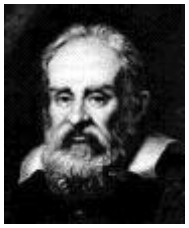
# The International Space Station: The Culmination or the Future of Innovation?

On November 20, 1998, Zarya, the first module of the International Space Station, was launched into orbit from Baikonur, Russia. Less than a month later, the American module Unity was launched aboard Space Shuttle Endeavour joining its Russian counterpart 400 km above the Earth. More than 40 space shuttle and Proton rocket launches will take place before the International Space Station is completed in 2004.

Just try to imagine the number of people involved in the creation of the world's largest space laboratory! There are scientists, engineers and astronauts from 16 countries including Canada, the United States, Russia, Japan and 11 European nations who have contributed and will continue to work on the development of this unique facility. At the Canadian Space Agency, we call these people innovators and are proud to say that Canadians make up an important part of this group.

The development of the International Space Station is the culmination of decades of hard work, creativity, innovation and the commitment of real people – scientists, engineers, astronauts and governments that had a vision and a plan to make life on Earth better for Canadians and humanity. It is also the beginning of a bright new future filled with opportunities for planetary exploration, Earth observation, medical research, development of robotics technologies and advanced satellite communications.

Humanity has always been innovative with a unique sense of curiosity and a hunger to understand the world in which it thrives. Let's take a brief look at the history of humanity's interest in space. From the prehistoric age, humans have been fascinated by the millions of twinkling spheres in the night sky. Early humans, using only their eyes and imaginations developed stories about sky images which were passed down through many generations. Eventually, humans learned to write and transferred the position of the dots of lights in the sky to paper. Joining the dots created wonderful images but few realized that of the millions of lights in the sky, eight were planets that orbit in our solar system. Ancient cultures such as the Egyptians, Aztecs and the Myans were, in their own way, the first space explorers.



Galileo, was one of the forward thinking scientists of the New Age. In the 1700's Galileo brought space exploration to new highs with the invention of the telescope. This new technology made far-away objects like stars, moons and planets seem closer to Earth and Galileo was able to, for the first time in history, make detailed observations of Earth's moon, the "Channels" of Mars as well as Jupiter and its four large moons. Eventually, as technology evolved, humanity was able to identify nine planets in our solar system.

Could there be life out there? Such questions lead to the development of new technologies, some that would assist humanity in viewing itself from space, others like communications satellites that would allow humans to communicate more easily and faster and still others that would permit the human exploration of the galaxy.

Here are some historic milestones of Canada in space:

**1839**
Sir Edward Sabine established the first magnetic laboratory at the University of Toronto to study the Northern Lights.

**1959**
Launch of the *Black Brant,* Canada's first sounding rocket to probe Earth's atmosphere.

**1962**
Canada becomes the third country in space with the launch of the Alouette satellite.
*Alouette-I* would study the ionosphere.

**1969**
Apollo 11 lands on the moon with Canadian built landing gears.

**1972**
Canada launches *Anik-1*, the first of a series of communications satellites in geostationnary orbit *Anik-1* linked Canadians from coast to coast.

**1976**
Canada launches the *Hermes* satellite and introduces the world to direct-to-home broadcast technology.

**1981**
Launch of the Canadarm aboard Space Shuttle Columbia.

**1983**
Selection of the first six Canadian astronauts: Roberta Bondar, Marc Garneau, Steve MacLean, Ken Money, Robert Thirsk and Bjarni Tryggvason.

# More Canadian Achievements…

**1972**
Creation of the David Florida Laboratory in Ottawa. This is a world-class facility which oversees the assembly and testing of Canadian spacecraft and hardware.

**1984**
Marc Garneau becomes the first Canadian in space aboard the Space Shuttle Challenger.

**1988**
Canada becomes a full partner in the development of the International Space Station.

**1996**
Canadian Space Agency astronaut Marc Garneau returns to space aboard Endeavour and Canadian Space Agency astronaut Robert Thirsk performs life science experiments aboard Columbia.

**1989**
The Canadian Space Agency is established with Kerwin Larkin as its president.

**1997**
Canadian Space Agency astronaut Bjarni Tryggvason performs experiments on the Microgravity Vibration Isolation Mount aboard Space Shuttle Discovery.

**1992**
Roberta Bondar becomes the 2nd Canadian and 1st Canadian woman in space aboard Space Shuttle Discovery.

**1998**
Canadian Space Agency astronaut Dave Williams flies aboard the Space Shuttle Columbia as part of the Neurolab mission. He later becomes the 1st non-American Director of NASA's Space and Life Sciences Directorate.

**1995**
Canada launches RADARSAT-1, the country's first Earth Observation satellite.

**1998**
Launch of Japanese spacecraft Planet-B to Mars with Canada's atmospheric probe, the Thermal Plazma Analyzer. The Canadian probe will gather samples of the Martian atmosphere to be studied on Earth.

**1995**
Canadian Space Agency astronaut Chris Hadfield becomes the first Canadian to operate the Canadarm in orbit and the only Canadian to visit the Russian Space Station, Mir.

**1999**
Canadian Space Agency astronaut Julie Payette becomes the first Canadian to set foot on the International Space Station.