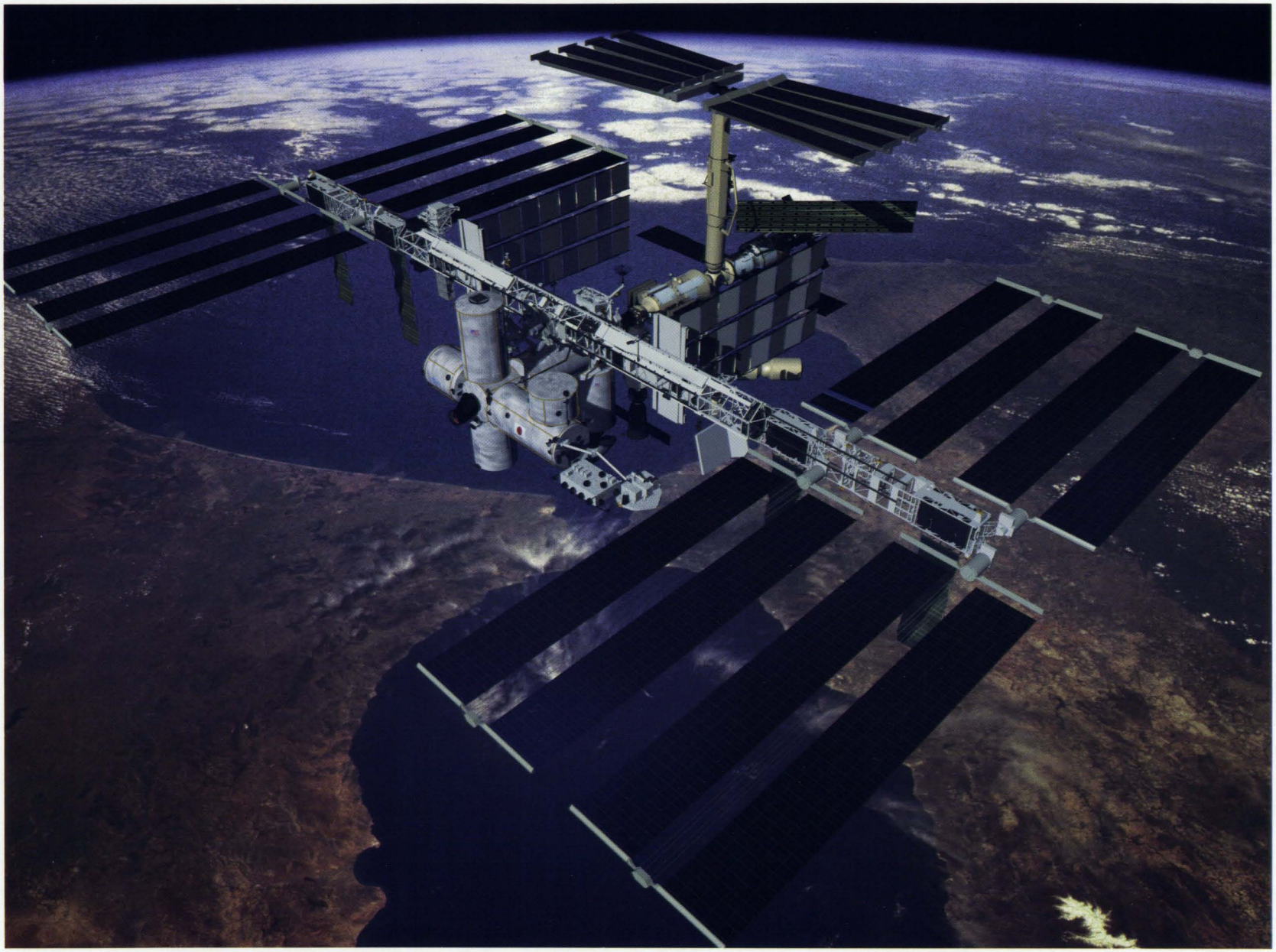
National Aeronautics and
Space Administration

International Space Station: Assembly Complete



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The International Space Station (ISS) draws upon the resources and the scientific and technological expertise of 15 cooperating nations: the United States, Canada, Japan, Russia, and 11 member nations of the European Space Agency (ESA). The program has three distinct phases, each building on the prior one and representing new milestones and capabilities. Phase I involves stays by U.S. astronauts aboard the Russian Mir space station, dockings by the Space Shuttle with Mir, the building of a joint space experience between the United States and Russia, and the performance of scientific research on Mir as a precursor to research on the ISS.

Phase II of the ISS program, construction in orbit, begins in June 1998 with the launch of the Functional Energy Block (FGB) from Russia on a Russian Proton rocket. The 21-ton FGB was built in Russia and purchased by the United States. It will provide attitude control and propulsion during the early assembly operations, plus solar power and berthing ports for additional modules. In July 1998, the U.S.-built Node 1 will be delivered by the Space Shuttle and attached to the FGB, providing connection ports for U.S. modules. Next, the first wholly Russian contribution, a component called the Service Module, which will provide the first living quarters and life support systems, will be launched from Russia in December 1998. After two more Space Shuttle assembly flights, the first people, a three-person crew, will be launched aboard a Russian Soyuz capsule to spend five months on the ISS. From that point on, the ISS will be permanently inhabited. Phase II of the station's assembly will be completed in August 1999, at which point the ISS will be ready for full-scale scientific research work to begin in a U.S. laboratory module.

