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Committee on the Peaceful Uses of Outer Space

Unedited transcript

619th Meeting
Monday, 14 June 2010, 10 a.m.
Vienna

Chairman: Mr. Dumitru Dorin Prunariu (Romania)

The meeting was called to order at 10.21 a.m.

The CHAIRMAN: Good morning distinguished delegates, I now declare open the 619th meeting of the Committee on the Peaceful Uses of Outer Space.

This morning we will continue our consideration of agenda item 5, General Exchange of Views, upon a request from some delegations to speak under this agenda item. We will then continue and hopefully conclude our consideration of agenda item 8, Report of the Scientific and Technical Subcommittee on its Forty-Seventh Session, continue and hopefully conclude agenda item 9, Report of the Legal Subcommittee on its Forty-Ninth Session, and item 10, Spin-Off Benefits of Space Technology: Review of Current Status.

Time permitting, we will begin our consideration of agenda item 11, Space and Society.

Following the plenary, there will be three technical presentations. The first one by Italy on "Use of Space-Based Information for Seismic Risk Management: An Italian Space Agency Pilot Project". The second one by the United States on "NASA Today and Tomorrow". And the third one by Japan on "JAXA Industrial Collaboration".

I would also like to draw your attention on the following.

The Action Team on Near-Earth Objects will meet today from 11.00 a.m. to 1.00 p.m. and from 3.00 p.m. to 6.00 p.m. in Room M0E19 under the chairmanship of Mr. Sergio Camacho from Mexico, with a view to reviewing draft recommendations for the international response to the threat of NEO impacts as well as preparing its interim report for consideration by the Scientific and Technical Subcommittee in 2011.

All delegates are invited to attend the UN SPIDER Information Meeting today at 1.00 p.m. in Conference Room M07 which will present the current status of UN SPIDER's Space-Aid Framework and current opportunities for collaboration.

A meeting for all delegations that are interested in participating in the 2011 Exhibition will be held at 2.00 p.m. in Conference Room M0E100 instead of M07 as originally scheduled.

At 6.00 p.m. today, there will be a ceremony to inaugurate the Global Navigation Satellite System Exhibit at the Permanent United Nations Space Exhibit in D08 corridor followed by a reception hosted by the United States of America.

I would also like to remind delegates to provide the Secretariat with corrections to the provisional list of participants so that the Secretariat can finalize the list of participants.

Any corrections should be submitted by no later than tomorrow afternoon.

Now I give the floor to the Secretariat for an announcement.

Mr. N. HEDMAN (Secretary, Office for Outer Space Affairs): Thank you Mr. Chairman. The following announcement from the Secretariat. The Chairman of the Working Group of the Scientific and Technical Subcommittee, Mr. Peter Martinez of South

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Africa, has asked the Secretariat to convey the message that he is available for consultations in Room M0E100 from now on until 1.30 p.m. this afternoon and it concerns, of course, the preparation for the Working Group meeting this afternoon and its document L.277. So the Chairman is available in M0E100 in this building now on until 1.30 p.m.

Thank you Mr. Chairman.

The CHAIRMAN: Thank you.

General exchange of views (agenda item 5)

Distinguished delegates, I would like to continue and hopefully conclude with our consideration of agenda item 5, General Exchange of Views.

The first speaker on my list to speak under this item is the distinguished representative of Belgium, His Excellency Mr. Frank Recker.

Mr. F. RECKER (Belgium) *(interpretation from French)*: Chairman, my delegation would like to start off by congratulating you and express our support for your work, guiding the work of the COPUOS session we are participating in. We are sure that your work will be crowned with success at a point in time when the Committee and its Subcommittees are tasked with important missions to respond to crucial issues concerning space activities and developments in this sector. And your mandate is also going to be comprising important events as well. There will be the fiftieth session of the Legal Subcommittee which will, no doubt, afford us the opportunity to think through the work organization done within that Committee and within the Scientific and Technical Subcommittee as well in order to enable these two organs to be endowed with procedures which would enable them to step up their competence and the effectiveness of their operations.

In this regard, we would like to constructive contribute to the thinking that has already been initiated by certain other delegations.

In 2011, the Committee will also be called upon to celebrate the fiftieth anniversary of manned space flight and the commemoration of Yuri Alexeyevich Gagarin's mission. Even more than the launch of the initial first satellites, the presence of a human being in outer space marks the very beginning of the space era and also the ultimate goal of our efforts. From the exploit of some individuals we can indeed guess a new aspect to humanity and humankind which is not necessarily fated to reside only on Earth. And this anniversary will give us the opportunity to show that today that citizens of very diverse nations, ever so many of them are indeed able to participate in flights and missions in outer space.

Which brings me to Chairman to refer to the activities in which Belgium has participated since the last session of this Committee.

We have been involved in various individual, very interesting activities, and here I would like to refer to the UFTI(?) Project which has been conducted by Liege University which intends to launch onto orbit a scientific micro-satellite. This is a remarkable project in more than one way. It is remarkable just because it is indeed the work of a team of students and young researchers and, over and above that, the UFTI(?) satellite is supposed to be launched by the new VEGA European launcher within the context of its qualification flights.

UFTI(?) is going to be the first satellite which is launched and operated directly Belgium. And in this fashion, it is going to be within Belgian outer space and will be the perfect opportunity to demonstrate that the Belgian State intends to certainly observe its international commitment as pursuant to international treaties and non-binding standards and technical standards as well.

In a related field, having to do with the exploration of outer space, Belgium also is not lagging far behind. Here I would refer you to the VITO Land-Based Live-In Facilities Experiment. It has to do with the development of dissolutions in the field of space agriculture. This will have importance and spin-off benefits beyond space missions and has to do with the development of sustainable agriculture on Earth as well.

Chairman, in the field of education, we have the University PhD Programme run by the University of Leuven in cooperation with Gant(?) and Liege. This international Master in Space Studies affords interdisciplinary training in English and it is promoting engineering sciences as well as the human political sciences as well.

From 27 May to 1 December 2009, General Frank De Winne, Belgium member of the ESA, European Astronauts Corps, participated in the OASISS European Mission including six months onboard the ISS. He has participated in many experiments and educational activities, some of them

as a Goodwill Ambassador of UNICEF. And these activities had to do with water issues.

In October 2009, Frank de Winne took the commandment of the ISS and thus became the first European Commander onboard the ISS. If indeed this mission of OASISS was a success for ESA, it also is pursuing the work of the ODISSEA Mission in which Frank de Winne participated in 2002 which was financed by the Belgian cooperation with ESA. The ODISSEA Mission allowed the achievement of many scientific educational experiments during a one-week mission onboard the ISS.

And in this regard, 2009 has also afforded Belgium the possibility to realize its support of the European space exploration efforts. This is very important because with scientific and technological dimension. It is also educationally valuable because of its humanness to the dimensions and it contributes to our final goals and overarches all national boundaries and division and Belgium because of this, would be investing a 45.5 million Euro budget to this European effort between now and 2008.

Chairman, the transition is perfect in order to now bring me to refer to the upcoming events that are going to be taking place in the implementation of the European Space Policy.

As you know, Belgium is going to be taking in hand the Presidency of the European Council for the European Union as from 1 July next, following the Presidency of Spain and I would like to express on behalf of my country, as of this point in time as well that we are very satisfied. We would like to convey our congratulations to Spain for the results that it has achieved during its mandate, especially with the backdrop of the difficulty economic situation that we are having to cope with at present, especially in the field of outer space. We appreciate the efforts implemented by our Spanish colleagues the past couple of months to make some headway in very complex and strategic issues and the implementation of the European Space Policy, aspects having to do with governance and the security of space activities and the Code of Conduct on Space Activities.

With the entry into force of the Lisbon Treaty, on 1 December 2009, the European Union has endowed itself with new political, legal and programme instruments in order to maintain to increase and enhance the position and role of Europe within the community of space-faring nations. And it is within this new institutional and legal context that Belgium, together with the European Space Agency and all of its other partners, is going to be actively supporting the Union in order to make headway in ongoing projects and proposing various events to develop international cooperation in the various activity fields of space and technologies and sciences.

During Belgium's Presidency, an International Conference at high-level under the theme "Space for the Africa Citizen" will be organized on 16 September in Brussels, together with the Commission. Its results could in particular serve as a working basis for the Outer Space European Ministerial Council which is scheduled for the end of November this year. The results of this Conference will serve as a contribution for the European-African Summit which is going to be held in Libya also at the end of this year. This Conference also is within the context of the partnership between Africa and the European Union. One of the pillars of that is to do with sciences, information society and outer space. It also responds to the Millennium Development Goals. One of the subjects of cooperation which will be necessarily broached is all of the uses that have been made of the GMES for Africa.

I have already mentioned the interest of Belgium for outer space exploration. In this regard, the Second International Conference on Outer Space Exploration at Ministerial Level is going to be held on 21 October 2010 in Brussels. This Conference will mark a very important stage in the process of defining a European vision as regards space exploration and will contribute to the future European Outer Space Programme for these kind of activities.

Chairman, I would like to make some comments having to do with the work of this Committee and its two Subcommittees.

I would like to refer to the excellent work performed by the Office for Outer Space Affairs, by its Director, Dr. Mazlan Othman, as well as her team, in preparing, supporting and winding up the work achieved during the three annual sessions.

