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Committee on the Peaceful Uses of Outer Space

Unedited transcript

Fifty-fourth session

628th Meeting
Commemorative segment
Wednesday, 1 June 2011, 10 a.m.
Vienna

Chairman: Mr. Dumitru Dorin PRUNARIU *(Romania)*

The meeting was called to order at 10.19 a.m.

The CHAIRMAN Good morning, Excellencies, distinguished delegates and representatives, I am pleased and honoured to welcome you all to the Vienna International Centre. I now declare open the commemorative segment of the fifty-fourth session of the United Nations Committee on the Peaceful Uses of Outer Space which is being held in accordance with the Committee's decision at its forty-third session last year and welcomed by the General Assembly in its resolution 65/97.

This year will witness a remarkable convergence of anniversaries in space activities. We celebrate the fiftieth anniversary of the Committee and the fiftieth anniversary of human space flight marked by extraordinary achievements in space exploration and human presence in outer space since 12 April 1961 when Yuri Gagarin became the first human to orbit the Earth. This is truly an excellent opportunity for us to pay tribute to the accomplishments achieved during more than 50 years of the space age since the launching of Sputnik 1 and to reflect on future developments.

I am honoured and pleased to be able to extend my warm welcome to the Director-General of the United Nations Office at Vienna, Mr. Yury Fedotov, who has joined us to address the Committee on the occasion of these anniversaries.

I am also honoured to welcome today our special guests of space farers who are with us for this historical commemoration of human space flight, astronauts and cosmonauts who are sitting on my left hand side. Welcome!

This commemorative segment today will begin by opening addresses. Thereafter we will proceed to adoption of the Declaration that you all have before you in A/AC.105/L.283/Rev.1. We will then benefit from a Round Table discussion with invited prominent speakers. In the afternoon, we will have addresses by delegations in accordance with an established list of speakers that is being made available for your attention in the back of this room.

Conference Room M3, in this building, is open for members of delegations that have no seat in this board room. Video transmission, in all languages, are made available.

Distinguished delegates, I would like now to invite you to watch and listen to a video address by the Secretary-General of the United Nations, Mr. Ban Ki-Moon.

Video message

Mr. Ban Ki-moon (Secretary-General) Excellencies, distinguished representatives, ladies and gentlemen.

Of all the important and challenging topics on the agenda of the United Nations perhaps none quite captures our imagination like outer space and this is indeed a special year.

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We mark the fiftieth anniversary of human space flight that began when Yuri Gagarin became the first human to orbit the Earth. We also celebrate the fiftieth anniversary of the first meeting of the permanent Committee on the Peaceful Uses of Outer Space.

For half a century your Committee has worked to ensure that outer space is used for peaceful purposes while also bringing the benefits of space technology to all. Through the years these benefits have helped us confront very down-to-earth programmes producing tools that are transforming weather forecasting, environmental protection, humanitarian assistance and more.

Just outside my office there are three United Nations flags, including one flown to the Moon by the astronauts of Apollo 14 in 1971, to me they serve as constant reminders of our common humanity and our global quest to conquer shared challenges. That is your mission.

Thank you for all you are doing to push us to new frontiers of knowledge and understanding. My congratulations on these important milestones and my best wishes for a successful session.

The CHAIRMAN On behalf of the Committee I would like to thank the Secretary-General, through you Mr. Fedotov, for addressing the Committee on this important day.

Distinguished delegates, I have the pleasure of inviting Mr. Yury Fedotov, Director-General of the United Nations Office at Vienna, to address the Committee.

Mr. Y. FEDOTOV (Director General, UNOV) Thank you Mr. Chairman. Dear cosmonauts and astronauts, Excellencies, distinguished delegates and representatives, ladies and gentlemen, it gives me great pleasure to address the United Nations Committee on the Peaceful Uses of Outer Space.

This year we celebrate the fiftieth anniversary of one of the greatest triumphs of human progress, the first human flight, Yuri Gagarin's flight. I think that yourself, Mr. Chairman, as well as cosmonauts and astronauts present here, could confirm that when the Earth is seen from outer space there are no visible boundaries dividing the territories and people on our planet, that reminds us that we are all part of the same global community so we must work together for the greater good for all humanity, that is the spirit that inspires the work of the whole United Nations.

This year also marks the fiftieth anniversary of the first meeting of this Committee, that is your anniversary. I congratulate the Committee on five decades of promoting the peaceful use of outer space for the benefit of all mankind.

International cooperation is crucial to ensure that space science and technology serve all countries, particularly developing countries. The United Nations, through the Committee on the Peaceful Uses of Outer Space, plays a pivotal role in helping States to work together to bring the benefits of space activities to people all over the world.

Today space applications make a significant contribution to the world economy and sustainable development. Indeed, space technology has become an indispensable tool for providing solutions for some of the most urgent issues including on the United Nations development agenda, such as climate change, disaster management, global health and human security. At least 25 United Nations entities routinely use space-based assets in their work. Telecommunication satellites, global navigation systems and Earth observation technologies provide operational solutions, data and information that help implement a wide range of UN-mandated activities. The UN is committed to ensuring that all nations benefit from activities in outer space, now and in the future. The United Nations Office for Outer Space Affairs helps States to develop their capabilities to use space technologies to support sustainable development. It fosters international cooperation in a number of areas of space research, applications, operations and exploration.

The work before the Committee on the Peaceful Uses of Outer Space and the Office for Outer Space Affairs makes an essential contribution towards the achievement of the Millennium Development Goals.

Ladies and gentlemen, I wish you productive discussions in the coming days. Your efforts to bring the benefits of outer space technologies to all countries and people would help to promote a better life for everybody across our planet.

Thank you very much.

The CHAIRMAN Thank you Mr. Fedotov for joining us today and for your words to the Committee.

Distinguished delegates, Excellencies, distinguished representatives, on 12 April 1961, the Soviet cosmonaut Yuri Gagarin completed the world's first human space flight on board the Vostok spacecraft

which opened new horizons for space research and exploration. Later, in 1961, the Committee on the Peaceful Uses of Outer Space held its first meeting. Recollection of these two events is an excellent opportunity for us to pay tribute to the accomplishments achieved during more than 50 years of the Space Age since the launching of Sputnik 1 and to reflect on possible future developments.

The contribution to the development of space activities of those who travelled to outer space is tremendous. It is particularly notable that many space travellers have continued to actively contribute to space endeavours after they have accomplished their career as astronauts and cosmonauts.

To many others present here, one special guest, a space legend, is present here today and I am truly honoured to invite Mr. Alexei Leonov. The least of his achievements would exceed the volume of my statement but I would like to particularly recall his bravery in the first ever human space walk in 1965 as well as his leadership over the Soviet part of the historical joint USA/USSR Apollo/Soyuz mission. One more secret, he was the first Russian who was supposed to land on the Moon.

We recall today that, for half a century since its establishment, the Committee on the Peaceful Uses of Outer Space has successfully resolved complex issues and has maintained an outstanding record of achievements while maintaining the principle of consensus in its decision-making process. The Committee has witnessed and has been at the centre of humankind's amazing exploration and utilization of outer space. Since its establishment the Committee has actively promoted efforts aimed at furthering space exploration and peaceful uses of outer space and bringing the benefits of space science and technology to Earth and to ensure development of all countries.

This year we can also look back at the successful first decade of the millennium. The Committee has been instrumental in the creation and development of the international legal regime governing the activities of States in the exploration and use of outer space consisting of five treaties and five sets of declarations and principles on outer space activities. Among them, the Outer Space Treaty of 1967 represents a landmark legal instrument, the Magna Carta of space law. Further, the Committee has been responsible for organizing three United Nations conferences on the exploration and peaceful uses of outer space. Following the most recent of these conferences, UNISPACE III, held here in Vienna in 1999, the Committee has addressed the wide range of issues and achieved concrete results in a number of areas related to its fundamental objective of promoting international cooperation in the peaceful uses of outer space, taking into particular account the needs of developing countries. With the holding of UNISPACE III, the Committee has also aligned many of its activities with the Millennium Development Goals as set by the Millennium Summit in 2000, articulated by the World Summit on Sustainable Development in 2002 and reaffirmed by the 2005 World Summit. The Committee also endeavours to contribute to the upcoming Conference on Sustainable Development to be held in Rio de Janeiro, Brazil, in 2012.

Excellencies, distinguished delegates and representatives. For many years the Committee has played a major role in shaping the international standards for space activities and in promoting international cooperation for the benefit of all countries in many areas of space research, space applications, space operations and space exploration. It is now important to look more closely into how advanced space research and exploration systems and technologies could further contribute to meeting challenges, including that of global climate change and to food security and global health and endeavour to examine how the outcome and spin-offs of scientific research in human space flight could increase the benefits in particular for developing countries. With this in mind, I am confident that the Committee will continue to manifest its unique platform for international cooperation in space activities. Thank you.

Video message

Distinguished delegates, I am now delighted to present to you a video message from the crew of the International Space Station.

ISS Crew We would like to greet you from the International Space Station. I am a cosmonaut of the Russian Federal Space Agency and Expedition 27 Commander, **Dmitry Kondratyev**, along with my friends...

Expedition 27 Flight Engineer, **Katie Coleman**, NASA astronaut

Andrey Borisenko, Flight Engineer from Roscosmos

Alexander Samokutyaev, Flight Engineer, Roscosmos cosmonaut

Ronald Garan, Flight Engineer from NASA

Paulo Nespoli, Flight Engineer, Italian astronaut of the European Space Agency

The International Space Station and space travellers representing more than a dozen nations has spent more than a decade in the pursuit of space research and international cooperation. The crew members you see before you comprise three of the _____(?) partner organizations involved in this amazing international project. It is a shining example of what people can do when they work together for the benefit of all humankind.

Today our crew salutes the UN Committee on the Peaceful Uses of Outer Space on its fiftieth anniversary and its rich history of stimulating international cooperation in space and promoting the use of space-based information for the benefit of all mankind.

We recognize the role played by the United Nations in the development of the current agreements under which we all operate in space. These are agreements that have fostered _____(?) upon nations on space exploration and peaceful endeavour to unlock the mysteries of our universe and to improve the lives of people on Earth.

