily available, cost-effective solution for human spaceflight. The per passenger cost for astronauts riding on a Liberty launch vehicle will be below that of any other proven human spaceflight offering. This paper will discuss in detail the attributes and benefits of the Liberty™ crew launch service.