My delegation has had the opportunity of participating in some informal thinktank sessions having to do with the improvement of the work of the Committee and the Subcommittees and we are, of course, open to any proposal to enhance and step up the effectiveness of our work and activities and we believe that measures should be taken and are going to be taken very soon in this regard. We nonetheless believe it is important to maintain the balance between work in the United Nations COPUOS on the one hand and thinking in that forum and the scientific and

technical aspects, and on the other hand, the political, legal and economic aspects of outer space activities.

More than ever before, the complementarity amongst the expertise having to do with these various aspects and the times and means afforded for this thinking process seems indispensable for us in order to enable COPUOS to fulfil its mission, the context with space is not just synonymous with infinite possibilities but also has to do with concerns and issues which are very short term related as well.

In this context, the theme of long-term viability of outer space activities seems to be a key question that all of the component parts of the United Nations COPUOS must seek to furnish responses to. We also believe that if necessary reflections amongst member States could be organized in an informal way interdisciplinary based on the side of sessions. This could also enable us to discuss subjects in the more long term.

Thank you very much for your attention.

The CHAIRMAN *(interpretation from French)*: Thank you very much distinguished representative of Belgium for your statement and I would also like to thank you for the references to the records of Frank de Winne. Indeed his accomplishments are many and outstanding. Thank you.

(Continued in English) The next speaker on my list is the distinguished representative of Colombia, His Excellency Mr. Ciro Arévalo.

Mr. C. ARÉVALO YEPES (Colombia) *(interpretation from Spanish)*: Thank you so much Mr. Chairman. First and foremost, Sir, I would like to convey my words of congratulations on the occasion of your election to preside over the deliberations of COPOUS. Throughout your career, you have demonstrated ability and a sense of guidance, as well as vision and a mission, as you have shown on various occasions. You may rely on our support.

Our words of congratulations go likewise to the First Vice-Chairperson, Ms. Majaja from South Africa, a country playing a major part in our work and they have demonstrated that they participate in a number of interesting subjects that we are discussing.

I cannot fail to express my satisfaction to see Ambassador Raimundo González Aninat, not just a leader in Latin America because he gave full support to all space-related issues, but also that in the Committee, he has yet again accepted an important responsibility and has been willing to discharge the major duties of Vice-Chairperson. Thank you so much for that. He will also be supporting you.

The Colombian State has activities such that we must declare our agreement with international space law and its principles in the interest of maintaining international peace and security and to bring about international cooperation and a general understanding between States. Of course, we support the statement made by GRULAC which the Ambassador of Costa Rica delivered.

Exploration and the use of outer space have to come about for the benefit and any interest of all countries regardless of their level of economic development and the scientific level of development that they have achieved. It is, of course, the duty of all States but also States Parties to the Treaty and international organizations to demonstrate responsibility in the context of space activities.

Colombia fully recognizes the part played by COPUOS in the interest of the peaceful use of outer space. This is the main intergovernmental forum responsible for space-related issues that are of a worldwide significance. COPUOS has a focal responsibility in the United Nations system, as clearly demonstrated over the 50 years of its existence where it has constantly demonstrated its commitment to the preservation of outer space for peaceful purposes.

Mr. Chairperson, I was pleased to describe the responsibilities of the United Nations after years of concern and I must say that here we have a convergence of the crucial activities of space activities for the years to come and that policy is very important in order to strengthen international cooperation.

The main purpose is guided by a holistic and systematic view of the United Nations that is motivated by responsibility that is shared by member States in terms of meeting the goals of the Millennium. My delegation is willing to support all initiatives that are an expression of that policy, the purpose of which is to have a more modern Committee, that is more efficient and it is closer to the interests and needs of the international community.

As requested in resolution 64/185 that initiative will continue to be developed over this session and I will be pleased to describe the evolution under agenda item 14, Use of Space Technology in the United Nations System, and if so required, this will be

supplemented in item 16, Other Matters, Future of Space of Activities.

Mr. Chairman, on the agenda item that refers to sustainability of space activities, we agree with the statements made by the distinguished representative of France in 2009, this was the fifty-second session, in that this is consistent with the space policy of the United Nations and is a technical supplement to the implementation in this very important aspect.

However, as expressed by the Colombian delegation to achieve full-fledged sustainability, I am not partially referring to safety or a given category of States in a certain advancement of space technology, access to orbital use of developing countries is of the utmost significance. Furthermore, we need to interpret sustainability in an all-encompassing approach that includes Earth applications in keeping with the global consensus of the Millennium Objectives. That is why for several years now, the Committee has been devoting a major portion of its efforts to ways and means to ensure the rational and equitable use of the resource. Space activities are sustainable, provided the use of the resource comes about in a rational, economic and equitable manner. This is *sine quo nom* condition because we have empirical evidence of a risk of saturation that we are facing, that is why we think it is well taken that under the topic of sustainability, we analyze and consider the setting up of an ITU-COPUOS joint group to define these concepts and better clarify the scope of what the issue of sustainability actually seeks to achieve.

If we were able to cooperate with the IAEA, the International Atomic Energy Agency, in institutionalizing a Working Group for Nuclear Power Sources with such good results, we wonder why the same could not be done an organization even closer related to us in terms of the topic. That is where the Inter-Agency's Committee will truly find its reason of being since this body is coordinating the United Nations activities and where we expect specific results.

On climate change, the inclusion of the topic on the agenda of COPUOS is one of the major achievements to contribute to an applied consideration, practical aspect of the consideration of that item. The High-Level of the United Nations on Climate Change and Space Technology, which was organized at the suggestion of COPUOS and the full cooperation of the Office for Outer Space Affairs, was very successful. But what was the follow-up to the conclusions and recommendations that were achieved there? Colombia is always part of the United Nations Climate Change Group and has ratified the Kyoto Protocol and we have developed a political, legal and institutional framework on the basis of this topic as part of the Convention.

Ten years ago, the first National Conference on Climate Change under the leadership of the Meteorology, Hydrology and Environmental Studies Institute was held with the participation of an excess of 70 public and private institutions.

Bearing in mind the fact that the Sixteenth Conference on Climate Change is to be held in Mexico and the Sixth Space Conference of the Americas will come immediately prior to this in November in the very same country, we propose that the Chairperson of the Committee report to COP-16 reporting on the input of COPUOS in this area for them to be part of the conclusions and recommendations of the Sixteenth Conference and naturally we call on the Secretariat to support the Chairperson as necessary.

G15. On this subject, we would like to thank the G15 Group for its input to the deliberations of this Committee as a development platform to bring about vision and policy within COPUOS. The important part played by this Group, where experience and representation on an equitable and geographical scale come together in addition to a consideration of the legal and technical and scientific aspects, represent, in our understanding, a fundamental instrument in the work of COPUOS.

Here we have a better understanding of the evolution of the work done in our Committee and a description thereof to the international community and especially within the United Nations system at its highest instance.

Finally, Sir, we would like to express our support for the candidature of Tunisia to become a member of our Committee. The technical presentations of the work they are doing bear witness to the serious nature and the many commitments to the work done by COPUOS and we are pleased to note this.

In due time, I will be making statements on the individual agenda items as they come up and yet again congratulations and thank you.

The CHAIRMAN: Thank you Ambassador Ciro Arévalo Yepes for your statement on behalf of Colombia and thank you also for the proposals you made. I will take them into consideration, also the proposals to represent as the Chairman of COPUOS whenever it is necessary the institutions to raise the interest and the level of it.

The next speaker on my list is the distinguished representative of Thailand. It is Ms. Darasri Dowreang.

Ms. D. DOWREANG (Thailand): Thank you Mr. Chairman. Mr. Chairman, distinguished delegates, first of all, I would like to thank Mr. Chairman for allowing me to address this important session. I would also like to express my congratulations to Mr. Chairman on your prestigious mandate for the period 2010-2011 as Chair of the Committee. I am confident that under your chairmanship, the meeting will be productive with a fruitful outcome.

In addition, I wish to extend my appreciation to the Director of the Office for Outer Space Affairs and the Secretariat for their excellent work in preparation of this meeting.

On behalf of the Thai delegation, it is my pleasure to inform the Committee on the progress of activities relevant to the peaceful uses of outer space in Thailand during the past year.

Since the successful launch of THEOS, the first Earth observation satellite of Thailand, the Geo-Informatics and Space Technology Development Agency, or GISTDA, has operated and maintained the overall performance of the satellite and related systems. The operational services of THEOS data, since its commencement on 1 June 2009, have allowed extensive utilization of data in several areas of applications, particularly to maximize social benefits.

As you are aware, natural disasters and irregular environmental phenomena are significantly increasing and have severely affected not only agricultural crop production but also the well-being and properties of farmers. The Government of Thailand, therefore, has prioritized the use of THEOS imagery for monitoring and analysis of rice crop coverage area and production aiming at supporting this and making practice for food security management and farmer-earning guarantee.

Our applications, particularly in the areas that strongly affect human lives and properties, such as drought, forest fire and flood, are also emphasized.

In the area of human capacity-building, several activities have been continuously undertaken including organization of training courses at different levels and holding of seminars and conferences.

Outreach activities, such as Space Youth Camp, mobile training and e-learning services, have also been conducted.