It is only fitting that on this day we send our congratulations and appreciation for the continuing work of the UN Committee on the Peaceful Uses of Outer Space and a special salute to all the space farers who have preceded us and those who will follow.

The CHAIRMAN I would like to thank the crew of the International Space Station for this message and to extend the gratitude, on behalf of the Committee, to the National Aeronautical and Space Administration (NASA) and to the Office for Outer Space Affairs for organizing this video message.

draft Declaration on the Fiftieth Anniversary of Human Space Flight and the Fiftieth Anniversary of the Committee on the Peaceful Uses of Outer Space

Distinguished delegates, I would now like to turn to our consideration of the draft Declaration on the Fiftieth Anniversary of Human Space Flight and the Fiftieth Anniversary of the Committee on the Peaceful Uses of Outer Space, which is before you in A/AC.105/L.283/Rev.1.

This Declaration is an important account of the past, present and future endeavour of the Committee on the Peaceful Uses of Outer Space and of the collective achievements by all humanity in the exploration and peaceful uses of outer space. The Declaration reads as follows:

We, the States participating in the commemorative segment of the fifty-fourth session of the Committee on the Peaceful Uses of Outer Space, held at Vienna on 1 June 2011, in commemorating the fiftieth anniversary of human space flight and the fiftieth anniversary of the Committee on the Peaceful Uses of Outer Space,

1. *Recall* the launch into outer space of the first human-made Earth satellite, Sputnik I, on 4 October 1957, thus opening the way for space exploration;

2. *Also recall* that on 12 April 1961, Yuri Gagarin became the first human to orbit the Earth, opening a new chapter of human endeavour in outer space;

3. *Further recall* the amazing history of human presence in outer space and the remarkable achievements since the first human spaceflight, in particular Valentina Tereshkova becoming the first woman to orbit the Earth on 16 June 1963, Neil Armstrong becoming the first human to set foot upon the surface of the Moon on 20 July 1969, and the docking of the Apollo and Soyuz spacecrafts on 17 July 1975, being the first international human mission in space, and recall that for the past decade humanity has maintained a multinational permanent human presence in outer space aboard the International Space Station;

4. *Respectfully recall* that the human exploration of outer space has not been without sacrifice, and remember the men and women who have lost their lives in the pursuit of expanding humanity's frontiers;

5. *Emphasize* the significant progress in the development of space science and technology and their applications that has enabled humans to explore the universe, and the extraordinary achievements made over the past fifty years in space exploration efforts, including deepening the understanding of the planetary system and the Sun and the Earth itself, in the use of space science and technology for the benefit of all humankind and in the development of the international legal regime governing space activities;

6. *Recall* the entry into force of the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the

Moon and Other Celestial Bodies (Outer Space Treaty) on 10 October 1967, which establishes the fundamental principles of international space law;

7. *Also recall* the first meeting of the permanent Committee on the Peaceful Uses of Outer Space, convened on 27 November 1961, which facilitated the adoption of General Assembly resolutions 1721 A to E (XVI) of 20 December 1961, including resolution 1721 A, in which the first legal principles were commended to States for their guidance in space activities, and resolution 1721 B, in which the Assembly expressed its belief that the United Nations should provide a focal point for international cooperation in the peaceful exploration and use of outer space;

8. *Recognize* that the Committee on the Peaceful Uses of Outer Space, assisted by the Office for Outer Space Affairs of the Secretariat, has for the past fifty years served as a unique platform at the global level for international cooperation in space activities and that the Committee and its subsidiary bodies stand at the forefront in bringing the world together in using space science and technology to preserve the Earth and the space environment and ensure the future of human civilization;

9. *Acknowledge* that significant changes have occurred in the structure and content of the space endeavour, as reflected in the emergence of new technologies and the increasing number of actors at all levels, and therefore note with satisfaction the progress made in strengthening international cooperation in the peaceful uses of outer space by enhancing the capacity of States for economic, social and cultural development and by strengthening the regulatory frameworks and mechanisms to that effect;

10. *Reaffirm* the importance of international cooperation in developing the rule of law, including the relevant norms of space law, and of the widest possible adherence to the international treaties that promote the peaceful uses of outer space;

11. *Express our firm conviction* that space science and technology and their applications, such as satellite communications, Earth observation systems and satellite navigation technologies, provide indispensable tools for viable long-term solutions for sustainable development and can contribute more effectively to efforts to promote the development of all countries and regions of the world, to improve people's lives, to conserve natural resources in a world with a growing population that places an increasing strain on all ecosystems, and to enhance the preparedness for and mitigation of the consequences of disasters;

12. *Express our deep concern* about the fragility of the space environment and the challenges to the long-term sustainability of outer space activities, in particular the impact of space debris;

13. *Stress* the need to look more closely into how advanced space research and exploration systems and technologies could further contribute to meeting challenges, including that of global climate change, and to food security and global health, and endeavour to examine how the outcomes and spin-offs of scientific research in human space flight could increase the benefits, in particular for developing countries;

14. *Emphasize* that regional and interregional cooperation in the field of space activities is essential to strengthen the peaceful uses of outer space, assist States in the development of their space capabilities and contribute to the achievement of the goals of the United Nations Millennium Declaration;

15. *Confirm* the need for closer coordination between the Committee on the Peaceful Uses of Outer Space and other intergovernmental bodies involved in the global development agenda of the United Nations, including with respect to the major United Nations conferences and summits for economic, social and cultural development;

16. *Call upon* all States to take measures at the national, regional, interregional and global levels to engage in the common efforts to use space science and technology and their applications to preserve planet Earth and its space environment for future generations.

This was the Declaration.

Adoption of the Declaration

Distinguished delegates, We shall now proceed to adopt the Declaration. If I hear no objections, do I take it that the Declaration is agreeable to all delegations as a whole?

I see no objections.

The Declaration is adopted.

Distinguished delegates, I thank you for your support and cooperation in adopting this important document. This Declaration truly marks our common achievements and future endeavours in using space

science and technology and their applications for the benefit of future generations.

Round Table

Now we have the Round Table with some distinguished guests, important persons dealing with outer space activities. I invite _____(?) in the conference room and I invite the Round Table guests to come here and to start speaking about space activities.

I invite Mr. Liwei Yang, Mr. Juan Acuña Arenas, Mr. Leland Melvin, Mr. Alexei Leonov, Mr. Rifaat Chaabouni, Mr. Jean-Jacques Dordain and Mr. Yoshifumi Inatani.

Distinguished delegates, I would now like to turn to the next point of the Commemorative Segment, the Round Table discussion. I would like to invite the members, they are already here, and you also to take your seats.

Excellencies, distinguished delegates and representatives, as the 103rd human who had the opportunity to see planet Earth from outside its atmosphere, no more than 20 years after Yuri Gagarin did it first, I was struck by the fragility of our home planet in the universe. Today we celebrate the fiftieth anniversary of human space flight and the past 50 years of work of the Committee on the Peaceful Uses of Outer Space. The Round Table today will allow us an opportunity to reflect on the past and to think about the future of space endeavours. With this in mind, the protection and preservation of the Earth and space environment for future generations must be honoured.

During the last century we have reached new levels of science, technology, industry, economical and social development but, at the same time, radically changed the natural balance of the planet we live on. Today, going to the stars means to learn, to gather knowledge, to enrich our spirit and to chart new ways of shaping our future.

Space exploration and advances in space science and research are fundamental pillars for the operational use of space technology and its applications. The practical benefits of space technology applications today virtually touch every facet of human endeavour extending over communication, navigation, meteorology, education, health, agriculture, resource management, environmental protection and disaster management.

To adapt to emerging and future challenges to the global community the United Nations system, in close coordination with its member States, needs to find effective solutions to current and emerging global problems. First, we need to look more closely into how advanced space research and exploration systems and technologies could further contribute to meeting challenges including that of global climate change, to food security and global health and endeavour to examine how the outcome and spin-offs of scientific research in human space flight could increase the benefits, in particular for developing countries.

We need to support regional and interregional cooperation in the field of space activities which is becoming to be even more essential for ensuring the peaceful uses of outer space, assisting States in the development of their space capabilities and contributing to the achievement of the goals of the United Nations Millennium Declaration.

We also need to ensure a closer coordination between the Committee and other intergovernmental bodies involved in the global development agenda of the United Nations including with respect to the major United Nations conferences and summits for economic, social and cultural development.

We are now going to benefit from participation in the Round Table of distinguished representatives of various branches of the space sector. Let us find out about how the future of space exploration and use is seen from their perspective.

Please allow me to introduce the distinguished members of the Round Table.

Next to me, **Mr. Alexei Leonov**, cosmonaut, Russian Federation.

The iconic Russian cosmonaut, Mr. Alexei Leonov who is with us today, was the first human to have ever walked in space. On 17 March 1965, more than 46 years ago, Mr. Leonov was appointed co-pilot on the Voskhod-2 (Sunrise-2) mission. The spaceship, with two cosmonauts on board, left for outer space and remained there for 1 day, 2 hours, 2 minutes and 17 seconds. It was a historic mission. For the very first time a human being dared to leave the spacecraft. It was on 18 March 1965, more than 46 years ago as I said, when Alexei Leonov performed a 12 minute and nine second long spacewalk. A decade later, in 1975, Mr. Leonov's second trip into space made history again, he commanded the Soviet half of the 1977 Apollo/Soyuz mission, Soyuz 19, the first joint space mission between the Soviet Union and the United States, an important step towards international cooperation in outer space.

In 1976-1982, Mr. Leonov became Deputy Director of the Cosmonaut Training Center named after Yuri Gagarin. He was also an editor of the cosmonaut newspaper *The Neptune*. Mr. Leonov is also an accomplished artist whose published books include albums of his artistic works including sketches of the Earth and drawn portraits of the Apollo astronauts who flew with him during the Apollo/Soyuz test project. Mr. Leonov, along with Rusty Schweickart, Vitali Sevastyanov and Georgi Grechko, established the Association of Space Explorers in 1985. Myself, I am one of the founding members of the Association. Membership is open to all people who have flown in outer space. This iconic Russian cosmonaut celebrated his 77th birthday just two days before joining us for the celebrations of the fiftieth anniversary of human space flight. Of course I would like to warmly congratulate Alexei Leonov and thank him for joining us today and for inspiring us.

