

FRANKLIN HIGH SCHOOL  
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**SPACE: FORUM FOR COOPERATION OR NEXT  
FRONTIER FOR WMD PROLIFERATION?**

PARTICIPANTS:

Mitesh Patel, Vinh Bui, Christina Modica,  
Kalissa Morgan, Will Sorensen

COORDINATOR:

Rene Mendoza

**BENCHMARK II.**

OBJECTIVE 1—SPACE PROGRAMS: WHO HAS THEM?

Country/Continent	Program Name – Year Founded	Purpose/Results
<b>Non-Human Spaceflight</b>		
Argentina	Argentine Space Agency (CONAE) – 1996	CONAE develops Earth-orbiting satellites. It has created the SAC-A, the failed SAC-B, the SAC-C, and is developing the SAOCOM and SAC-D.
Brazil	Brazilian Space Agency (AEB) – 1994	AEB's first success on October 23, 2004 when a Brazilian Exploration Vehicle (VSV-30) was launched into sub-orbit.
Canada	Canadian Space Agency (CSA) – 1989	CSA has launched a number of satellites to explore the ionosphere, observe Earth, and use as communication. It contributes many astronauts and also technological achievements on the International Space Station (ISS) and Space Shuttle.
Europe	European Space Agency (ESA) – 1975	ESA has aided in the development of the International Space Station (ISS) and will implement a new space freighter for the ISS in July 2007, called the ATV.

		<p>Past projects include sending observation satellites, telescopes, and various probes into space, some in cooperation with NASA. Some major current and future projects include the Chandrayaan-1 mission to the Moon in association with India's ISRO, ExoMars (a mars rover set to launch in 2013), Aurora Programme (manned and unmanned exploration into Mars and other planets), KEO (a space time capsule to return in 50,000 years), and the Galileo positioning system.</p>
France	Centre National d'Etudes Spatiales (CNES) – 1961	<p>CNES offers expertise in satellite deployment through its Ariane launchers. It has also helped put satellites to observe Earth and is currently studying “formation flying” where satellites fly more complex instruments in a tight configuration. Part of ESA.</p>
Germany	German Aerospace Center (DLR) – 1969	<p>Projects include the Mars Express, Galileo positioning system, OCA-DLR Asteroid Survey, Shuttle Radar Topography Mission, and the Stratospheric Observatory for Infrared Astronomy. Part of ESA.</p>
India	Indian Space Research Organization (ISRO) – 1969	<p>ISRO has built 45 different satellites including the IRS (Indian Remote Sensing) series, INSAT, GSAT, and METSAT 1. It has two major satellite launch vehicles called PSLV and GSLV. It possesses a Technology Experiment Satellite which functions as a spy satellite. With the aid of Russia, ISRO has begun the</p>

		first Unmanned Lunar program, dubbed Chandrayaan-1.
Indonesia	National Institute of Aeronautics and Space (LAPAN) – 1964	LAPAN has launched a number of satellites, most of which are for telecommunications, such as the Palapa Program in the 1970s.
Iran	Iranian Space Agency (ISA) – 2003	Launched by Russia in 2005, Sinah-1 made the ISA a satellite-making capable organization. Sinah-2 is due to launch in 2008 and 5 future satellites are under development. Iran claims to hold satellite-launching-capable rockets and wishes to venture into manned space programs.
Israel	Israeli Space Agency (ISA) – 1983	ISA has developed series of satellites for reconnaissance (Ofeq – used the Israeli-made Shavit launchers), observation (Eros), and communication (Amos). Some current satellite projects include Venus (microsatellite for earth observation) and OPsat (a new generation optical observation satellite). The ISA has produced one astronaut who was tragically killed in the Columbia disaster in 2003.
Italy	Italian Space Agency (ASI) – 1988	The ASI has provided NASA with its Multi-Purpose Logistics Module (MPLM), which is used in NASA's Space Shuttles. Part of ESA.
Japan	Japanese Aerospace Exploration Agency (JAXA) – 2003	Within the prior 3 organizations (NASDA, ISAS, NAL) which merged into JAXA, satellite, rocket (H-IIA and M-V) and research projects were completed. NASDA created the Japanese