In the area of communication technology for education, the Distance Learning Foundation, or DLF, has developed the applications of satellite technology from the promotion of nationwide access to basic education and life-long learning. The one class, one channel, 24-hour live broadcast, from grapevine to _____(?), using Ku-Band, direct-to-home system. From His Majesty the King' Private School has served about 20,000 primary schools out of about 30,000 and around 2,700 secondary schools in the remote areas.

The Regional Learning Network has also been established to connect some schools and universities in Cambodia, Laos, Myanmar, Viet Nam, China and 15 Thai temples in Kolantan(?), Malaysia, for the benefit of knowledge-sharing.

Mr. Chairman, as for Indonesia cooperation, Thailand has participated in several international activities, both at regional and global levels.

Under the Cooperation Framework of the Asia-Pacific Regional Space Agency Forum, or APRSAF, initiated by JAXA, several activities have been implemented. GISTDA is one of the data provider nodes for Sentinel-Asia _____(?). The wind system was installed at the Thai ground station, through support from JAXA, and has been used for data transfer between the Station and the Sentinel-Asia server.

Early this year, Thailand, by the Ministry of Science and Technology, GISTDA and JAXA, Japan, jointly organized the sixteenth session of APRSAF, during 26-29 January in Bangkok. More than 300 participants from 28 countries and seven international organizations attended the Conference. The meeting recognized that regional cooperation is important in areas such as disaster management, environment, capacity-building, quality of human lives and health and so on.

Concerning the Satellite Technology for the Asia-Pacific Region, or STAR Programme, GISTDA has actively participated and sent out a satellite to attend a one-year training organized between June 2009 to June 2010 at Sagamihara Campus in Japan. The training was also participated by engineers from JAXA, Japan, KARI(?), South Korea, Lapan(?) of Indonesia, and _____(?) of Viet Nam. The conceptual design of the micro-satellite were emphasized.

Mr. Chairman, Thailand, by GISTDA, served as Chair of the Committee of Earth Observation Satellites, or CEOS, for a one-year term from November 2008 to November 2009, before handing over the chairmanship to INPE of Brazil, at the CEOS plenary, organized in November 2009 in Phuket, Thailand. During such period, CEOS prioritized the work towards delivering tangible outcomes and products in support to the 2009-2011 GEO(?) Work Plan.

On a bilateral basis, Thailand has also cooperated with several countries including France, Laos, Peru, Russia, the United States and Viet Nam. This affirms our strong commitment to work for peacefulness and security of humankind through international cooperation.

Mr. Chairman, I am pleased to report on the progress of the United Nations/Thailand Workshop on Space Law, which is planned to be held during 16-19 November this year in Bangkok. The purposes of the Workshop are to promote understanding and exchange of information on national space laws and policies and to consider legal aspects of commercialization of space activities.

Furthermore, the development of university-level studies and programmes in space law will be discussed in view of enhancing national expertise and capability in this field. These are the vital integrated steps to support the successful implementation and application of the international legal framework to efficiently govern the activities in the peaceful uses of outer space.

I take this opportunity to cordially invite all distinguished delegates to take part in this Workshop.

Mr. Chairman, before concluding my statement, as we realize that space activities is one of the vital and powerful tools to help solve problems confronting us. Thailand, therefore, strongly encourages all member and non-member States to collectively develop space for peaceful purposes. I believe that maximized social benefits can be derived from various space technology development along with cooperation amongst like-minded countries and regional networks.

Finally, I would like to take this opportunity to extend our support to Dr. Horikawa, representative of Japan, for the chairmanship of the Committee in the coming period of 2012-2013. I am confident that with his professional experiences and calibre, the prestigious Committee will undoubtedly achieve his goals under his able guidance.

I wish the meeting a successful and productive deliberations.

Thank you for your attention.

The CHAIRMAN: I thank you distinguished representative of Thailand for her statement.

Is there any other delegation wishing to speak under this agenda item at this morning's session?

I see none.

We have, therefore, concluded our consideration of agenda 5, General Exchange of Views.

Report of the Scientific and Technical Subcommittee on its forty-seventh session (agenda item 8)

Distinguished delegates, I would like now to continue with our consideration of agenda item 8, Report of the Scientific and Technical Subcommittee on its Forty-Seventh Session.

The first speaker on my list is the distinguished representative of Venezuela.

Mr. R. BECERRA (Bolivarian Republic of Venezuela) *(interpretation from Spanish)*: Thank you Mr. Chairperson. Thank you for giving us another occasion to address this meeting. This delegation, prior to its statement, would like to bring to your attention and those of the distinguished representatives, the fact that the Director of the Bolivarian Agency of State Activities is now with us, Mr. Francisco Varela.

Mr. Francisco Varela is a professional. He has come back from the People's Republic of China where he did his doctoral studies in satellite technology. The fact that he has joined us has certainly strengthened the Bolivarian Agency for Space Activities in the context of the VENESAT-1 Space Programme.

I would also like to say that we have an Expert in Space Management, Romina Acevedo. She is a graduate of the Space University in France, ESU. Ms. Romina Acevedo, who is an Expert also studied in the People's Republic of China, and there she was active in environmental sciences.

Here we would like to show the excellent support that the Venezuelan Government gives space activities in my country.

After this preamble, I will now read our statement.

Mr. Chairperson, the delegation of the Bolivarian Republic of Venezuela is particularly pleased to note the results achieved in the report of the Scientific and Technical Subcommittee concerning the forty-seventh session and it expresses its wish to continue constructive discussions in order to bolster research, the development of science and space technologies and their applications, as fundamental tools to give broad-based momentum to intergovernmental cooperation programmes intended to promote the well-being of mankind, promote social inclusion and bring technology to all.

Along these lines, the delegation would like to highlight as a full-fledged component of the report, the work of the United Nations Programme for Applications of Space Technology in space information systems, the promotion of courses intended to train human talent in space-related activities for 2008-2010 and regional and interregional cooperation as well as space-based disaster management, particularly in the implementation of the United Nations SPIDER Programme, the activities and Liaison Offices on a worldwide scale.

Likewise, the national delegation reaffirms its position in regard of items 5 and 9 of the afore-mentioned report in reference to space debris and the use of nuclear power sources in outer space.

For the specific case of space debris, we are pleased to note the progress achieved in this area. However, we believe that such progress is insufficient in view of the threat of space debris on a medium- and long-term scale. Therefore, it is a priority issue to continue also consideration of the topic, giving greater attention to debris from platforms that use nuclear power sources in outer space, collision of space object with space debris and other spin-offs, and also to improve technology to monitor this, that is space debris, and increase the commitments of space-faring nations in respect of such debris.

Specifically, those countries responsible for space contamination that traditionally have managed the technological resource without any oversight and have generally led the requirement to institute control over other countries that in exercising their legitimate right, aspire to consolidate their plans and thus improve the living conditions of their peoples.

Along similar lines, it is essential to continue to perfect the Guidelines to reduce space debris because of a lack of clear requirements and the existence of some ambiguous terms in that Guideline.

Mr. Chairperson, considering furthermore the use of nuclear power sources in outer space, this delegation reiterates the content of Article 6 of the Space Treaty in respect of the responsibility and regulations that apply to States and their responsibilities in this regard.

Furthermore, we believe that there is a high-risk element in terms of nuclear power sources in orbit in view of the failures reported and the possible collision that represent a threat to humankind and the environment and the Earth's biosphere.

Therefore, we think it is inadmissible to use nuclear reactors or any other source of nuclear power on these orbits.

We understand the need to use nuclear energy to give viability to certain inter-planetary missions. However, we should give in-depth consideration to research activities so as to use this source of energy properly considering other safer sources of energy, the use of which is confirmed.

On this basis, and making mention of the Safety Framework that applies to the use of nuclear power sources as adopted by COPUOS at its fifty-second session, and specifically mentioning the Plan of Action that was proposed by the Working Group in this regard, this delegation would like to draw attention to the commitment that derives from the forty-seventh session in that the main purpose of the afore-mentioned Plan are in keeping with international law, the United Nations Charter and the United Nation Treaty Governing Outer Space.

In addition to this, any additional work as a result of this initiative, should benefit from the participation of member States strictly confined to the approval of this Committee.

Mr. Chairperson, in respect of other aspects of the Subcommittee's report, the Venezuelan delegation is well aware of the issues that member States face in terms of outer space. We are well aware of the interest of the Subcommittee in its efforts to cover such aspects and ensure the safe and sustainable use of space for the benefit of countries, via the new Programme that

carries the title "Long-Term Sustainability of Activities in Outer Space".

From this viewpoint, my delegation would like to recall some of the considerations surrounding this item.

Here, I would ask the interpreter to please go by my text.

The study of sustainability on a long-term basis of activities in outer space should not be converted into an area for countries that have traditionally managed the technological resource without any control and have principally caused the present problem, establish a set of conditions for other countries in their legitimate right as they aspire to consolidate their plans and/or space-related projects and even less to become a space to give privilege to commercial interests at the detriment of the interests of the nations and the well-being of humankind.

Also this initiative must be in keeping with international law, the Charter of the United Nations and the treaties relating to outer space.

Concluding on this topic, my delegation is well aware of the significance of listening to civil society and other social groups. However, by virtue of the impact of this topic for space activities, at a planetary scale, decisions are the direct responsibility of States and cannot be transferred. We should not give priority to activities that are intended merely for profit, thus neglecting the proposals and activities that are in the interest of social programmes and that benefit all mankind.