One of the next speakers is Mr. Rifaat Chaabouni, on my left side, Minister of Higher Education and Scientific Research of Tunisia. Mr. Rifaat Chaabouni was nominated on 7 March 2011 as the Minister of Higher Education and Research. Mr. Chaabouni graduated in physical sciences, with a specialization in chemistry at the University of Tunis, and holds a Ph.D. in organic chemistry and a Ph.D. in sciences from the University Claude Bernard in Lyon, France. Mr. Chaabouni has been a lecturer in the University of Lyon before continuing post-doctoral studies at the University of California (USA). He has also been teaching in the National School for Engineers in Tunis. Mr. Chaabouni has worked as the Director for research at the French National Center for Scientific Research in Toulouse. He has also served as the Director for forecasting, planning and evaluation in the State Department for Scientific Research. He is an expert in the area of science and technology at the Tunisian Institute for Strategic Researches. In January 2011, Mr. Chaabouni was nominated as the Secretary of State to the Minister of Higher Education and Scientific Research. He was in charge of scientific research and has been holding this position until his recent nomination as the Minister of Higher Education and Scientific Research. Welcome Mr. Chaabouni.

Mr. Jean-Jacques Dordain, also on my left side, Director-General of the European Space Agency.

Mr. Jean-Jacques Dordain, Director-General of the European Space Agency, studied engineering at the École Centrale obtaining his diploma the year Neil Armstrong walked on the Moon before going on to join ONERA, the French national aerospace research center, in 1970, first serving as a researcher in propulsion and launchers from 1970 to 1976 and then went on to be Coordinator of Space Activities and then Director of Fundamental Physics. In 1977, he was among the first five French candidate astronauts to be selected by CNES.

After joining ESA in 1986 as Head of the Microgravity and Space Station Utilisation Department, Mr. Jean-Jacques Dordain became Associate Director for Strategy, Planning and International Policy in 1993, Director of Strategy and Technical Assessment in 1999 then Director of Launchers in 2001. Mr. Dordain was appointed Director General in December 2002, taking up office in July 2003. In June 2006 his mandate as ESA Director General was renewed until 2011. In June 2010 he was re-elected to a third four-year term until June 2015. Mr. Dordain, welcome!

We have here, on my right side, **Mr. Leland Melvin**, Associate Administrator for Education at NASA.

Mr. Leland Melvin has been appointed NASA Associate Administrator for Education by NASA Administrator Charles Bolden on 12 October 2010. Since April 2010, Mr. Melvin had been assigned to the Office of Education at Headquarters leading the Education Design Team. His job was to develop a strategy to improve NASA's education offerings and to assist the agency in establishing goals, structures, processes and evaluation techniques to implement a Sustainable and innovative science, Technology, Engineering and Math (STEM) education programme. In 2003, Mr. Melvin co-managed the former Educator Astronaut Program, which recruited teachers to become fully-trained astronauts in an effort to connect space exploration with students across the country.

As Associate Administrator, Mr. Melvin is responsible for the development and implementation of NASA’s education programmes that inspire interest in science and technology, strengthen student involvement and raise public awareness about NASA scientific goals and missions. He joined NASA in 1989 as an aerospace research engineer at Langley Research Center in Hampton, Virginia. In 1998 he joined the astronaut corps, serving as a mission specialist on two Space Shuttle missions, STS-122 in 2008 and STS-129 in 2009. A Bachelor of Science in chemistry from the University of Richmond, where he also excelled as a wide receiver for the Spiders’ football team, Mr. Melvin has logged more than 565 hours in space. Mr. Melvin, welcome!

Also on my right side, **Mr. Juan Acuña Arenas**, Head of the Chilean Space Agency.

Mr. Juan Acuña Arenas, the Head of the Chilean Space Agency is an engineer in electronics and telecommunications from the Military Technical Academy, Naval Polytechnic Academy and Aviation Technical Academy. He also holds a Master in Business Administration and Management and a Bachelor of Science diploma in Statistics and Telecommunications. From 1976, Mr. Acuña Arenas served in the Air Force of Chile until his voluntary resignation in February 2004, reaching the rank of Group Commander. In this institution, Mr. Acuña Arenas participated in several projects in the area of technology, he was the Team Leader in the COSPAS-SARSAT satellite project in Chile and involved in the Athena Project Advisory Army, representing the institution in the satellite project. He has served as the General Coordinator and Technical Director in the Chilean Space Agency. He currently serves as the Executive Secretary of the Chilean Space Agency and a Member of the Commission of Telecommunications Engineers Association of Chile. Mr. Acuña is also a member of the executive committee of the Group on Earth Observations (GEO). Welcome!

Mr. Yang Liwei. Allow me to introduce Mr. Yang Liwei, Deputy Director of China Manned Space Engineering Office and the first Chinese astronaut flown into space, with the honourable title of 'Space hero'. Mr. Yang Liwei was selected as an astronaut candidate in 1998 and has trained for space flight since then. He was chosen from the final batch of 14 candidates to fly on China's first manned space mission, which made China the third country to independently send astronauts into space. Mr. Yang Liwei was launched into space aboard his Shenzhou 5 spacecraft carried by a Long March 2F rocket from Jiuquan Satellite Launch Center on 15 October 2003. In the middle of the journey, China's state television broadcast footage of Yang waving a small flag of the People's Republic of China and that of the United Nations inside his capsule. Yang's craft landed in the grasslands of the Chinese region of Inner Mongolia on 16 October 2003, having completed 14 orbits and travelled more than 600,000 kilometres. On 7 November 2003, Mr. Yang Liwei received the title of 'Space Hero' from Jiang Zemin, the President of the People's Republic of China. Yang Liwei, welcome!

On my left side, **Mr. Yoshifumi Inatani**, JAXA, Japan.

Professor Inatani serves, since 1 April 2010, as the Programme Director of the Space Science Programme at the Institute of Space and Astronautical Science, JAXA. He holds a Doctorate of Engineering from the University of Tokyo. Mr. Inatani's major research fields are hypersonic aero, aerothermodynamics, re-entry vehicles and future space transportation systems. Mr. Inatani was responsible for the development of the re-entry capsule of the Japanese Hayabusa mission. It is well known that Hayabusa succeeded in the sample return from an asteroid for the first time in the world. It is amazing that the tiny capsule of 40 centimetres diameter and 17 kilogram's came back from deep space to Earth as planned. Its great success made distinguished contribution to the ablator research which is a key technology for the future space exploration. For this Mr. Inatani received the Commendation for Science and Technology by the Minister of Education, Culture, Sports, Science and Technology in 2011. Mr. Inatani, welcome!

Distinguished members of the Round Table, allow me to ask each of you an introductory question for your respective interventions. You have for this introductory question about 5 to 10 minutes.

Mr. Dordain, could you please share with us your views on the role of space in addressing global challenges such as climate change, health, and disaster management?

MR. J-J.DORDAIN (Director-General, ESA) Just to say that I am glad to be with you today to celebrate at the same time the fiftieth anniversary of human space flight and the fiftieth anniversary of the Committee on the Peaceful Uses of Outer Space. Two anniversaries at the same time this is certainly a good opportunity to take the lessons learned for our future.

The two anniversaries are delivering one common message, that our future will rely upon cooperation, not cooperation among a happy few but global cooperation because our future on planet Earth is global, there is no individual future on planet Earth, there is only one common future for all individuals. This is certainly one of the important messages which has been brought by human space flights and it can look strange that the flight of Gagarin and the first step on the Moon by Neil Armstrong, which were symbols of competition in space, have become the two first steps of international cooperation in space.

The Chair has mentioned Apollo/Soyuz and then there was the International Space Station. As you could see the International Space Station has six persons living there from three nationalities, sometimes four and even sometimes five nationalities, living and

working together. This is certainly a model of the future world. It is interesting to note that in 50 years of human space flight only 8 years were dedicated to competition, 42 years of international cooperation. International cooperation is certainly an important aspect of space.

Space and the use of space is a part of the common future on planet Earth because space is the only tool which can bring information at a global scale and at a local scale, there is no other tool. This is very important because I shall speak in a minute of global phenomena, be it climate change or natural disasters, but global phenomena have local consequences. This is the combination between the global aspect and the local aspect which will make space a very important tool for our future.

I shall give you two examples. The use of space for monitoring and managing situations of natural disasters and also space as a contributor to the industrial _____(?) of climate change.

First, natural disasters. This is here in Vienna in 1999, during UNISPACE III, that the French Space Agency (CNES) and the European Space Agency have been the two founding members of the Charter on Space and Natural Disasters. Interesting to note that this Charter has been created in that UNISPACE conference and that Charter became operational very soon after when Canada joined CNES and ESA and today we have 11 members of that Charter and three other ones will join the Charter very soon. According to this Charter, all members are committed to give all data that they have from their satellites available to any organization, governmental and non-governmental, which are activating the Charter in case of a natural disaster. Unfortunately that Charter is called upon more and more often, now it is an average of every three weeks that we have to activate that Charter and every three weeks we are providing data to the organizations which need that.

Recently there was the major disaster of the tsunami in Japan but last year it was a major disaster of the earthquake in Haiti and, within 48 hours, the space organizations are able to provide all the data that organizations need on the ground to understand which are the zones which have been affected by the natural disaster and, even more important, which means can give access to these zones by giving information on the roads which are still available, the bridges, the runways, and so on. I have a pile of letters of thanks from these organizations for the value of the data that we have delivered to them. Obviously this is not the end we have to do much better in the future and much better means what? It means reducing the time to data. Time is very important when lives are at stake and we have to reduce the time to data and to reduce the time to data we have to have as many satellites as possible. I am not saying that we have to develop new satellites but at least to bring all organizations which have satellites together to reduce this time to data but also we have to try, and this is what we are trying to do, not only to manage natural disasters but also hopefully, more and more, to predict natural disasters. We can already follow trajectories of typhoons but we are not yet able to predict, unfortunately, a lot of natural disasters.

A second example is climate change. Climate change is certainly at the origin of some of these natural disasters. Climate change is a very complex problem maybe one of the most complex problems to reach humanity as to work together to understand that. It requires the cooperation between a lot of different actors along a chain which is starting from collecting data, processing the data, developing models, predicting, acting, monitoring. It is a long chain of actors which are very different actors which are not used to working together, this is the biggest difficulty of climate change to make a lot of different actors work together.