		<p>Experiment Module set to become a part of the ISS in 2007-2008. JAXA, in cooperation with other organizations, is developing the GX rocket, the first rocket to use liquefied natural gas.</p> <p>Past projects include Hayabusa, X-ray astronomy, and HALCA and current/future projects include missions to the Moon (SELENE), more satellites, and a lunar base.</p>
South Korea	Korea Aerospace Research Institute (KARI) – 1981	<p>KARI developed its own rockets in the 1990s (KRI series), Now in cooperation with Russia, KARI plans to send an astronaut into space and launch the Korea Space Launch Vehicle (KSLV) in 2007.</p>
Malaysia	Malaysian National Space Agency (ANGKASA) – 2002	<p>In agreement with the RFSA, ANGKASA will send its first Malaysian astronaut in 2007 and is looking forward to sending more to the moon by 2020. However, the agency has been criticized for wasting funds of a developing nation.</p>
Nigeria	National Space Research and Development Agency (NASRDA) – 1998	<p>NASRDA is set to launch a communications satellite (Nigcomsat-1) for rural internet access in 2007. It is to be followed by NigeriaSat-2 in 2009.</p>
Pakistan	Space and Upper Atmosphere Research Commission (SUPARCO) – 1961	<p>SUPARCO has successfully launched 2 satellites, BADR-1 and BADR-B. It also launched PAKSAT-1 in GEO, has tested sounding rockets, and plans to send astronauts to the Moon.</p>
Taiwan	National Space Organization (ROC) – 1990 (?)	<p>ROC has developed a series of FORMOSAT satellites and successful sounding rockets. Projects in the future are to create constellations of micro</p>

		satellites.
Ukraine	National Space Agency of Ukraine (NSAU) – 1992	HSAU has developed satellites and launch vehicles. NSAU is currently working on the Sea Launch project and Galileo positioning system.
United Kingdom	British National Space Centre (BNSC) – 1985	BNSC focuses on research, Earth observation, satellite communication, GPS, etc. and directly funds ESA.
<b>Human Spaceflight</b>		
China	China National Space Administration (CNSA) – 1993	The third country to send an astronaut by itself, China made its first success in October 2003 when it sent Yang Liwei on the Shenzhou V in 14 orbits. Two years later in 2005, the Shenzhou 6 sent 2 more astronauts into space for 5 days.
Russia	Russian Federal Space Agency/Roskosmos (RKA) – 1992	During Soviet rule, Russia sent the first satellite with Sputnik 1 and the first man (Yuri Gagarin) with Vostok 1. It also sent the first animal and woman into space and conducted the first spacewalk. The enduring Soyuz and Progress spacecraft and other rocket technologies were also developed then. Following the fall of the USSR, RKA lacked funding but still continued small researching, operating the old Mir, contributing to the ISS, and conducting Soyuz and Progress missions. RKA has an upgrade plan which will first upgrade the current Soyuz models, replace the Progress with the Parom, and then replace the Soyuz with the Kliper Shuttle.
United States	National Aeronautics and Space Administration (NASA) – 1958	As a reaction to the Space Race, NASA began quickly with its Mercury program,

		<p>which had 6 successful human-piloted missions beginning in 1961. Following Mercury were the Apollo missions (sent astronauts to the Moon, Skylab (first US Space Station), and the Space Shuttle development project. The Space Shuttle will retire in 2010 and be replaced by the Orion by 2014. NASA plans to complete construction of the ISS and move onto further exploration, manned and unmanned, of Mars, Jupiter, Pluto and elsewhere. NASA, in cooperation with other nations and organizations, also plans to begin a 5-year construction of a permanent Moon base by 2020.</p>
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#### References

[http://en.wikipedia.org/wiki/List\\_of\\_space\\_agencies](http://en.wikipedia.org/wiki/List_of_space_agencies)

<http://meria.idc.ac.il/journal/2006/issue3/Kass.pdf>

<http://www.globalsecurity.org/space/world/taiwan/agency.htm>

#### OBJECTIVE 2 – SPACE TREATIES AND OTHER AGREEMENTS

Treaty/Agreement Name	Year Introduced	Guidelines	Signed/Ratified Countries
<b>Treaties/Agreements Made by the UN's Committee on the Peaceful Uses of Outer Space (COPUOS)</b>			
<b>Outer Space Treaty</b> (Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies)	1967	<ul style="list-style-type: none"> <li>• Outer space shall be used peacefully in interests of all states as a province of all mankind.</li> <li>• Outer space is not subject to national appropriation by claims of sovereignty.</li> <li>• States shall not place weapons of mass destruction in</li> </ul>	27 signed countries and 98 ratified countries.