Finally, the national delegation gives special attention to equitable access to the geostationary orbit for all States by virtue of the enormous potential that this represents for the implementation of social programmes that benefit all with educational programmes and medical assistance activities for our peoples.

At the same time, we ratify the request put in by GRULAC to the Secretariat so that as of now the statements of the Group are reflected verbatim in the reports of COPUOS and the Subcommittees as those of the Group of Latin American and Caribbean States, GRULAC, and not under the heading "some delegations".

Thank you for your attention. Thank you Sir.

The CHAIRMAN: I thank the distinguished representative of the Bolivarian Republic of Venezuela for his statement.

Now I want to give the floor to the Coordinator of UN SPIDER, on behalf of the Office for Outer Space Affairs.

Mr. D. STEVENS (UN SPIDER - Office for Outer Space Affairs): Thank you Mr. Chairman, for providing the Secretariat the opportunity to introduce the Conference Room Paper 11, "Establishment of a Fund for Space-Aid Framework", which was requested by the Working Group of the Whole of the Scientific and Technical Subcommittee at its forty-seventh session, as contained in the report of the Subcommittee, A/AC.105/958, Annex, paragraph 12.

I would first also take the opportunity to want to thank all member States for the extensive support provided to the UN SPIDER Programme. We listened last week to the statements made in which member States noted with satisfaction the progress made within the UN SPIDER Programme, but more importantly reported on their own activities that contributed to the implementation of the UN SPIDER Plan of Work. It has become evident that together,, member States and the Office, have in less than three years successfully established a programme that builds upon a collective effort and takes advantage of the knowledge, expertise and opportunities which every country has available.

We have done this through the establishment of new partnerships and a strengthening of existing ones. More importantly, we are doing this for the establishment of a network of UN SPIDER Regional Support Offices. Currently, the Office for Outer Space Affairs has formalized the establishment of Regional Support Offices with Algeria, Iran, Nigeria, Pakistan, Romania, Ukraine, the Asian Disaster Reduction Centre and the Water Centre for the Human Tropics of Latin America and the Caribbean, CATALAC.

Additionally, we will be signing a Cooperation Agreement with the African Regional Centre for Mapping of Resources for Development, RCMRD, during the upcoming UN SPIDER Workshop for Africa, which will be held in Addis Ababa, from 6-9 July.

We are discussing with the governments of South Africa, the Philippines and the _____(?) West Indies, following up on their offers to host a Regional Support Office. And last week, the Government of Indonesia informed us that they are offering to host a Regional Support Office.

Together with the Regional Support Offices, we are carrying out the approved Plan of Work for 2010-2011 and also supporting countries during emergency events through the Space-Aid Framework.

In 2009, the UN SPIDER Programme initiated the Space-Aid Framework to help countries as well as international and regional organizations access and benefit from available mechanisms and initiatives that help countries receive relevant information and access space-based technologies to support emergency response efforts.

In 2009, the Space-Aid Framework support a total of 20 events globally and in the first five months of 2010, a total of 19 emergency events have already been supported, including the devastating earthquakes that hit Haiti and Chile. At all of these events, the Office worked very closely with other United Nations entities and local end users on the ground.

The evident increase in the number of emergency events supported by the Space-Aid Framework is due to the implementation of standard operating procedures which contributed to the streamlining and optimization of the support provided. The establishment of additional agreements and arrangements with existing mechanisms and opportunities, and increase the expansion of the network of UN SPIDER Regional Support Offices which brings in additional expertise and resources.

In order to ensure that we are able to cover every single country, as well as regional international organizations that request our support, we need additional funds to cover existing gaps. The Space-Aid Fund been established will enable the Framework to provide support beyond what is currently possible and also to ensure rapid and direct acquisition of satellite imagery, as well as other space-based technologies, to support emergency and humanitarian response in cases when existing mechanisms cannot provide the full extent of what is required, such as when users need to receive imagery from specific sensors or when there is a need to have multi-agency licences, as well as for humanitarian response, early recovery and reconstruction.

The Office for Outer Space Affairs will set up a specific account within the existing Trust Fund in support of the United Nations Space Applications Programme and will then inform member States as well as regional international organizations and private companies of the establishment of the Space-Aid Fund and invite them to contribute to the Fund.

I thank you Mr. Chairman.

The CHAIRMAN: Thank you very much David.

Is there any other delegation wishing to speak under this agenda item at this morning's meeting?

Japan. Japan has the floor.

Mr. S. OTAKE (Japan): Thank you very much Mr. Chairman. Please allow me making an additional statement in this agenda briefing.

Mr. Chairman, distinguished delegates, on behalf of the Japanese delegation, I am pleased to report that the significant event in space science occurred yesterday. Japanese asteroid explorer, HAYABUSA, overcame a number of difficulties and after seven years and totally six billion kilometre-long trip through space, finally returned to Earth successfully at Woomera, Australia, yesterday.

HAYABUSA accomplished a round-trip between celestial bodies which had not been achieved since the _____(?) Mission. HAYABUSA was launched in May 2003 and it reached its target of Ito Kawa in September 2005. After travelling about two billion kilometres, it completed remote sensing and made landings to collect a sample with surface material. The HAYABUSA has been eagerly anticipated by people all over the world, particularly for the sample that HAYABUSA has hoped to have carried from the surface of Ito Kawa. This sampler capsule was successfully separated from HAYABUSA, re-entered as scheduled and landed safely Woomera in Australia. This sample capsule has been retrieved and now is going to be transported to Japan in a few days.

During this session, we would like to show you a video and introduce the success showing some pictures.

Finally, on behalf of the Japanese Government and JAXA, I would like to express our appreciation to everyone who assisted this project, especially for the support of Australia and the United States of America.

Thank you very much for your attention.

The CHAIRMAN: Thank you distinguished representative of Japan for this announcement. Let me congratulate you for this exceptional mission, long mission, that put for the first time in the history of cosmonautics, a lander on an asteroid and brought

some samples home. It is a very important event. Thank you very much.

Is there any other delegations wishing to speak under this agenda item?

Yes, Colombia. You have the floor.

Mr. C. ARÉVALO YEPES (Colombia) *(interpretation from Spanish)*: Thank you Sir. Very briefly, if I may, because I would reserve my right to make a fuller declaration subsequently on this agenda item but I do have two brief comments.

Firstly, I would like to join in with the words of congratulation to the Government of Japan and JAXA, the very successful HAYABUSA mission in particular, as this shows how a project that is so long term in space can meet with success. I am sure that the results will be very precious in an area such as near-Earth objects which is very dear to your heart, I know.

I would likewise wish to congratulate the Office, Mr. David Stevens in particular, on the SPIDER Project, for a very practical and well-organized perception of what the SPIDER topic represents. For us, in Colombia, it is indeed fundamental. The country is pleased to note the General Assembly's comment on progress achieved since UN SPIDER for 2007-2009 and remaining years in keeping with resolution 64/160 and the support from the field offices. Venezuela is going to take on board the 2010-2011 Programme and we encourage all member States to support SPIDER.

Colombia has mentioned the activities of the Augustine Codazzi Geographical Institute, IGAC(?) is the acronym for that. This is the Colombian space authority, and we described our Programme to have Colombia be converted into a Regional Office of the SPIDER Programme as we would like to support the Programme and this was already conveyed during the visit Dr. Juan Carlos Videagan(?) made to Colombia a month ago in the Santa Marta event and meeting for the whole hemisphere.

Those were the comments I had to make Sir, and again my congratulations to the Office for the SPIDER Programme activities.

The CHAIRMAN: Thank you Ambassador Ciro Arévalo Yepes for your intervention.

Is there any other delegation wishing to speak under this agenda item?

The distinguished representative of India.

Mr. S. K. SHIVAKUMAR (India): Thank you Chairman. The Indian delegation wishes to congratulate JAXA and the HAYABUSA team on its successful completion of the mission. We honestly hope that the sample return will open new avenues on space science.

Thank you very much.

The CHAIRMAN: I thank the distinguished representative of India for your intervention.

Is there any other delegation wishing to speak on this agenda item?

I see none.

We will, therefore, continue our consideration of agenda item 8 to hear the report on the outcome of the discussions of the Working Group on the Long-Term Sustainability of Outer Space Activities, tomorrow morning.

Report of the Legal Subcommittee on its forty-ninth session (agenda item 9)

Distinguished delegates, I would like now to continue and hopefully conclude our consideration of agenda item 9, Report of the Legal Subcommittee on its Forty-Ninth Session.

The first speaker on my list is the distinguished representative of the United States, Mr. Sam McDonald. You have the floor.

Mr. S. McDONALD (United States of America): Thank you Mr. Chairman. Mr. Chairman, my delegation has noted previously the positive developments in revitalizing the agendas and methods of work of COPUOS and its Subcommittees. The last session of the Legal Subcommittee demonstrated once again the encouraging results that have emerged from our efforts. Under the able leadership of its Chairman, Ahmad Talebzadeh of Islamic Republic of Iran, the Subcommittee produced a number of highly useful results.

As we have in past years, we would like to take this opportunity to note that COPUOS and its Legal Subcommittee have a distinguished history of working through consensus to develop space law in a manner that promotes space exploration. The Legal Subcommittee played a key role in establishing the primary outer space treaties, the Outer Space Treaty,

the Rescue and Return Agreement, and the Liability and Registration Conventions.