Space, obviously, is not at all part of the chain but space is at the start of the chain, collecting data, and is at the end of the chain, monitoring, services to monitor the effect of climate change. We at ESA are part of this important aspect to the point that the member States of ESA have put climate change as one of their priorities. We have launched, within one year, three satellites dedicated to climate change which are Earth explorers and we are developing, together with the European Commission, the sentinels of the GMES services and the first operational services will be fully operational from 2013 onwards.

So climate change is certainly a fantastic challenge. It is a fantastic opportunity to cooperate not only among different nations but among different actors and I can tell you that one of the most difficult parts of cooperation is to understand each other and this is what we are trying to do.

I cannot conclude without speaking of education because education should be a school of cooperation. We have to give the opportunity to students to work together, to learn together, to learn how to work together, this is one of the objectives of the International Space University. I am proud to be the Chancellor of that University, in addition to being the Director-General of ESA, but there is a common point

between ESA and the International Space University, they are children of cooperation. ESA has 19 member States of Europe working together, I can tell you that this is not every day easy but it is every day successful and ISU is also an international cooperation.

I shall finish with my usual sentence that I have picked up from _____(?). The future, it is no use to predict it because you have 95 per cent chance to be wrong, the most important thing is to make it possible so let us work together to make our future possible. Thank you.

The CHAIRMAN Thank you Mr. Dordain. I just inform you these are just introductory statements because then you have the opportunity to put questions to our guests.

Mr. Leonov, please share with us ideas on further development and challenges in human space flight programmes and also some historical considerations since you were one of the colleagues of Yuri Gagarin. He was part of the first team of the Soviet cosmonauts.

Mr. A. LEONOV (Cosmonaut, Russian Federation) (*interpretation from Russian*) Thank you Mr. Chairman.

Mr. Chairman, may I call you Dima(?). Dumitru Prunariu, a colleague, an astronaut, a cosmonaut, ladies and gentlemen.

It is the greatest honour for me to be here before you. I spent 12 minutes to walk, or to fly, from the Black Sea to the Yangtze River, 5,000 kilometres, and 46 years of my life it took me to walk as far as this podium. On the day of the fiftieth anniversary of the United Nations Committee on the Peaceful Uses of Outer Space here I am saying thank you. Thank you for your efforts in making sure that that becomes a possibility, the peaceful uses of outer space.

Yuri Gagarin and some wise people thought far ahead to ensure that we should recall that extremely important event now, 50 years since, because if we do not do it 50 years later who is going to recall it 100 years later, maybe nobody. Why was Yuri Gagarin so important? Why are we here today?

We must think back to those years, the 1960s, our country still bore traces of the war, wounds of the war, but the best engineers, the best thinkers were already thinking about outer space. The launch of the first Sputnik provided a major stimulus. What comes next? A human being? A manned flight? Who is that human being going to be? What will he represent for humankind? The most important thing probably was that that person should be a person of his time and it was time itself that chose Yuri Gagarin. Now, 50 years on, we can say with assurance the time was right, Yuri Gagarin brilliantly lived up to the task.

Of course, speaking from our situation here today, these ladies and gentlemen have spent months in outer space. At that time it was just 108 minutes, a very short time, but 108 minutes that contained centuries in concentrated time. As of the present time, more than 500 people have done that and our dear friend, astronaut Neil Armstrong, had something very wise to say, he called all of us into space, he said about Gagarin. All of us, all of us sitting here. My friends, I have many stories to tell about all of them. They have been chosen from the chosen in each of their countries. they are the best experts anywhere in every discipline and now I want to think back again to Yuri Gagarin's flight.

He was 27 years old, a young man, a pilot flying state-of-the-art aircraft at the time. He had been trained at the Higher Engineering Academy and, at the very first news conference, he said something that essentially became a programme for all of humankind. Having circled the Earth on the Vostok spacecraft I saw how beautiful our blue planet was. He had been the first to see all of it on behalf of all human beings everywhere and he said, my fellow humans let us preserve and multiply the beauty of our planet rather than destroy it. It took him 108 minutes to understand all that and it is no accident that the Committee on the Peaceful Uses of Outer Space was set up right after that.

For 26 years we have had something called Associated Space Explorers, an organization bringing together all cosmonauts and astronauts of the world and those of my friends and colleagues sitting here are very active members of that Association. We ask nobody for money, we meet every year once a year, in different countries and discuss issues that humankind has not yet given sufficient thought to but we are ahead of our time, we know what the issues are and we know what needs to be done next.

Here in this room, I would like to convey my thanks to those who have said good words about the Apollo/Soyuz programme. Again, think back to the past, the 1970s, the height of the Cold War, a very tense situation here on Earth and the leaders of two countries, President Nixon, Fletcher the NASA President, Premier Kosygin of the Soviet Union and academician Keldysh, President of the Soviet Academy

of Sciences, more than anybody else these individuals were aware of all the problems that existed on Earth. It was a dangerous time indeed and these people spoke on the phone and then got together and decided that, in that tense situation, the right thing to do would be to send into outer space two spacecraft from two continents, two hemispheres, to dock them together so that those guys could work together for a week or 10 days on behalf of all humankind. Six billion people watched, listened to the mixture of Russian and English when they spoke to everyone on Earth. Good morning America, good morning Soviet Union, good morning France, those were words spoken from the heart by people who had had a chance to shake their hands in outer space. That happened in 1975 and when, after that mission, Tom Stafford, the wonderful American astronaut, gave a press conference, he said, I am sure that this is only the beginning of cooperation in outer space. Indeed, it was.

Those sitting in this room here today are routine workers of outer space, this is part of what they do, this is their life, working together in space and I am sure it will be followed by cooperation in other areas, said Tom Stafford at that time and he was right there as well. I always recall with great pleasure and admiration that amazing person. After my flight I went to America, there is this famous jet propulsion laboratory in Pasadena and on its facade one reads these beautiful words, together we are better, and indeed we are better together. This Committee more than any other organization is testimony to that.

What is ahead of us in the future? We are going to keep working on the International Space Station. Today there is a crew of six, in its current configuration it weighs 400 tons, a solar battery with an area of 1.5 hectares, representatives of different countries are working up there and how many people are working to support the mission on Earth and nobody is thinking of working separately. This is a joint project, the Station will continue operating until 2020, according to the agreement, I think it will be possible to work well beyond that to install new laboratories, soon I hope it will be a Chinese lab. Is that true? Are you in agreement with that? We have to use all the advantages, the benefits, weightlessness chief among them. We can create all kinds of production facilities on Earth, nano-technology and so on but we cannot recreate a situation of weightlessness on the ground. We should follow Arthur Clark, a huge station with hotels, housing, experts, a factory, a production facility, make full use of weightlessness, grow various types of materials, crystals for example that can grow only in pure weightlessness. I would also like to say a bit more about this Association of ours, the Association of Space Explorers.

Over the last five years, we have worked on a complex topic, we have written to the United Nations about it, it is a matter of asteroid threat. You have all heard about the Tunguska meteorite, the Arizona meteorite, the others, and think for a second if all of that had dropped on a city, an urban area, it would be more terrible than Hiroshima. This is scary, this is terrifying. What we need to do to avert the threat, not to think of the end of the world, not to heed various scam artists and false prophets, we should know that today we have everything we need on Earth to detect the possibility of a close encounter, for near-Earth objects and asteroids pose a very serious threat to Earth and how to divert them or blast them and eliminate the threat. To get there we need a decision of the United Nations to set up a committee to make use of the work that has been done, the technology that exists today, powerful rockets, space systems, and work together to protect our planet and save humankind. That is something we should be thinking about. We did write a letter about it to the United Nations and we did conduct some serious research and I think the 50-year old Committee will pay attention to that. Thank you very much, dear friends, thank you.

The CHAIRMAN (*interpretation from Russian*) Thank you very much, Alexei.

(*continued in English*) Now I invite Mr. Chaabouni to share with us some views on the prospects of space science and technology development in developing countries, in particular in Africa.

Mr. R. CHAABOUNI (Minister of Higher Education and Scientific Research, Tunisia) Thank you Mr. Chairman. Distinguished delegates, distinguished panellists, ladies and gentlemen. I am pleased to be among you to attend the special celebration of the fiftieth anniversary of COPUOS and the fiftieth anniversary of human space flight. Moreover, I am delighted and honoured to join you this morning at this Round Table.

As we are all aware while space science and technology is a well-defined activity sector in frontier countries its development prospects in developing and catch-up countries remains highly conditional on the scientific and technological context and know-how of these societies. Therefore, I will present the key Tunisian space science and technology development steps as an illustration of such a development in a developing country and carefully generalize to similar

ones and close my intervention, as you said Mr. Chairman, with prospects as to the global development of this sector in Africa.

Nowadays, developing countries are faced with unprecedented challenges where their quest for achieving the Millennium Development Goals are augmented by additional global challenges, such as climate change, energy shortages, infectious diseases and food security. To tackle such challenges the world as a whole is trying to make the best use of available scientific research and technological solutions and working hard to innovate in order to apprehend the yet to be solved problems albeit the sizeable gaps between countries and regions.

It goes without saying that space science and technology have played a _____(?) role in helping society deal with natural resources management, agriculture, desertification, disaster management, urban management, to mention just a few. During the early 80s most African countries initiated their space science and technology programme with the help of and assistance of international institutions and as a response to the utilization of new and emerging technologies such as telecommunication satellites. For instance Tunisia, as an African developing country, started its space development activity in 1984 by launching its National Outer Space Commission followed, in 1988, by the inauguration of the National Center of Remote Sensing. These national institutions, with help and assistance of related _____(?), designed and executed several national programmes and projects pertaining especially to Earth observation, environmental and coastal monitoring, urban and rural planning, desertification monitoring, natural risk monitoring, agriculture management and weather observation.

For the attainment of national space capabilities, most African countries successful space effort focused on capacity building in space science and technology with appropriate educational system especially at the higher level and adequate engineering training and promising research activities. Besides these burgeoning national space science and technology programmes, African countries got involved on the regional and international level. For instance, Tunisia is a member of the Regional Centre for Remote Sensing of North African countries, the Regional Centre of Science and Space Technology for French-speaking Africans, which is in Morocco, the League of the Remote Sensing Centres in the Arab World, the African Organization of Cartography and Remote Sensing, the Inter-Islamic Network on Space Science and Technology and, of course, COPUOS.