		<p>orbit or on any celestial body.</p> <ul style="list-style-type: none"> <li>• Astronauts shall be regarded as envoys of mankind.</li> <li>• States shall be responsible for all national space activities whether governmental or non-governmental.</li> <li>• States shall be liable for damages done by their space objects and shall avoid harmful contamination of space.</li> </ul>	
<p><b>Rescue Agreement</b> (Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space)</p>	1968	<ul style="list-style-type: none"> <li>• States shall take all possible efforts to return astronauts in distress to their launching state.</li> <li>• States shall provide assistance to launching states in recovering space objects returning to Earth that are outside the launching state.</li> </ul>	25 signed countries and 88 ratified countries.
<p><b>Liability Convention</b> (Convention on International Liability for Damage Caused by Space Objects)</p>	1973	<ul style="list-style-type: none"> <li>• A launching state is liable to pay compensation for any damage or faults done by its space objects to Earth or other aircraft.</li> <li>• Provides procedures for settlement of claims for damages.</li> </ul>	25 signed countries and 83 ratified countries.
<p><b>Registration Convention</b> (Convention on Registration of Objects Launched Into Outer Space)</p>	1975	<ul style="list-style-type: none"> <li>• Launching states must provide information to UN on all launches, including: name of launching state, designator, date and territory of launch, orbital parameters, and function of object.</li> </ul>	4 signed countries and 45 ratified countries.
<p><b>Moon Treaty</b> (Agreement Governing the Activities of States on the Moon and Other Celestial Bodies)</p>	1979	<ul style="list-style-type: none"> <li>• Moon and other celestial bodies should be used for benefits of international community.</li> <li>• Bans military uses of celestial bodies.</li> <li>• Bans space activities without approval or benefit of other states.</li> <li>• All states have a right to</li> </ul>	<p>4 signed countries: France, Guatemala, India, and Romania.</p> <p>12 ratified countries: Australia, Austria, Belgium, Chile, Kazakhstan, Mexico, Morocco, Netherlands,</p>

		<p>research and samples obtained should be open for all scientific/research communities.</p> <ul style="list-style-type: none"> <li>• Bans altering of space environment.</li> <li>• Bans a state from claiming sovereignty of any celestial body and bans any non-governmental or non-international organization from owning property.</li> </ul>	Pakistan, Peru, Philippines, and Uruguay.
<b>Other Treaties/Agreements</b>			
<b>Nuclear Test Ban Treaty</b> (Treaty Banning Nuclear Weapon Tests In The Atmosphere, In Outer Space And Under Water)	1963	Prohibits testing of nuclear weapons under water and in <i>outer space</i> .	17 signed countries and 113 ratified countries.
<b>International Space Station Multilateral Intergovernmental Agreement (IGA)</b>	1998	<ul style="list-style-type: none"> <li>• NASA is the lead agency in coordinating all activities on the International Space Station (ISS).</li> <li>• Each member nation has full jurisdiction over its own module(s).</li> <li>• Provides protection of intellectual property and procedures for criminal prosecution.</li> </ul>	Signed by all 15 governments working on ISS under NASA, CSA, ESA, RKA, and JAXA.
<b>Space Preservation Treaty (SPT)</b>	N/A	Bans all space weapons.	Not yet passed.