Under the legal framework of these treaties, space exploration by nations, international organizations and now private entities has flourished. As a result, space technology and services contribute immeasurably to economic growth and improvements in quality of life around the world.

Notwithstanding the continued relevance of the space law instruments, many States have not accepted key treaties, including some members of COPUOS. The United States has encouraged the Subcommittee to invite the States to consider ratifying and implementing the four main space law instruments cited above and, of course, it should encourage States that have accepted the core instruments to look at the sufficiency of their nations laws to implement them.

At the most recent session of the Legal Subcommittee, some States called for the negotiation of a new comprehensive convention on outer space. It is my delegation's view that such an approach would be counterproductive. The principles contained in the space law instruments establish a framework that has encouraged the exploration of outer space and benefited both space-faring and non-space-faring nations. It is important that we note lose sight of how much has been and continues to be achieved for humanities common benefit within this framework. Articles 1 and 2 of the Outer Space Treaty established that the exploration and use of outer space is to be carried out for the benefit and in the interests of all peoples, that outer space exploration and use are open on a non-discriminatory basis, that there is freedom of scientific investigation in outer space and that outer space is not subject to national appropriation.

The United States fully supports these principles and believes that the Subcommittee should undertake activities that support the continued vitality of these principles. The United States remains convinced, in particular, that to entertain the possibility of the negotiation of a new comprehensive space law instrument might underline these principles and the existing space law regime.

At its most recent session, the Legal Subcommittee continued its consideration of several items recently added to the agenda. Under the item of national legislation relevant to the peaceful exploration and use of outer space, delegations engaged in an informative exchange of information that would provide insights as to how States oversee their governmental and non-governmental activities in space.

We were pleased with the level of participation and the high quality of the information presented. We remain impressed with the progress made by the Working Group under the leadership of its Chair, Irmgard Marboe of Austria, and we look forward to working to conclude the report of the Working Group at the next session of the Subcommittee.

The Subcommittee also continued its consideration of an item on the national mechanisms relating to space debris mitigation measures. This item, which gave member States and observers the opportunity to exchange information on what steps have been taken by States, to control the creation and effects of space debris, provides a helpful vehicle to continue the important work this Committee has done in the area of space debris mitigation, such as the recent adoption of the United Nations Space Debris Mitigation Guidelines.

Equally encouraging was the Subcommittee's consideration of the item on capacity-building in space law. Member States and observers had the opportunity to exchange views on efforts underway at the national and international levels to promote a wider appreciation of space law. Such efforts, including the draft curriculum on space law developed by the Office for Outer Space Affairs and the regional workshops are vital to our work to build capacity in this area.

Thank you Mr. Chairman.

The CHAIRMAN: I thank the distinguished representative of the United States of America for his statement.

The next speaker on my list is the distinguished representative of Venezuela, Mr. Francisco Varela

Mr. F. VARELA (Bolivarian Republic of Venezuela) *(interpretation from Spanish)*: Thank you Mr. Chairperson, good day to you and to other distinguished representatives.

Mr. Chairperson, the delegation of the Bolivarian Republic of Venezuela is pleased to note the results achieved in the report of the Legal Subcommittee of its forty-ninth session and expresses its desire to continue to make a constructive discussion of its area of competence in order to progress in terms of the work and to bolster the international space law.

In general terms, this delegation believes it is indispensable for this Commission to increase interaction with the two Subcommittees, the Scientific and Technical Subcommittee and the Legal Subcommittee, for the purpose of promoting the preparation of binding international standards on such critical subjects as the use of nuclear power sources in outer space and space debris, among other matters, bearing in mind the fact that one of the main responsibilities of the United Nations in the legal sphere is to bolster the progressive development of international development and rules and regulations in this case as they relate to the environment of outer space.

Likewise, this delegation is very much concerned about this and, therefore, calls on the Committee to review, update and modify the five United Nations treaties relating to outer space for the purpose of strengthening the Guidelines that govern space activities of States, in particular the peaceful use, strengthening international cooperation and bringing space technology to humankind as a whole.

Specifically mentioning now the use of nuclear power sources in outer space, and by virtue of the Safety Framework on Nuclear Power Source Applications in Outer Space, adopted by COPUOS on the occasion of the fifty-second session, this delegation encourages the Committee to request the review of the text via the Legal Subcommittee and to promote binding standards in order to ensure that all activities that come about in outer space are governed by the principle of the preservation of life and peace.

Especially we need to pay greater attention to the legal aspects that are associated with satellite platforms using nuclear power sources in Earth orbit, in view of the failures and possible collision that do represent a substantial risk for humankind.

In respect of the Guidelines to reduce space debris, adopted by the General Assembly in resolution 62/217 of 22 December 2007, this delegation is of a view that we should continue to improve and perfect the existing Guideline to reduce space debris, especially to enter into an appropriate legal analysis.

In respect to the geostationary orbit, this delegation is deeply convinced and reiterates its position that this natural resource because it is confined, runs the risk of saturation which is why we believe that its use should be rationalized and it should be extended to all States. My delegation believes that equitable access to the orbit spectrum can be ensured if such principles are enshrined rather in international instruments. That is why, and in order to ensure the peaceful and sustainable use of the geostationary orbit, we believe it is necessary for the afore-mentioned topics to be considered in a permanent fashion within COPUOS and on the agendas of the two Subcommittees in a fully inter-State area bringing together working groups or intergovernmental panels, as required, to do so.

Now on to another matter. This delegation shares the view that NGOs participate in their capacity of permanent observers in COPUOS meetings as an example of the plural nature of society's participation in matters that are inherent to outer space. However, and in consistency with other entities and subsidiary bodies of the United Nations and in full compliance with the standards and institutional norms, we do require the respect of the procedures established for the United Nations and for there for granting status as observers for NGOs, as included in 1991/31 of ECOSOC in such a manner as to ensure supervision of these organizations and the linkage of their concerns with those of the Committee's, avoiding situations whereby some NGOs give privilege to particular interests rather than joint interests for which their participation has been authorized, vis-à-vis this Committee.

To conclude, may I, Mr. Chairman, specifically mention the topic of the definition and delimitation of outer space. It is a subject which, in the opinion of my delegation, should be further analyzed and we suggest that this matter be given further consideration in the Scientific and Technical Subcommittee.

Finally, with the greatest optimism, my delegation calls on States to focus on the critical aspects that at present create a risk for space activities. This, for the purpose of creating, updating and modifying existing international space legislation and continuing with the progressive development of international law.

Thank you.

The CHAIRMAN: I thank the distinguished representative of the Bolivarian Republic of Venezuela for his statement.

The next speaker on my list is the distinguished representative of Japan, Mr. Satoru Otake.

Mr. S. OTAKE (Japan): Thank you Mr. Chairman. Mr. Chairman, distinguished delegates. On behalf of the Japanese delegation, I am pleased to have the opportunity to address the fifty-third session of COPUOS. Japan fully supports the report adopted by the last session of the Legal Subcommittee. I wish to express our sincere appreciation and respect for the excellent work of Mr. Ahmad Talebzadeh, Chairman of the last session of the Legal Subcommittee, and Dr. Othman, Director of the Office for Outer Space Affairs and her staff.

Mr. Chairman, there is an increasing number of nations and even private sectors which are embarking on space activities and these activities are becoming more diversified. Since many space-related issues have recently emerged, issues which were not envisaged at the time of the adoption of the space-related treaties and it is very important to provide this ever-growing number of space activities with the necessary legal framework. Therefore, in order to meet the challenges of this changing situation, certain space debris mitigation, we should explore the possibility of developing appropriate new rules including soft laws. In this context, Japan appreciates the increasingly important role of the COPUOS Legal Subcommittee.

Mr. Chairman, I wish to now note that the general exchange of information on national legislation relevant to the peaceful exploration and use of outer space is one of the most important agenda items in the current Subcommittee discussion since we can compare notes and share insights and experiences with other committees about the practice in governments and non-governmental organizations.

Following our Basic Space Law, as well as the Basic Plan, we are now working on concrete legislation which covers the wider spectrum of private outer space activities. In the last Legal Subcommittee, Japan contributed to the agenda through the interaction of our legislation on space activities. We expect that the report on this agenda item which is to be completed by 2011 will be meaningful(?) for each nation.

Through the exchange of information with other COPUOS members under this agenda item, Japan will continue to take the necessary measures to fulfil its obligations to space-related treaties.

Mr. Chairman, the COPOUS Legal Subcommittee's mandate was the important role of discussing legal aspects in order to ensure that space activities are conducted in a free and fair manner. As a space-faring country, Japan continues to contribute to the Legal Subcommittee so that it may achieve it goal effectively and productively.

Thank you for your attention.

The CHAIRMAN: I thank the distinguished representative of Japan for his statement.

The next speaker on my list is the distinguished representative of Italy, Professor Sergio Marchisio.

Mr. S. MARCHISIO (Italy): Thank you very much Mr. Chairman. The Italian delegation is pleased to congratulate the Legal Subcommittee for the results achieved during its forty-ninth session.

We would like to commend the Chairman, Mr. Talebzadeh, from the Islamic Republic of Iran, for his wise leadership. We wish to reiterate the importance of the activities of the Legal Subcommittee and of the Office for Outer Space Affairs as directly contributing to the progress made towards a more universal acceptance of the United Nations outer space treaties.