Despite the above relative successes and in order to further leverage the benefit of space science and technology, African countries still need to gear their respective national and regional space agendas towards sustainable national development and the development of new resources particularly attaining capabilities in relevant space sciences and technology that would impact on their socio-economic systems especially their industrial make-up and job market.

Nevertheless, due to the elevated costs of space technology and products and the challenges of sustainable technology transfer project, the development of space science and technology based solutions were delayed and most of them were limited to the pilot project phase only. This repetitive state of affairs rendered the progressive and sustainable development of indigenous space know-how difficult. For the future development of Africa and as a continuation of the on-going national agenda, it is highly pertinent to further commit ourselves to the development and growth of indigenous capacity in space and technology in core areas, such as information and communication technology, navigation and Earth observation. These technologies are the bedrocks of several application areas presented earlier and key socio-economic development _____(?).

_____(?) and in order to consolidate previous assets, it is also necessary to develop a pan-African space policy that reflects the common interest of the African nations pertaining to space and technology. Enhanced cooperation and coordination between African space institutions and agencies; promote bilateral and multilateral investment projects conducted with partner space and technology frontier countries; increase the commitment of politicians and decision-makers as to the development and application of space science and technology and, finally, extend the use of space technology to novel and emerging applications such as global health, education and transport. Thank you very much for your kind attention.

The CHAIRMAN Thank you Mr. Chaabouni.

Now I invite Mr. Melvin to have an intervention and to answer a simple, or maybe a very complicated, question. Could you please share with us your perspectives of why education and outreach programmes on space are gaining importance.

Mr. L. MELVIN (Associate Administrator for Education, NASA) Distinguished delegates, Mr. Chairman, distinguished colleagues of the Round Table, I am very honoured and humbled to be here.

In 1997 I went to Houston, Texas, to interview to become a US astronaut. During this process I met Captain John Young who was a Gemini astronaut, he flew on the Apollo, he walked on the Moon and then he was the first commander of the Space Shuttle. A very distinguished and also a very humble man who made a significant impact on the world with space flight. There was a moment in this interview process when he turned to me and he said 'Leland, if we don't continue to explore as a civilization we will falter' and that is why COPUOS is here to use the peaceful use of space.

As a child I grew up in a family of educators, both of my parents were middle school teachers and, to this day when I go back home, people tell me what impact my parents had on their lives, not just in education but as relationships, as building communities. There is an African proverb that says 'It takes a village to raise a child' and we are that collective village here, to help ensure that we continue to motivate and inspire that next generation of explorers. Exploration is intrinsic in the core fabric of who we are as a civilization. Alexei said it very succinctly, together we are better.

I had an opportunity to fly on two Shuttle flights, STS-122 and STS-129 in 2008 and 2009 respectively. Before getting assigned to my STS-122 flight, we were to install the European Space Agency's Columbus module. So my job, as a rookie astronaut, was to use the robotic arm to reach down in the Shuttle bay and attach the Columbus module to the International Space Station, as a rookie. I think ESA had been waiting many many years for this to happen and, when I first got assigned to the flight, there were some German flight controllers in Houston that I met and they congratulated me on my getting the assignment and, as I walked out of the room, one flight controller stopped me and said 'Congratulations, Leland, we have been waiting nine years, don't screw it up!' I did not so my colleagues are happy with me. The one thing about this space venue, if you think about all the technology, all the technological feats that we do, from 12-minute space walks to 8-hour space walks, we have come a very long way but one of the main things that we need to get out of this is to help inspire that next generation of explorers.

Throughout the history of, at least NASA space programmes, we have had a lot of tragedies, Apollo 1, we had a Challenger accident and we had the Columbia accident. When the Colombia accident happened we were in the process of starting off this educator astronaut programme that Mr. Chairman had mentioned in my bio and 1 February 2003 was a very fateful day where Colombia did not make home, it broke up over Texas. That night I went to David Brown's parents home in Washington, Virginia, and went there to console his parents on this very fateful day. This was another turning point in my life because David's father, on the night of the accident, looked me in the eyes and he said 'my son is gone, there is nothing you can do to bring him back but the biggest tragedy would be if we do not continue to fly in space to carry on their legacy'.

That is what it is about, the legacy. It is the future, it is the future of our world, it is the future of us working together as one civilization to make a difference. My charge from that point, after talking to his parents, was to do whatever I could in my power to carry on the legacy of those that have fallen, to ensure that the children's children's children's children have a planet, have a world, have a place they can call home, that we develop programmes using this peaceful platform to ensure that every kid is inspired.

This is a slide of us working with strategic partners. This is LEGO, every child on the globe knows what a LEGO brick is. We have a current programme where we sent up four LEGO kits to the International Space Station to allow students to build their LEGO activity on the ground and then the astronauts actually build the same thing in space to try to let them understand how their machine on the ground would behave in the microgravity environment. When I think about future applications for education and for space it is so imperative that we, as a civilization, use this platform to kick off education activities.

In 2003, as I mentioned, we had three teachers from the US become astronauts and they have all flown in space, they have all done space walks, they have done robotics, they have done the same things that every career astronaut has done. The importance of using this platform to help inspire and motivate is paramount in us continuing to carry on the legacy of those that have fallen and to ensure that future generations have an opportunity to believe and dream and explore. Thank you very much.

The CHAIRMAN Thank you Mr. Melvin for an interesting intervention.

Now I would like to invite the first Chinese cosmonaut, Mr. Yang Liwei, to share with us the rationale for placing human space flight as a highest priority in national space programmes and some other considerations he wishes to share with us.

Mr. L. YANG (Astronaut, China) (*interpretation from Chinese*) Distinguished Chairman, ladies and gentlemen, distinguished colleagues, good morning.

At the outset on behalf of the China manned space engineering office and the Chinese manned space engineering delegation that is here to attend this session, I would like to thank UNOOSA for their kind invitation. We feel privileged to have this opportunity to meet our friends from around the world in the beautiful city of Vienna. Here we offer our warm congratulations on the convocation of this august event and pay our heartfelt tribute to the official space agencies executives, astronauts, experts and scholars from various countries who are gathered here to attend this session.

COPUOS has been around for 50 years. The Committee has made important contributions to the development of the space endeavour of mankind and the noble aspiration of putting outer space to peaceful uses. The annual sessions create a very good platform for sharing, for comparing notes.

In 1969, Gagarin walked in the orbit of the Earth and signalled that our habitat extended into outer space. In a broader sense, the progress in manned space flight also enhances the overall national strength and the prestige of a country, it plays a huge role in that department. It also reflects the overall national _____(?) of a country and the level of development in economic and social sense. In another sense developing manned space flight is also very important to the development of space science and technology and applications, in particular in information, materials, energy exploitation and application, it has a unique role to play. It is something that all countries in the world pursue in the 21st century. We should be aware that manned space flight contributes to sustainable socio-economic development and the development of social, culture and civilization.

China's manned space flight programme has been in place for some years and has generated the following benefits and results. First of all, it contributes to the national cohesion and rallying power of the nation and also, in terms of the programme, we have blazed a new trail that is suited to the national conditions and realities of China. We have made explorations along this direction, we have also overcome a lot of technological challenges and barriers which have catalysed the development of related science and technology. We have also brought up a contingent of young engineers and scientists, we have developed some supporting and ancillary equipment and facilities such as Jiuquan Satellite Launch Center and Beijing Space City. It also has enriched our experience in large-scale space project management.

Today we are privileged to be gathered here in Vienna. We all aim for the same goal, that is the peaceful use of outer space to benefit all humankind. Mr. Leonov also referred to this development in China, we are from different countries, different nations, different cultural backgrounds, we are gathered here for the same cause. On this occasion, in order to better promote our international cooperation and space activities, I would like to take this opportunity to give you a brief presentation on the manned space flight programme of China.

My presentation will be in three parts. First of all the history of development, Beijing, next steps and the third part of the presentation is about the way we manage our programme so that more people will get to know our programme to facilitate our future cooperation.

The programme was approved by the Chinese government on 21 September 1992. It is a three-step strategy. Step 1, manned spacecraft, i.e. to complete preliminary experimental manned spaceship engineering and to conduct experiments for space application.

Second step is the installation of a space lab. We will master the technology of EVA and rendezvous and docking of manned spaceships and spacecraft, launch space labs and solve short-term man-tended space application problems with a _____(?).

The third step is the construction of a space station. Our plan is to build a 20-ton scale module to solve long-term man-tended space application problems on a larger scale.

A brief review of the 19-year trajectory of our programme. In 2003, I accomplished China's very first manned space flight and that was a breakthrough in the Chinese space technology. In 2005, Shenzhou 6 was launched and we accomplished multi-man, multi-day space flight. In 2008, we launched Shenzhou 7, our astronauts performed EVA, making China the third country to independently master EVA technology.

Moving on to the second part of the presentation, future development. The second goal is to realize the rendezvous and docking of spacecraft and to master the space technology for continuous manned space activity. The project plan is to launch Tiangong 1 spacecraft, followed by Shenzhou 8, aiming to conduct

the first unmanned rendezvous and docking. After that, in the first and second half of 2012, we will be launching Shenzhou 9 and Shenzhou 10 spaceships in order to achieve manned and unmanned rendezvous and docking through a series of experiments.

Tiangong 1 space lab is not only a target spacecraft for rendezvous and docking but also a simple space lab. The plan is to launch 1-2 space labs before 2016, preparing for the building of a proper space station. Then, around 2020, the space station composed of 20-ton modules, will be developed and launched thus mastering the technology to build and operate combination modules for a near-Earth space station to acquire capabilities for astronauts to stay in space for a long time, to carry out space application and technological experiments on a larger scale. Thereafter, we will be maintaining, updating and expanding the manned space station in order to have a permanent manned vehicle in LEO so as to advance space technology and promote capabilities in space resource exploitation, making our contribution to the peaceful use of space resources and exploitation of deep space.