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[http://en.wikipedia.org/wiki/Outer\\_Space\\_Treaty](http://en.wikipedia.org/wiki/Outer_Space_Treaty)

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<http://www.unoosa.org/oosa/en/SpaceLaw/treaties.html>

[http://www.esa.int/esaHS/ESAH700VMOC\\_iss\\_0.html](http://www.esa.int/esaHS/ESAH700VMOC_iss_0.html)

OBJECTIVE 3 – NON-TREATY APPROACHES TO SPACE SECURITY

[Space-Based Defenses as Deterrent to Space Weaponization](#)

(Should link to powerpoint)

OBJECTIVE 4 – ISSUES OF ACCOUNTABILITY

Country/Continent	Treaties Signed/Ratified	General Policy Towards Space Security
<b>Nations only Achieving Non-Human Spaceflight</b>		
Argentina	Outer Space Treaty (OST) Rescue Agreement (RA) Liability Convention (LC) Registration Convention (RC) Nuclear Test Ban Treaty (NTBT)	Little Involvement in Major Space Security Issues; primarily use space for peaceful civilian purposes
Brazil	OST RA LC NTBT	Little Involvement in Major Space Security Issues; primarily use space for peaceful civilian purposes
Canada	OST RA LC RC International Space Station Multilateral Intergovernmental Agreement (IGA) NTBT	Promotes peaceful collaboration and multinational demilitarization of space; heavy proponent of IGA
Europe	OST RA LC RC IGA NTBT	Promotes commercial and economic use of space, necessarily against space militarization; little research into offensive space weaponry
France	OST RA LC RC Moon Treaty (MT) IGA NTBT	Backs ESA decisions on Space Policy
Germany	OST RA LC RC	Backs ESA decisions on Space Policy

	IGA NTBT	
India	OST RA LC RC MT NTBT	Volatile political situation and increasing nuclear and missile programs make poor case for future peaceful use of space
Indonesia	OST RA LC RC NTBT	Little Involvement in Major Space Security Issues; primarily use space for peaceful civilian purposes
Iran	OST RA LC RC NTBT	Unstable political state and radical government, and increasing nuclear and missile programs make it a future threat to space security
Israel	OST RA LC NTBT	Publicly declares to support space demilitarization; nuclear arsenal and advanced missile program, along with volatile political situation cast doubt on future peaceful use of space
Italy	OST RA LC RC IGA NTBT	Backs ESA decisions on Space Policy
Japan	OST RA LC RC IGA NTBT	Membership in IGA supports multinational peaceful cooperation in space, but also has aspiration of lunar colonization
South Korea	OST RA LC RC NTBT	Little Involvement in Major Space Security Issues; primarily use space for peaceful civilian purposes
Malaysia	OST	Little Involvement in

	RA NTBT	Major Space Security Issues; primarily use space for peaceful civilian purposes
Nigeria	OST RA LC NTBT	Little Involvement in Major Space Security Issues; primarily use space for peaceful civilian purposes
Pakistan	OST RA LC RC MT NTBT	Volatile political situation and increasing nuclear and missile programs make poor case for future peaceful use of space
Taiwan	OST RA LC RC NTBT	Little Involvement in Major Space Security Issues; primarily use space for peaceful civilian purposes
Ukraine	OST RA LC RC NTBT	Little Involvement in Major Space Security Issues; primarily use space for peaceful civilian purposes
United Kingdom	OST RA LC RC IGA NTBT	Backs ESA decisions on Space Policy
<b>Nations Undertaking Human Spaceflight</b>		
China	OST RA LC RC NTBT	Publicly unclear on long term space uses goals; increasing nuclear weapons and missile programs and growing political power suggest a vested interest in space-based weaponry and Defense
Russia	OST RA LC RC	Major investment in space-based offensive weaponry, including orbital trajectory ICBMs

	IGA NTBT	(programs nominally dismantled); now publicly dedicated to multinational cooperation and demilitarization of space; long term military goals classified
United States	OST RA LC RC IGA NTBT	Major investment in Space-Based Defense Platforms (SDI-Star Wars); unknown research into space based offensive weaponry; publicly dedicated to multinational cooperation and demilitarization of space; long term military goals classified

#### References

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<http://www.unoosa.org/oosa/en/SpaceLaw/treaties.html>

<http://en.wikipedia.org/wiki/Ntbt>

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