Mr. Chairman, the Italian delegation endorses the recommendations that the mandate of the Working Group on the Status and Application of the Five United Nations Treaties on Outer Space, be extended for one additional year with the understanding that the Subcommittee at its fiftieth session in 2011 will reconsider the need to extend the mandate of the Working Group beyond that period.

We also note with satisfaction, the fruitful debate that continued to take place within the Working Group on Matter Relating to the Definition and Delimitation of Outer Space and wish to congratulate the Chairman for his excellent guidance.

Mr. Chairman, my delegation wishes to express satisfaction for the fruitful discussion that the Subcommittee devoted to the exchange of information on national mechanisms relating to space debris mitigation measures as a single item for discussion and agreed that this item should remain on the agenda for the fiftieth session of the Legal Subcommittee.

At the same time, commend the work accomplished by the Working Group on the Exchange of Information on National Legislation Relevant to the Peaceful Exploration and Use of Outer Space and agreed that the Working Group should continue and conclude its work in 2011.

Mr. Chairman, we also support the decision of the Legal Subcommittee the item concerning the examination and review of the developments concerning the draft Protocol on Matters Specific to Space Assets to the 2001 Cape Town Convention on International Interests in Mobile Equipment should remain on its agenda for its fiftieth session. The two recent meetings of the UNIDROIT Committee of Governmental Experts held in Rome in December 2009 and May 2010 reached positive results so that the draft Protocol could rapidly arrive at its completion.

Mr. Chairman, the Italian delegation is also pleased to express its satisfaction for the decision adopted by the Legal Subcommittee to retain capacity-building in space law as a single issue item for discussion on the agenda for its fiftieth session. The Italian delegation strongly supports the dissemination of the knowledge of space, especially in developing countries.

Finally, Mr. Chairman, our delegation supports the work carried out by the Legal Subcommittee as the most appropriate forum to address legal issues arising from the peaceful uses of outer space. It is important for the Legal Subcommittee to remain attentive to the evolving needs of the space-faring nations as well as the increasing expectations from nations that do not have active space programmes but need the benefits from space activities.

In conclusion, Mr. Chairman, Italy fully supports the adoption of the report of the Legal Subcommittee on its forty-ninth session.

Thank you Mr. Chairman.

The CHAIRMAN: I thank the distinguished representative of Italy for his statement.

Is there any other delegation wishing to speak under this agenda item at this morning's meeting?

Yes, the distinguished representative of Saudi Arabia. You have the floor.

Mr. M. A. TARABZOUNI (Saudi Arabia): Thank you Mr. Chairman. My delegation agrees to the report of the Legal Subcommittee on its forty-ninth session. We would like to thank Mr. Ahmad Talebzadeh from the Islamic Republic of Iran, for the sagacity with which he conducted our work of the Committee.

We should attach importance to the United Nations treaties. My country has recently agreed to subscribe and adhere to these treaties because we believe that they represent an important framework in support of outer space activities which are evolving actually.

We urge that States should enhance international cooperation in order to preserve the peaceful nature of space activities and to limit any attempts to militarize the outer space, especially because the treaties do not provide for the prohibition of such weapons in space.

We call for the delimitation of outer space and definition also of outer space and look into ways and means to use the geostationary orbit which is a limited natural resource. They should be accessible to all States. No single State or an international organization or regional organization should be allowed to possess this orbit through the contracts to launch satellites.

We welcome the efforts by the Office for Outer Space Affairs to establish a Regional Centre affiliated to the United Nations to study space sciences in the Arabic language. However, we urge the State that would host that Centre to complete the measures in cooperation with the Office for Outer Space Affairs.

Thank you very much for your attention.

The CHAIRMAN: I thank the distinguished representative of Saudi Arabia for his statement.

Is there any other delegation wishing to speak under this agenda item at this morning's session?

I see none.

We will, therefore, continue and hopefully conclude tomorrow morning our consideration of agenda item 9.

Spin-off benefits of space technology: review of current status (agenda item 10)

Distinguished delegates, I would now like to continue and hopefully conclude our consideration of agenda item 10, Spin-Off Benefits of Space Technology: Review of Current Status.

The first speaker on my list is the distinguished representative of India. India has the floor.

Mr. D. GOWRISANKAR (India): Thank you Mr. Chairman. The Indian delegation would like to emphasize that the Indian Space Programme strives to take the benefits of space technology to the mankind and society for which several application programmes, such as tele-education, tele-medicine, disaster management support, search and rescue, Village Resource Centres, etc., have been carried out in India. While pursuing our Space Programme, many of the technologies and tools that are usual in other fields benefiting society. Such technologies have been successfully transferred to industries for production and promotion.

The Indian delegation would like to brief this Committee on the benefits that are spin-off from space technology.

Mr. Chairman, polyarimid reinforced plastic is a popular composite used for various launch vehicle applications. The composite of polyarimid fibre and poly methyl metalacrylate resin called acramid is found useful for fixture, prosthodontic restoration _____ *(not clear)* and due to the low cost better aesthetics, lightweight and ease of manufacturing, it has become popular not only in urban areas but also in rural areas. Poly resin technology was developed for insulation, damping, rusting(?) protection and other lightweight structural applications in launch vehicles. This residual material is found to have numerous applications in day-to-day life and _____(?) important spin-off in the form of the artificial foot prosthesis. A special moulding technique is developed to produce integral skin polyurethane for processing recurred(?) mobility, gait, flexing and plano-flexing properties. Popularly known as the G4 Foot(?). These were fitted to mini-amputees successfully especially among the poor and needy in the country in collaboration with voluntary and government organizations. It has a natural look, lightweight, durability, comfort and slip-resistant properties.

Mr. Chairman, structural and non-structural _____(?) are developed for the launch vehicle programme find use in various applications in the automobile and engineering industries. The main advantages are improved distribution, weight saving, noise reduction, correction prevention, ease of joining the similar material and aesthetic.

Mr. Chairman, Olfex and Ternary Eutetcic Powders and chloride powders developed for the space programme are found to be really excellent in the fire fighting industry due to their _____(?) anticating and efficient fire extinguishing characteristics.

Poly Cleanse is a cleaning cream for effective removal of resins, oil, grease, adhesives, propellants, ink stains, etc. from the skin. The skin barrier cream can be used in the chemical industries, the polymer industries, the rubber industries, oil refineries, automobiles workshops and propellant plants.

Mr. Chairman, in conclusion, the Indian delegation assures the Indian Space Programme will continue to find new opportunities for deriving benefits from space technology to the common man.

Thank you Mr. Chairman.

The CHAIRMAN: I thank the distinguished representative of India for his statement.

The next speaker on my list is the distinguished representative of the United States of America, Mr. Ken Hodgkins.

Mr. K. HODGKINS (United States of America): Thank you Mr. Chairman. Mr. Chairman, the United States takes great pride in sharing the fruits of its aerospace research and development efforts, bringing the benefits of technologies borne in space and in the skies back down to Earth.

Often understated, these innovations have been successfully spun-off to private industry and made available to people around the world. The United State is once again pleased to share a few examples with the Committee.

This year's examples include a device that allows medical researchers to grow human cells in a laboratory, a technique for tracking endangered species, a portable ultrasound device and protocols that can be used in emergency medical diagnostics, and an air purifier that helps produce fresh air on the often long trek from farm to table.

NASA researchers investigating the effects of long-term micro-gravity on human tissues developed a horizontal rotation device called a Rotating Wall Bioreactor that allows the growth of human cells and simulated weightlessness. Previously, cell cultures on Earth could only be grown two-dimensionally in Petri dishes because gravity would cause the multiplying cells to sink within their growth medium.

Such cells do not look or function like real human cells which grow three-dimensionally in the body. The NASA Bioreactor successfully cultivates cells using simulated micro-gravity resulting in three-

dimensional tissues that more closely approximate those in the body. A Houston-based Biotechnology firm acquired the licences for the NASA Bioreactor in a number of related patents for use in the field of adult stem cell research. The Bioreactor which allows for the rapid cultivation but healthy cells in simulated weightlessness is now providing researchers with the tools to develop adult stem cell therapy, a potential source of treatment for conditions like heart disease, diabetes and Sickle Cell Anaemia.

A software programmer in Portland, Oregon,, partnered with the Goddard Space Flight Centre, to develop a method for tracking the elusive whale shark using the unique spot patterns on the fish's skin. Employing an adapted Star Mapping Algorithm originally designed for the Hubble Space Telescope, the programmer created a photograph database and patent matching system that can identify whale sharks by their spots and match images contributed to the database by photographers around the world. The system has been adapted for tracking other rare and endangered species including polar bears and ocean sun fish. The technology allows eco-tourists and citizen scientists to contribute to the study of these animals resulting in significant rises in confirmed sightings and more efficient tracking of individual animals. This technology resulted in the documentation of more than 2,400 whale shark sightings in 2009, a huge increase for a rare fish with only a few hundred previously documented sightings.

On the International Space Station, diagnosing an injury or other medical issue can be problematic. Bulky medical imaging devices like X-ray or MRI machines are too large and heavy for cost-effective transportation into space. The ISS does, however, have a much smaller ultrasound machine. The Johnson Space Centre, the Henry Ford Hospital in Detroit, Michigan, and Houston-based Wiley Laboratories collaborated on NASA's Advanced Diagnostic Ultrasound in Micro-gravity Equipment which developed revolutionary medical ultrasound diagnostic techniques for long-distance use.