The third part is about the management mode. China's manned space project consists of 13 systems respectively carrying out development production, testing of systems, of astronauts, space application, manned space ship, cargo space ship, space lab, space station, launch vehicle, launch site, TT&C landing site, etc.

Around the country we have more than 110 academies, research institutions and units undertaking the research and development work. We have more than 3,000 units that are undertaking collaboration and support. The purpose for China to develop a manned space engineering course is to explore the universe and make peaceful use of outer space to benefit humankind. We are ready to engage international cooperation on the basis of mutual respect, equality and mutual benefit.

In conclusion, the China manned space engineering office as the specialized agency for the management of the manned space flight programme of the Chinese government, we are ready to have exchange with other space agencies in the world actively explore and have international cooperation in building, operating and applying space stations thus making joint efforts to advance world space technology and making a contribution to the peaceful use of outer space for the benefit of the whole world. Our participation in this session also reflects the charm of manned space flight.

On 12 April I visited Russia and attended the event in Moscow commemorating the fiftieth anniversary of Gagarin's space trip. What touched me deeply was the impression that no activity like space flight can move a country with such power, no project can move human beings with such deep profundity therefore, on that occasion, I was deeply touched and I love the cause I dedicate my life to and here I would like to extend my best wishes to space technology. Thank you.

The CHAIRMAN Thank you very much Mr. Yang Liwei.

Now Mr. Acuña Arenas, I would like to ask him what, in his view, are the prospects for regional and interregional cooperation in space activities?

Mr. J. ACUÑA ARENAS (Head, Chilean Space Agency) (*interpretation from Spanish*) Thank you Chairman. I feel very honoured to speak at this august panel of astronauts and I can tell you that I only arrived to a much closer orbit in space, much closer than they reached. Before tackling the technical aspects of this presentation I would like to devote a few words to express deserved recognition for this historic milestone which we are commemorating this year.

Half a century ago, a child of this planet rose beyond our realm to discover that the Earth is beautiful and we should take care of it. The legacy of Gagarin continues to be more relevant today than ever, that his odyssey is still inspiring new generations who are identifying with the opportunity of equalling his feat and the dream of extending the realm of humanity beyond our natural confines.

Today, in Chile and in the larger majority of Latin American nations, there is an increasing awareness of the fact that we are part of a space generation, that we are protagonists in the speedy development of the use of space technologies and the fact that support for productive activities of a society, as well as its safety vis-à-vis natural and man-made disasters such as global climate change, depend in part on our space capacity or the use of its technology.

There are more and more of us who understand that our current development may have sustained stimulus through the peaceful use of outer space and it is precisely the development of a country and indeed the future of humanity which is not only related to the ability to design, implement and operate space systems but also is related to the use of such capacity and support of productive and social processes, acquiring special importance in the exchange of this experience

among the various organizations within our countries and indeed in the various regions of the planet as well as between regions of the planet.

Today our country, like many other countries in the region, is making exceptional efforts geared to educating the population about the advantages of developing capacity in the peaceful use of outer space. Our agency advocates a strengthening of technical and specialized professional community in constant contact with its fellows in the region or other regions involved in a scientific and technological exchange which is productive and consistent with our needs. Since this is the fundamental premise, what are our priorities?

The first is the building of a dynamic space relationship among the nations of Latin America and a relationship of trust in which the peaceful use of space is the best argument for bolstering ties between fraternal nations. The second, is an understanding of the extraordinary value of our local experiences in the use of space technology in the context of natural disasters as well as on search and rescue missions. Perhaps the most emblematic example of this is the successful experience in the use of satellite imagery in Chile after the disastrous earthquake and tsunami in February of last year in Chile. On that occasion, we were able to benefit from the great generosity of the international community receiving more than 1,000 satellite images which helped in managing the disaster and which were extremely useful to us in the reconstruction process.

In conjunction with UN SPIDER we are planning on the way of extending this experience to other nations. We must also pool our efforts as nations seeking to bringing about full-fledged development in establishing robust cooperation on space projects and, to this end, we shall be guided by the great example set in our region by Argentina and Brazil. These countries have developed, or are developing, major projects based on regional and interregional cooperation. We would highlight the forthcoming launch on 9 June of a satellite by the Argentina CONAE agency in conjunction with other agencies. We believe that we should be studying, supporting and strengthening, all initiatives conducive to the efficient and effective use of Earth observation applications allowing for the use of satellite imagery in support of productive processes an endeavour which, in some countries, has made it possible to increase gross domestic product thus redounding to the better well-being of their inhabitants.

An understanding that space technology is a high value tool for overcoming our people's isolation, we must reach out to the most isolated corners of the world with communication mechanisms and information services which will undoubtedly be based on satellite platforms. We again know that the best means of achieving this is international cooperation in the context of joint projects and in this context Dr. José Luis Cárdenas, a teacher at the University of Santiago and a technical adviser to the Chilean Space Agency, will make an interesting exposition on a project geared to supporting our indigenous native peoples. We believe that cooperation on space issues is very extensive and it can be forthcoming in unexpected areas as happened during the rescue of the 33 Chilean miners who were trapped underground, an emergency during which Chile benefited from important medical recommendations from NASA among other agencies of different nationalities. Together with NASA we would like this experience to help the international community especially given the similarity between extreme isolation in outer space and that beneath the ground and commencing this work through a seminar between NASA and the Chilean Space Agency to be held in Santiago on 17 June this year.

The Chilean Space Agency has fostered the development of major regional cooperation projects on geospatial information and we would like to express thanks for the important support extended to our country again on the occasion of the earthquake and tsunami of 27 February last year. We have held workshops on _____(?) in Guatemala, Ecuador and the Americas Space Conference, which is an important regional cooperation forum where we demonstrated our experience in the use of satellite imagery in emergencies and thus help to bolster and strengthen the establishment of multi-sectoral groups able to process space data to provide services in the field of disaster and risk management in support of the national risk and emergency management offices while also disseminating knowledge on the use of new technologies such as radar and lidar.

We have also initiated working contacts to support the activities of UN SPIDER in the region through the use of satellite imagery in emergency situations arising from natural or man-made disasters and make the best possible use of mechanisms such as the Charter programme, SpaceAid, UNOSAT, the Disaster Management Support Group amongst others. We also restate our commitment to support regional cooperation activities which will make it possible to institutionalize the use of space data and technologies within the governmental bodies which are responsible for risk and/or disaster management in support of the efforts undertaken by UN SPIDER to bring about such institutionalization.

Another example of regional cooperation is the regional project with the support of the Inter-American Development Bank which has re-implemented an Argentina/Paraguay/Uruguay/Chile with the purpose of implementing the use of remote sensing tools in support of agricultural activities in each of our countries. In the context of interregional cooperation, we are in the throes of coordinating our work with a view to signing agreements on space issues for the European Union, China and Japan. Our country is currently preparing the planning tasks for the GEO of the Americas, which will be developed in Chile this year, and we are carrying this forward with substantial cooperation of the United States and Canada. Together with this, we are making major efforts to ensure that, in March 2012, we can hold a meeting with the directors of the space agencies and related agencies that are members of UNOOSA in the context of the International Air and Space Fair to be held in 2012 in Chile.

Our links with the universities are close. We know very well that it is academic institutions that lead the process of innovation through technological applications and research and in this context we are developing projects with a number of different universities from our country, thanks to major international support.

I should mention the MMARS project, being developed in conjunction with the Antofagasta University, which involves installing a technological park in the Atacama desert owing to the geological similarity it has with the surface of the planet Mars. We are enjoying support from NASA and the Mars Society among others. On this occasion, I have with me a delegation from this university, headed by its science and technology director, Dr. Carlos Araya. The delegation of Chile also has _____(?) who is training to be an astronaut. We are developing major projects using space satellites which has inter-organizational activities with the global lunar team heading this project in the context of Chile.

I would also like to mention a project we are developing with Roscosmos with whom we are also studying a cooperation agreement. We are also developing a project in conjunction with the University of Chile for developing and launching a satellite which will require major international cooperation and we are looking to resolve the launching vehicle issue.

Owing to all of these reasons, the Chilean delegation has also included major representatives from Chilean universities as well as geospatial technology-using organizations. Here I would like to refer to cooperation within the country as well as projects developed in other countries. Here you can see down the length of our country the various projects being developed from the north to the far south near the Antarctic.

This represents regional cooperation, the various projects on the American continent involving regional cooperation which will allow us to make advances in space technology and promoting the development of our countries. Then, interregionally on the next slide, here you can see different projects involving various countries Chile, Argentina, Brazil, geared to interregional cooperation. We have relations with America, Europe, Asia and the Pacific and this is an area we need to develop further in the future.

Lastly, I would like to add that the Latin American peoples represented in their space institutions want to be protagonists and not mere bystanders in international space development. Not by creating bureaucratic organizations but rather through tangible projects which jointly will allow us to press forward with sustainable space development to benefit our peoples. Thank you.

The CHAIRMAN Thank you Mr. Acuña Arenas for your intervention.

Now Mr. Inatani, I would like to ask him from his point of view, what prospects will space exploration offer to humans in the future, taking into account the outstanding experience with the Hayabusa project.

Mr. Y. INATANI (JAXA) Thank you Mr. Chairman and distinguished delegates. It is my honour to have an opportunity to talk about what we are doing and what we are thinking about for the future.

Unlike the established people here today, I am just a poor professor who is doing technical studies but I would like to be having a good vision for the future. In that context, I prepared some _____(?) to share a better understanding of what we are doing.

I was introduced as the Hayabusa, the asteroid explorer, _____(?) to the asteroid in 2003 but there were many unexpected things happened, we are very luck and the spacecraft came back. Last year, just one year before, 13 June that was the day of the returning flight, I show a little bit about the spectacular view when we have a re-entry flight from outer space, very high speed entry, this was in the Hayabusa mother ship burn out. In the original planning we did not do that,

the spacecraft was very much handicapped so that is why we did it. The mother ship was destroyed, here it is you are looking at that. This is the capsule recovered in the Australian desert and thanks to the Australian people for helping us for the recovery operation and the safety issues and the native people around there were very cooperative to us, thank you very much indeed.