Phase III of assembly will see the ISS progress gradually to its ultimate status as a research facility with up to seven crew members; laboratory modules supplied by Russia, Europe, Japan, and the United States; and a robotic arm supplied by Canada. The complete assembly sequence for the ISS calls for a total of 45 spaceflights launched by at least three different types of vehicles—the Space Shuttle, the Russian Proton rocket, and the Russian Soyuz rocket.

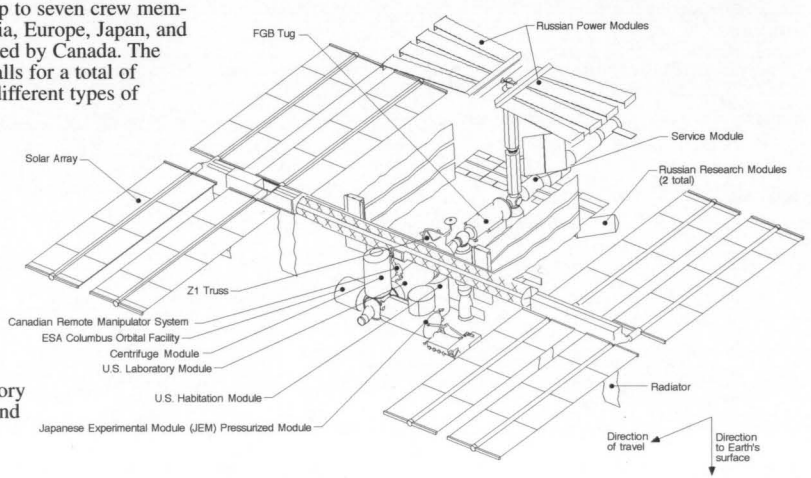
The pressurized living and working space aboard the completed ISS will be roughly equivalent to the passenger cabin volume of two 747 jetliners. The atmospheric pressure in the ISS will be 101 kilopascals, the same as on Earth's surface.

There will be six main laboratories. The United States will provide one laboratory and a habitation module that will replace and supplement the Service Module's early crew living quarters. There will be two Russian research modules; one Japanese laboratory called the Japanese Experiment Module (JEM); and one ESA laboratory called the Columbus Orbital Facility (COF). The U.S., ESA, and Japanese laboratories together will provide 33 International Standard Payload Racks for research equipment and experiments. Additional research room will be available in the Russian modules, connecting Nodes, and a Centrifuge Accomodation Module (CAM). The JEM also has an exterior "back porch" with 10 spaces for mounting experiments that need to be exposed to space. The experiments will be set outside using a small robotic arm on the JEM.

The central girder connecting the modules and the main solar power arrays will be built by the United States and is called the Integrated Truss Structure. The Canadian-built Remote Manipulator System, a 55-foot robot arm and a grappling mechanism called the Special Purpose Dexterous Manipulator (SPDM), will move along the truss on a mobile base transporter to perform assembly and maintenance work. The four solar arrays will rotate on the truss to maximize their exposure to the Sun.

An emergency crew return vehicle, initially a Russian Soyuz spacecraft and later a higher capacity vehicle currently under development by NASA, will always be docked with the ISS while it is inhabited. In addition, a number of vehicles, both with and without people aboard, will be constantly visiting the ISS, including the Space Shuttle (U.S., piloted), Soyuz (Russian, piloted), Progress resupply spacecraft (Russian, unpiloted), H-II Transfer Vehicle (HTV, Japanese, unpiloted), and Autonomous Transfer Vehicle (ATV, European, unpiloted).

WEB SITE: http://station.nasa.gov



Facts and Figures

Wingspan End-to-End Width	356.4 feet (108.6 meters)
Length	262 feet (79.9 meters)
Mass (weight)	1,005,021 pounds (456,620 kilograms)
Operating Altitude	220 nautical miles average (407 kilometers)
Inclination	51.6 degrees to the Equator
Atmosphere	14.7 pounds per square inch (101.36 kilopascals) same as Earth
Crew Size	Up to seven people at assembly complete

Major Milestones

Date	Payload/Milestone
6/98	First element launch—FGB on a Proton rocket
7/98	Node 1 launches on a Space Shuttle
12/98	Russian Service Module launches on a Proton rocket
1/99	First three-person crew launches on a Soyuz rocket
5/99	U.S. Laboratory launches on a Space Shuttle
6/99	Canadian Remote Manipulator System launches on a Space Shuttle
1/00	First utilization flight
12/00	Universal Docking Module launches on a Proton rocket
5/01	Japanese Experiment Module launches on a Space Shuttle
6/02	Fifth utilization flight
TBD	ESA Columbus Orbital Facility

This illustration depicts the International Space Station in its completed and fully operational state with elements from the United States, Europe, Canada, Japan, and Russia.

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