The Canadian company with US operations drew on NASA's expertise to create Framegrabber and Data Archiving Technology that enables ultrasound users with minimal training to send diagnostic quality ultrasound images in video to medical professionals via the Internet allowing patients as varied as professional athletes, Olympians and mountain climbers to receive medical attention as soon as it is needed. More than 345 ultrasound examinations have been performed on these patients so far, a number of those with remote guidance.

NASA-funded researchers produced an ethylene-reduction device for a plant growth unit designed for cultivating crops in space. A Georgia-based company specializing in sustaining perishable foods licensed the ethylene scrubbing technology. Yet partnered with a company in Jacksonville, Florida, which now markets the NASA-developed technology as Aerocide. According to the company, it is the only air purifier that completely destroys air-borne bacteria, mould, fungi, viruses, volatile organic compounds and odours. The devices have no filters that need changing and produce no harmful by-products such as the ozone created by some filtration systems. The technology is now featured in a line of refrigerators that preserve freshness and reduce food waste and Aerocide units have been deployed to remote regions of the world where harsh environments and under-developed infrastructure complicate food storage and distribution.

In the health arena, the technology has been incorporated into doctors clinics, operating rooms and neo-natal wards.

Mr. Chairman, space research continues to improve and revolutionize our lives as NASA research has spun off into tangible and remarkable benefits for all.

Our resolve to improve the quality of life on Earth and benefit humankind provides the impetus to develop and disseminate these technologies. The handful of examples I have highlighted are the direct result of the US Government's Civil Space Programme dedicated to active and productive collaboration with private industry and academia.

Additional information about these and many other interesting spin-offs is provided in the brochure "NASA's Spin-Off Efforts" and a copy of NASA' publication "Spin-Offs 2009" which have been made available to each delegation during this session.

I would like to advise delegations that Mr. Doug Comstock, the Director of NASA's Office of Innovative Partnership Programmes, will give a special presentation on Tuesday, 15 June, on how NASA-developed technologies are being used to solve problems here on the Earth.

Thank you Mr. Chairman.

The CHAIRMAN: I thank the distinguished representative of the United States of America for his statement.

The next speaker on my list is the distinguished representative of China.

Ms. S. ZHANG (China) *(interpretation from Chinese)*: Mr. Chairman, with the development of space technology, more and more space technologies are being used in the national economy and introduced into the daily lives of people and created huge spin-off benefits. The Chinese Government actively support the application of space technology in industrial development and has produced satisfactory results in such fields as information technology, new materials and energy resources, special automobiles and their components. A great number of products and services have been commercialized such as industrial control computers, solar batteries, special palmed valves, winged power generators and a car air conditioning system. In using dozens of know-how and technologies such as rocket engine combustion heat transfer, special palmed valves, system integration, the Chinese space industry has successfully developed an advanced technology on pressurized gasification of powdered coal which can transform solid coal of virtually any grade to mixtures of carbon monoxide and hydrogen in a cost-effective and environmentally friendly way. This is a very promising application.

At present, using satellite solar panel technology, China is developing a production line for solar cells of 150 megawatt. In order to achieve energy conservation and emission reduction, our space sector is working on the application of space technology of lithium battery to automobile power with a view to promoting the development of key components of automobile power batteries and create rapidly an independent industrial system for the production of key components of automobiles given by new energy sources and encouraging the transfer of new material technologies obtained in space development into our industries.

China has started the construction of its home-made production lines of carbon fibre, carbon brake discs of _____(?) field materials and of aluminium conductor with composites of carbon fibre core. Several innovation technologies have been integrated into carbon brake discs of a Boeing-757 200 and Airbus 320 airplanes of which 16 have field applications for patents of innovation.

In addition, in applying space technology in the agricultural sector, we used crop seeds on board recoverable scientific satellites to understand mutation breeding research and reached a series of innovative results. More than 17 new varieties have been bred and over two million hectares have been devoted to their cultivation contribution thus to the development of agriculture and agricultural breeding technology.

Mr. Chairman, the application of space technologies in all walks of life has brought about a rapid upgrading of civil technologies and improved considerably the people's lives, facilitating largely the social and economic development of China. Thanks to the advancement of space technology, we are entering a brand new space era spin-off benefits of space technology constitute a great thrust for our social and economic development.

Together with other countries, China is ready to tap and use actively space technology so it may provide a better service to the human society.

Thank you Mr. Chairman.

The CHAIRMAN: I thank the distinguished representative of China for her statement.

The next speaker on my list is the distinguished representative of Japan, Mr. Otake.

Mr. S. OTAKE (Japan): Thank you Mr. Chairman. Mr. Chairman, distinguished delegates, on behalf of the Japanese delegation I am pleased to present you some examples of Japanese spin-off efforts in the field of space technology at this session of COPUOS.

To begin with, the Japan Aerospace Exploration Agency, JAXA, has established an Industrial Collaboration and Coordination Centre in order to strengthen the competitiveness of the Japanese space industry and enhance space utilization. The Department is predominantly in charge of the spin-off, that is to say technology transfers, _____(?) technology and patents and inter_____(?) properties are created by JAXA for industry use. It is expected to boost the level of cooperation among public, academic and private sectors according to the previous mentioned Japan's Basic Plan for Space Policy. To provide you with an illustration of upcoming space spin-offs, Japan's need astronauts so astronaut Soichi Noguchi has continued it to the experiment _____ *(not clear)* made as a counter-measure to space flight introduced boneless which is a collaboratively researched project between JAXA and NASA.

During the orbital weightlessness, the process of losing bone density is accelerated to about 10 times that of a person who is or still porosis. This makes its possible for us to obtain the medical data regarding

_____ *(not clear)* and more specifically to the most rate of effectiveness of anti-_____(?) for boneless in a short amount of time.

These excellent results are expected to contribute to the research on medical healthcare for the elderly people.

Another ongoing and interesting development is in the use of _____(?) sat technology in which a sensor is going to be mounted on then next Generation XA astronomical satellite.

We are aiming to commercialize a detector for medical services and other programmes based on this technology. This will enable précising image and high-wavering analysis by monitoring mountings and conductors made of silicone and paramirilite(?) in high density. According to the development of sensors mounted on satellites for observing Earth X-ray and gamma ray emitted by black holes at high precision.

The sensor is expected to be applied to a detection node meter size of early cancer cells that have been difficult to identify by the conventional technology and in the diagnostical brain function for early detection and clarification of the pathological condition of chronical nerve disease.

Furthermore, this is in the future we applied to formal physiologies, non-destruction inspection and new material development.

These are just a few examples of Japanese space spin-off efforts aiming to deep comparative spin-off benefits. JAXA has undertaken various supportive activities such as the promotion of rises(?) by business academia, coverage of co-datas who support the commercialization of technology, based on the JAXA _____(?) and promotion system and opening up JAXA's R&D facilities to private companies in order to support their commercialization plan.

JAXA has also established the JAXA Cosmode Project as JAXA's space brand. This is to promote the utilization of space technology and reserves through direct support for JAXA and also to encourage private companies to enter into the commercial of space business market aiming to the commercialization of these products.

Spin-off benefits from space technology constitute one of the main issues of the Space Policy of Japan in the Space Basic Plan.

Japan is of the brief that spin-offs from space technology will advance the economies through the production of new innovative technologies, thereby contributing to an improvement in the quality of life. We intend to further promote spin-off benefits.

Thank you for your attention.

The CHAIRMAN: I thank the distinguished representative of Japan for his statement.

Is there any other delegation wishing to speak under this agenda item at this meeting?

I see none.

We have, therefore, concluded our consideration of agenda item 10, Spin-Off Benefits of Space Technology: Review of Current Status.

Technical presentations

Now we start our technical presentations.

Distinguished delegates, I would now to give the floor to Ms. Simona Zoffoli of the Italian Space Agency who will make a presentation on "Use of Space-Based Information for Seismic Risk Management: an Italian Space Agency Pilot Project". Ms. Zoffoli, you have the floor.

Ms. S. ZOFFOLI (Italy): Mr. Chairman, distinguished delegates, I am pleased to present you some preliminary results of an Italian Space Agency project on seismic risk management name SIGRIS.

We have been working for this project since 2003 to demonstrate operational use of Earth observation data for seismic risk management. The main task of the project is to generate operational value added products the Italian Civil Protection Service integrating Earth observation data and ground measurements.

After a feasibility study, in 2007, the SIGRIS Pilot Project was launched. The Project is funded by the Italian Space Agency and designed and developed by a scientific and industrial team on the Italian Civil Protection User Requirements.

In addition to the definition of the User Requirements, the Italian Civil Protection is deeply involved in the verification of the demonstration activities and its feedback are very important to optimize the project.

Up to date, the SIGRIS system is active and is operated by the National Institute of Geophysics and Vulcanology.

The system was designed to get an input Earth observation data from different satellites, SAR data, high-resolution optical data and ground measurements mainly from GPS networks and auxiliary meters network. And on the basis of state-of-the-art algorithms and models, value added products and related technical reports are delivered through a web GIS(?) to the Italian Civil Protection.

Before the delivery, the scientific team validates the products. SIGRIS products concern of two different risk management phases, the knowledge and prevention phase in order to support the seismic hazard assessment, and the warning and crisis phase in order to support the emergency management.