Now, our scientists are busy doing this kind of things, this is the dust from the asteroid, that is a very small particle but our scientists are doing this kind of investigation and hopefully they will make new findings out of this asteroid material in order to have a much better understanding about our solar system, evolution and bodies in the solar system and things like that. We have accomplished that last year and, out of these missions, we are doing many inter-planetary missions, to the Moon, to Venus and Mercury.

Changing into the next story. This is a space station, we have built it already and people are thinking about what is the next to the space station. One goal we are thinking about a lunar or a Mars base or the sustainable presence of humans in these very far remote areas but we have an accomplishment on the space station _____(?) sustainable presence in low-Earth orbit but far from the Earth is very much different situation and we have to develop much newer technology and architecture in order to be able to do that. In order to do that, we have to have the sustainable _____(?), we need many stuffs to be carried and one of the obstacles preventing us from doing that easily is the launch costs from the ground to orbit. Some people in the commercial sector are doing this improvement for this space transportation architecture, some people said that the commercially driven activities like tourism will be one of the drivers to improve this situation.

For example, the launch costs for _____(?) cost-reduction is necessary and if we realize it we can buy a ticket for a space ride and things like that. When we do that on a much larger scale, space utilization will be possible. That is a solar power station in orbit and if we launch hundreds of this type of power station in orbit we can take care of the world demand for energy. That is still in our dreams but if we improve our capabilities it would be possible. Taking a look at a much longer time scale as it is we have to have the possibility to have this kind of global crisis and disasters. So the thousands years, million years, billion years there are many crises we are going to face as Jean-Jacques Dordain says and some other people say this kind of crisis management and we have to use space for solving this kind of crisis. In order to this we need the observation and to control it, to manage it, to change the orbit of asteroids and things like that. There are many question marks but at the bottom we have several billions of years, far from now, but there is no question mark on it which means there is no doubt we have to do that in order to have survival of human beings. In that context, there are ideas, the exodus by all people, selected people, there will be many many problems we have to solve and we are not ready for that, we do not have a solution for that, that is the reality.

We have to improve much more about how to travel much better and how to stay in and how to utilize the space much better otherwise we do not have a future for a longer time period. Can we smartly do these things? In order to do that no single nation can take care of that. In order to do that how do we coordinate our capability, how do we work together and things like that? In order to do that, think about taking these kind of things into consideration. This is the fiftieth anniversary of this and space activity worldwide, let us think about the next goal for another 50 years, that would be a good opportunity to think about that. That is my proposal for this meeting. Thank you very much.

The CHAIRMAN Thank you Mr. Inatani.

I would like to sincerely thank all members of the Round Table for their views and important messages given to us.

I would now like to open the floor for questions and I have already expressed the wish of one of the Vice-Chairmen of the Committee to be the first to speak, it is Mr. Raimundo González Aninat.

Mr. R. GONZÁLEZ ANINAT (Vice-Chairman, Chile) (*interpretation from Spanish*) Thank you Chairman. I would like to congratulate you on bringing together such a hallowed panel. I would like to share some concerns and raise some queries that are still outstanding.

Firstly, it is clear here that there is deep asymmetry in terms of space technology development, some are in the forefront and others are making great efforts to catch up and reach the level they need to reach.

The first point is that the new material, the prime resource of the planet is the need for education, we cannot have innovation, knowledge, dissemination, democratic dissemination of knowledge if we do not develop grey matter and we need the new technology

to do that. It is difficult today to achieve this bearing in mind that we face a couple of structural problems. Firstly, only 7 per cent of the world's population has some sort of college education, 7 per cent which is virtually nothing compared to the overwhelming majority of humanity which has not reached the essential level of educational development for their development as human beings.

The second point is access to knowledge and here I would like the panellists to clarify what they understand by education. It is difficult to disseminate space knowledge if you do not have broad universal access and democratic access to knowledge of the most essential things when we are tackling extraordinary serious challenges and very acute challenges such as those referred to by the representative of the Holy See. Not so long ago Pope Benedict XVI referred to how space issues relate to poverty and education, all of which basically fit within the so-called Millennium Development Goals that were adopted by the UN General Assembly in resolution 55/2 in which to some extent were highlighted as well by UNISPACE III +5 with an important chapter devoted to space education and the synergy between this and the MDGs as well as synergy with the Knowledge Society and space technology synergy with the Commission on Sustainable Development. In other words, I think we have managed to capture and grasp an important aspect of a technical nature and of a scientific nature which should prompt us to go on making such as has been going on Latin America for a long time now.

Ever since 1982, UNISPACE II in one of its paragraphs in the final report referred to the need for developing regional and interregional cooperation because we think that these models which were then reflected in the Conference of the Americas, we want those models to be replicated on other continents with an expression of solidarity which is now taking a normative standard setting dimension. We need to create a conceptual and practical link which is much closer between cooperation emerging from these wonderful challenges we face through science and practical applications needed by people in developing countries.

We also need to take into account there has been a paradigm shift on cooperation issues. We can no longer talk about international cooperation, we talk about global cooperation taking into account the profound horizontalization of international relations with the emergence of new issues and new players. I would like to hear the opinion of the panellists on the possibility of establishing true synergy between space, technology and the eight Millennium Development Goals which we all know so well. Thank you.

The CHAIRMAN Thank you very much Mr. Raimundo Aninat.

Now the floor is open for questions. Nigeria.

Mr. A. AYODIMEJI (Nigeria) Thank you Sir. We want to thank you and want to thank the Round Table as well. It is not every day you get to have distinguished astronauts and cosmonauts and I think indeed for those of us who are here are very privileged to be part of these discussions.

The distinguished astronaut Melvin said that, referring to the African programmes, two people perhaps bring babies to life, it takes a village to raise it. I can also add the fact that another African proverb says that very few people clear the path to the market place but thousands and thousands of people _____(?). In this particular context, we want to _____(?) distinguished astronauts _____(?) here are the few people who have cleared the path to the market place for the billions of _____(?) who have been through this particular process.

For us, especially in the developing world and I also make bold to say Africa, space technology and application of space technology to development is the heart of the matter and, to use the cliché, it is also the matter of the heart for us. That is why we want to ask one or two questions.

The distinguished Vice-President has also raised the issue, the question of whether space technology as far as the development goals are concerned. The question I would like to put to the panel, in terms of development cooperation how far have we fared because when we look at some of the _____(?) of this cooperation, this meeting COPUOS, sometimes we seem to get the impression that there is so much that is being held back which could be used. Correct me if I am wrong. I had the occasion to be in Nairobi, the United Nations Environment Programme, we got satellite images donated to developing countries for use in disaster management. By the time we looked at it, it looks like those figures, data we had were a little bit outdated. I want the members of the panel to please help us. How has it, in terms of assessment of regional cooperation and development, do we think of the possibility of a space university in a developing world? Or in Africa?

The second aspect of it, of course, has to do with the generational issue. The distinguished

cosmonaut from Russia who also spoke about Yuri Gagarin and others are a generation that have led us and _____(?) for us. In terms of the younger generation, what exactly are we looking at? The distinguished astronaut Melvin spoke about images of young children and others because these are the generation because I am putting that in context of what Professor Inatani had spoken about, how the next 50 years in terms of how do we use smartly this knowledge. I presume the people we are targeting to be able to take us _____(?) younger generation that is coming. _____(?) very happy with the space generation that is here as part of this meeting and we express the wish, within our space programme, to work closely in Nigeria with this _____(?) as far as _____(?) are concerned. These are just my comments and a few questions which we will be very grateful to have a reaction to. Thank you.

The CHAIRMAN Thank you very much. Did you address the question to a specific person on the panel?

Mr. A. AYODIMEJI (Nigeria) I presume the distinguished members of the panel are knowledgeable enough to be able to .. but for example the distinguished astronaut Melvin who is also involved especially in _____(?) education, perhaps can help us further in terms of his own experiences and how do we work together and what _____(?) transferable to us especially in the developing world.

The CHAIRMAN Thank you.

Mr. L. MELVIN (Associate Administrator for Education, NASA) Thank you for your question, it is very _____(?).

I think there has to be a certain baseline of education with young learners especially in Africa, NASA has now signed a memorandum of agreement with the US Agency for International Development. One of things we want to try to use is the allure of space because one of the issues in Africa is literacy for young girls. How do we get everyone at the same playing field, the same level, and allow them to at least have the entrée to be able to utilize the space technology, the space applications.

USAID and NASA are planning to use the inspiration from space to actually reach out to young students for STEM (science technology, engineering, mathematics) but there has to be a certain baseline level of academic preparation to allow them to utilize these assets. It is a very difficult problem. If a child is inspired no matter what technology or what things that they have, if they are inspired lots of times they will figure out a way to get the things that they need for education but it is going to take like a say this village and this community to ensure that we all get them to that base level.

Mr. A. LEONOV (Cosmonaut, Russian Federation) (*interpretation from Russian*) To have a discussion on the matter we need at least two individuals, one talking the other listening. At present a lot has been done at the International Space Station but very few places around the world can benefit from that. A country, any country, at present should be able to do that, the world has reached a high enough level in terms of knowledge, experience, to make decisions regarding the use of space technologies. These need to be government decisions, to create a periphery, devices or receiver stations that should be able to receive those satellite data. Thank you.

The CHAIRMAN Are there any other questions?

Mr. F. FLORES PINTO (Brazil) (*interpretation from Spanish*) Thank you very much Mr. Chairman. I would like to put a question to the participants on this panel which seems to me very interesting, very useful, very beneficial.

In Brazil we are under the impression that one of the burning needs of the developing countries is not just to have access to information technology but to have the necessary equipment, the necessary material, to make sure that countries have access to the satellite data. In the most recent sessions of COPUOS we tried to draw the attention of delegations to this issue. There is a need for a programme of cooperation whereby countries get the wherewithal, the necessary assistance, so that they might install equipment that would be able to receive, process, analyse and apply satellite data.

There are 200 countries in the world and less than half of that number is in a position to perform all of those types of work. Today, a large part of humanity still needs to be able to accede to that type of work. This, of course, puts forward the question of capacity building in countries, enabling them to have access to satellite information and space-based technologies. We know there is a programme in Africa and Latin America with the objective of sharing satellite data obtained by China, to put it for free at the disposal of countries that need those data. It is essential that we give thought to setting up the minimal necessary infrastructure and to make sure that that information is made available to countries so that we proceed to create new actors, new stakeholders, in space activities.

The number of actors has increased, that has been mentioned here, but there are still a large number of countries that are outside the loop as it were. We have to pursue a policy of inclusion, including countries within the space activities circuit, expanding it to the largest possible number of countries and I would be curious to hear what the participants of this wonderful panel think about that. Thank you.

The CHAIRMAN Thank you distinguished representative of Brazil.

I would direct these questions to, if you agree, Mr. Dordain. You have experience in Europe with new commerce in the space arena. You have experience with eastern European countries becoming members of ESA and, of course, this example could expand, not as members of ESA, the methodology to raise awareness and also infrastructure in your countries, Latin American countries, African countries, Asian countries. Thank you very much.

MR. J-J.DORDAIN (Director-General, ESA) Yes, Mr. Chairman. I shall start by saying that cooperation is much more difficult than competition. Cooperation is much slower than competition. It took eight years to go the Moon, it took 40 years to make the International Space Station. This is normal because to cooperate together, be you high-tech or not high-tech, requires a mutual understanding and mutual understanding is not so easy. I have heard that maybe we could do more for the developing countries. Certainly, and there is certainly good will on the side of the space agencies, I have never met in my life a head of a space agency not willing to cooperate with others and not willing to share data. The only problem is, which data? We can offer data but there is 99 per cent chance that these data are not useful. I can tell you that this is not only a question of development, it took 10 years in a developed country like France to have a good understanding between the space agencies and the civil security organization, to understand how space data can be useful for civil security. We were speaking of data for natural disasters. It was not obvious from the civil security and start to understand what they can do with space data and it was not obvious for space agency to understand what was needed by those civil organizations. Just to say that we have to discuss, we have to develop a mutual understanding because we have certainly a lot of data, we have certainly a lot of capabilities but we have to understand what are the needs. We are also here to help education because education is certainly a key for that.

This is true that there are more and more actors in space and even more users of space. When I arrived at the European Space Agency we were 12 member States, today we are 19. So, yes, we know what means growing, in terms of actors, _____(?) life of the Director-General easier that I can tell you that but it makes ESA more successful because the more actors we are at ESA the more successful ESA is, it takes some time. Usually at ESA, this is our experience, it takes at least five to seven years for a new member State of ESA taking the full benefit of being a member of ESA because we need to build up mutual trust, mutual understanding and all that. Just to say that, yes we can do great things together but it will take time, so do not try to do that in one day, let us work together. We should not lose one day to discuss, we should not lose one day to try and understand each other but it will take much more to work and to get all the benefits that space can bring to all citizens of the world.

The CHAIRMAN Thank you very much Mr. Dordain.

Mr. Chaabouni will add something.

Mr. R. CHAABOUNI (Minister of Higher Education and Scientific Research, Tunisia) (*interpretation from French*) I wanted to add a few thoughts of my own. Coming from a developing country and the first comment is that indeed, for some years now, we have seen an increasing number of players in the field of the use of space technology and that is a fact. The point I would like to make is that there is a need to develop home grown capacity in States first and foremost, there needs to be a clear-cut choice to develop science and technology and to do that you need education and scientific education, that has to be done in the countries themselves. Once that has been done then of course this can be done with international cooperation, that assistance can be helpful, we need a common language and common projects because we all have our own interest in our States. What we are calling for from the developing countries is for there to be, alongside the effort we are making, support and assistance and an interest in support of our efforts. When you take a country such as our own, Tunisia, we have achieved a certain level and to go on to the next level then we need to do a job domestically but there is also work to be done in terms of international cooperation to give a real boost to the work we are doing.

There are two comments, first of all there is an entrance ticket which needs to be home grown and, once you have made that effort, there is a need to promote other forms of cooperation and multiply the ways and means of developing cooperation. It is not a single window or single shop at which you buy that

cooperation, there are various avenues, various possibilities. Thank you.

The CHAIRMAN Thank you very much Mr. Chaabouni.

Are there any remarks concerning the question put by the distinguished delegate of Brazil? I see none.

Now the last question, the time is running very fast as you see. We can take one last question.

Ms. A. CORNELL (Space Generation Advisory Council) Thank you Mr. Chairman and thank you to our distinguished panellists. There were very interesting presentations from all of you.

I wanted to ask in particular about education, it has been a key component of this discussion this morning but I wanted to focus a little bit more on a slightly older age bracket. Many of us were speaking in particular about younger children but for university students in particular that are already committed to science and engineering, how do we encourage them to join the space sector? In particular I think this is a question that is pertinent not only to developed space countries who are trying to replenish their workforce but also for many of the developing countries in the room today who are trying to develop this workforce to grow their space sector. Thank you.

The CHAIRMAN Thank you very much.

Mr. L. MELVIN (Associate Administrator for Education, NASA) It is a great question. As you mentioned in your question about inspiring younger kids to at least get in the pipeline to allow for more graduates and undergraduates that are looking into the science and technology, engineering and mathematics.

Using the space platform as a means of doing design challenges, giving these students the challenges from a space platform, global design challenges. I know that some of the programmes that we are looking at doing with NASA is to utilize this on a global scale. The funding, the resources that we are putting into education at NASA, we are 5 per cent of the Federal STEM budget, which pales in comparison to a number of the other agencies like the National Science Foundation, the Department of Education, and so forth. I think the biggest way that we can make the larger impact in helping the higher education sector is to form more strategic partnerships with corporations with education entities, with other organizations to ensure that these students have a path from their education to the workforce and to let them see while they were in school what those opportunities are in the workforce to make it more applicable for them to stay in school. There are a lot of students they get into the hard courses, they are difficult, they do not see this final application sometimes and so making that bridge between their academic career with what that future is out there and then using the space environment, using astronauts, using cosmonauts, using people doing downlinks from the International Space Station, to downlink into those schools to give them this inspiration. Lots of times it takes this bit of inspiration to get someone over that edge, to make them work harder, to make them be more motivated and dedicated. I think a combination of strategic partnerships with this platform of space as a peaceful means of helping inspire and motivate students to look further and explore higher. Thank you.

The CHAIRMAN Some considerations also from Mr. Jean-Jacques Dordain on the question.

MR. J-J.DORDAIN (Director-General, ESA) Yes, thank you Chair. Obviously I share everything that my colleague Mr. Melvin has mentioned. I would like to add that we have to make all efforts, and especially from the space agencies, to contribute to education and we certainly have to do that.

I would not like to give the impression that it is only budget for education which is important. I think that the most important things are space projects. I am from a generation, I was 10 years old when Sputnik was launched, I got my engineering degree when Armstrong stepped on the Moon and I can tell you that having spent my teenage life with space projects, all my friends of my generation, they all wanted to make space, they were all attracted by science and technology. We have to bring to the young generation challenging projects, new projects to attract them. Yes, we have to educate them but if we educate them with no projects behind that it will not go very far. So, we need challenging space projects and it is our responsibility to offer to the young generation the projects that I had myself when I was young. I am not so sure that we have still succeeded but we are working on that. There is one big difference between the student and myself, that they have more chance than me to see the world in 50 years from now.

The CHAIRMAN Thank you very much Mr. Dordain.

Mr. J. ACUÑA ARENAS (Head, Chilean Space Agency) (*interpretation from Spanish*) Yes, I too, on behalf of a developing country would like to express my full agreement with what Brazil has said

and what has just been mentioned. The idea is that this cooperation should become concrete, a critical mass amongst our students. Those who are scientifically very gifted, we need to guide them and show them how space development can support the development of their own countries. I remember when I was working on aircraft engineering in 1976, we were discussing space issues and I could never get away from it ever since. It is not just when you are very young, it is also in secondary education and in university education that we need to see how we can ensure that this development involves an improvement in the well-being of our peoples as a whole and how these applications can work in disaster management, in agricultural development, land management, various fields and I certainly am grateful to the countries that are very advanced in those. We need specific projects and I think that is vital but sometimes there needs to be a stay by a doctoral student in a space agency for two or three months so that when he or she goes back that information can be handed on to others, it would be a commitment that this technology will be used, so it is just a minor investment in this field can lead to great benefits in the longer term. Thank you.

The CHAIRMAN Thank you Mr. Acuña Arenas.

Are there any other considerations on the question put by the distinguished representative of the Space Generation Advisory Council? I see none.

I wish to thank all the panellists for their very valuable contributions to this Round Table and, before closing this morning's part of the commemorative segment, I wish first to congratulate NASA and the delegation of the United States for the successful landing of the Space Shuttle Endeavour, just a few minutes ago. It was the last flight of the Space Shuttle Endeavour after 19 years of exploitation. Soon it will go to a museum in the United States.

I would like to inform you about the order of our work in the afternoon.

We will then meet promptly at 1500 in the Board Room A. In the afternoon's part of the Commemorative Segment, the floor will be opened for addresses by United Nations member States related to the fiftieth anniversary of the Committee and the fiftieth anniversary of human space flight. I kindly draw attention of the delegations that the addresses are limited to maximum 5 minutes.

At 1815 there will be the official opening of the International Exhibition on Human Space Flight in the Rotunda of the Vienna International Centre. All delegations are cordially invited to take part in the opening ceremony. The opening ceremony will be followed by a reception hosted by the United Nations Office for Outer Space Affairs in the Mozart Room of the restaurant of the Vienna International Centre.

Are there any questions or comments on this proposed schedule? I see none.

I would like to inform you that there will be a press conference in the meeting room M7, organized by the United Nations Information Service. The press conference will be attended by Mr. Franz Viehbock, Astronaut, Austria; Mr. Alexei Leonov, Cosmonaut, Russian Federation; Mr. Yury Fedotov, Director-General, United Nations Office at Vienna; Mr. Dumitru-Dorin Prunariu, Chair of COPUOS; and Ms. Mazlan Othman, Director, UNOOSA. Samples of space food will be displayed at the press briefing.

During lunchtime there will be a screening of videos in this room, Board Room A, starting at 1400 with the following films:

'Yuri Gagarin: Chosen by Stars' by the Russian Federation

'Anniversary of the Golden Years' by the United States of America

'China's Manned Space Programme' by the People's Republic of China

This meeting is adjourned until 3 p.m. this afternoon.

The meeting closed at 1.08 p.m.