Regarding the emergency management phase, the Italian Civil Protection and the SIGRIS team jointly selected the following products: map of seismic ground information, map of the seismic source, map of induced surface affects, and, of course, damage map. The term used by Civil Protection to get the direction of search and rescue operation, define area to evacuate, find the best location for emergency shelters, estimate areal probability of larger aftershocks and assessment some increments of induced risk, like, for example, landslides.

Italy experienced a strong earthquake last year so in the following slides I will show the products generated by the SIGRIS system during the emergency phase.

Even if it was the first time the SIGRIS system was applied for a real event, it responded well. However, this experience helped us to make improvements to the system.

On 6 February 2009, an earthquake affected central Italy and in particular the city of L'Aquila and its surroundings with a main shock of magnitude 6.2 located at a depth of 9.5 kilometres and followed in the next week by seven aftershocks of a magnitude greater than five. We had 3,000 casualties and 1,500 people injured and 65,000 displaced. The earthquake happened at 3.32 a.m. The SIGRIS systems was activated by the SIGRIS Manager at 5.34 a.m. with a request of a position for COSMOS-SKYMED, ENVISAT, ALOS, IKONOS, ___VIEW(?), ALOS A & D satellites. The response time of COSMOS-SKYMED was 12.5 hours.

SAR satellites were asked to acquire interferometry mode because the interferometric technique is the base for the generation of one value added product. The map of co-seismic ground information. In simple words, if there is a SAR satellite image of the interested hire before the earthquake and the image after the earthquake combining these two informations, it is possible to determine the surface deformation generated by the earthquake.

So six days after the earthquake, we received from SAR satellites, one ENVISAT image, one RADARSAT image and 21 acquisition, 21 COSMOS-SKYMED acquisition and new front(?) acquisition modes.

The first COSMOS-SKYMED interferogram made on 9 April obtained three days after the event, as the one produced with the RADARSAT data the same day of the event showed the co-seismic deformation but due to the local events of the signal, it was not possible to localize the area of maximum deformation and the general pattern.

Six days after the event, a SIGRIS team generated two interferograms, one with the ENVISAT data and the other one with COSMOS-SKYMED data. Some days later it was also possible to generate in interferogram with ALOS data.

But COSMOS-SKYMED and ENVISAT interferograms clearly shows the general pattern of the co-seismic deformation in the area of maximum deformation. Thanks to this data, it was possible to identify the location of the active fold and support on field survey teams activities.

In the COSMOS-SKYMED interferogram, each fringe corresponds to about 1.5 centimetres of displacement in the satellite direction. While in the ENVISAT interferogram, each fringe corresponds to about 2.8 centimetres of displacement in the satellite direction.

Comparing the two datasets, the higher spatial resolution of COSMOS-SKYMED data results are clearly evident. From a technological point of view, it is worthwhile to remember that this was the first production of an interferogram with this resolution on a seismic displacement.

From the interferogram just shown, it was possible to calculate the ground displacement in the upper and east component. The colour scale goes from red, that means maximum negative value, to blue, that

indicate maximum positive value. For the upper component, the maximum ground displacement happened in the red area and corresponds to minus 26 centimetres. For the east component, the maximum ground displacement corresponds to minus 20 centimetres. The fault involved in the earthquake and localized from synthetic aperture to red data is drawn as a black line.

One other important product generated during the emergency phase was the map of seismic source obtained using synthetic aperture radar data. It was possible to determine the fault geometry and the seismic dislocation. It is evident that the good agreement between the maximum ground information measured by the satellite and the maximum seismic dislocation. Also it is evident that optimum agreement between the aftershock distribution and the model dislocation.

For the first time it was possible to give this kind of information to the Italian Civil Protection only seven days after the earthquake.

Thanks to the higher COSMOS-SKYMED special resolution, it was also possible to localize at least two areas where the ground shaking was large enough to induce break _____(?) the deep-seated gravitational slowed the formation. One of the two areas is lighter in this slide. The entire deformation is about three centimetres.

The sagging of the area is more evident in this 3-D view. Above the risen areas, a picture of the same area. Without COSMOS-SKYMED high resolution data, it would not be possible to alight this area where the likelihood of a catastrophic collapse is higher.

The last figure is emergency products I would like to show you is the damage maps that are used, for example, by the Civil Protection to define higher to _____(?) or find the best location for emergency shelters. To make an example out of Italy, we have considered the 2003 Bam earthquake. In the picture, the damage level map is shown for the entire city. Three different levels of damage, light, medium and heavy, are at the centre with three different colours, yellow, red and purple. Going more in details, the SIGRIS is able to generate single building damage level maps where it is possible to associate, to have a building at damage level.

Below the damage map, there are the satellite images before and after the earthquake.

As I already said, the Italian Civil Protection at all interested in products for the warning and crisis phase, but also in understanding how Earth observations can be used in the knowledge and prevention phase in order to support the seismic hazard assessment.

Therefore, the SIGRIS team selected the following value added products: high resolution ground velocity maps and inter-seismic fault models that can be used to identify high strength patterns and to map inside active faults.

To demonstrate the added value of these products, in the SIGRIS Project we have defined four seismogenic test areas in Italy where we calculate high-resolution ground velocity maps. This product is based on a differential synthetic hyper to radar interferometry techniques and it is essential to have available a temporal series of data.

In these areas, COSMOS-SKYMED satellites are tasked to acquire regularly, that means at least every 15 days in order to build a significant archive.

Here it is shown an example of the velocity map in the Strait of Sicily obtained using the Earth ESA data.

The blue colour shows an up and an east positive movement. We observed that the Strait of Sicily is subject a tectonic deformation field with Sicily rating relatively to _____(?) of 1.5 millimetres for here and there is an extension rate of three millimetres for here. The next step is to use this kind of information for the first time for seismic hazard assessment. Up to now in Italy, the seismic hazard assessment is produced with no use of Earth observation data.

To conclude, I would like to say that following the same approach and in particular a deep cooperation with the final user, the Italian Space Agency is developing other demonstration services on the following themes: floods, landslides, fires, oil spill, coasts, volcanoes, now-casting

It is possible to find all the related information on our website.

Thank you for your attention and thanks to the SIGRIS team for its promising work.

The CHAIRMAN: Thank you Ms. Zoffoli for your presentation.

Are there any questions or comments on the presentation of Ms. Zoffoli.

I see none.

The second presentation for this morning will be made by Ms. Lori Garver of the United States, NASA Deputy Administrator, who will make a presentation on "NASA Today and Tomorrow".

Ms. L. GARVER (United States of America): Thank you Mr. Chairman and distinguished delegates. Thank you for the opportunity to address the Committee today at its fifty-third session. Recognizing the enduring connection with NASA's mission and the important work undertaken by this Committee, it is my honour to update you on NASA's ongoing activities and our plans for the future.

Earlier this year, I joined US President Obama when he visited NASA's Kennedy Space Centre in Florida to lay out his bold vision for US space exploration and to reiterate his one hundred per cent commitment to that endeavour. It was a proud day for NASA and we are gratified that the President's Space Exploration Policy is a crucial part of a dynamic national strategy involving many agencies and activities, to re-focus our efforts as a nation on innovation and technology development.

I will talk about some details of that work in a minute but I want to stress from the outset that a fundamental element of the President's new plan for NASA is the essential role that international cooperation must play in our future exploration missions.

As many of you know from our nations work together over the past 50 years, NASA has a long history of international cooperation. Indeed, international cooperation was envisioned as a key element in the US legislation that formally established NASA. We intend to broaden and deepen those relationships as we seek to implement the President's new US Space Exploration Enterprise.

Over the past five decades, NASA has concluded more than 3,000 agreements with over 100 international organizations and the level of new cooperation is rising each year. Presently, NASA has over 450 active international agreements with 118 countries. However, much of this cooperation is conducted with a handful of nations that have in essence become NASA's traditional partners. While these strong traditional relationships will undoubtedly continue, as part of our new plans NASA is also trying to find mutually beneficial activities with non-traditional partners that are easy to implement at a low cost yet have a high impact for both the potential partners and NASA.

Smaller nations have in the past made very meaningful contributions to NASA's programmes, even when the roles have been modest. In return, cooperation with NASA has provided these partners, in some cases, with access to world class research facilities, new technology applications and very productive collaboration with world renowned scientists and engineers.

Mr. Chairman, I am pleased to report that President Obama has laid out this bold new path for NASA to become an engine of innovation with ambitious new programmes that I believe will inspire people from around the world.

Under the President's direction, the United States will pursue a more sustainable and affordable approach to human space exploration, to development of transformative technologies and systems. We plan to pursue new approaches to human space flight exploration that will give us more advanced capabilities to send both human and robotic missions beyond low-Earth orbit and to a variety of destinations, including near-Earth asteroids, Lagrange Points and Mars. These technologies will also let us focus on what we call grand challenges. How can our nation develop innovations that can answer some of the big questions, important to all of humankind and to the Earth as well a to space exploration.

This effort will include a flagship demonstration programme that we expect will include participation from around the globe to demonstrate critical technologies such as advanced, in-space propulsion, automated autonomous rendezvous and docking, field depots in space, closed loop life support systems and other next generation capabilities.

We feel these and other technologies are at the readiness level where, with concerted effort, we can bring them into flight, evaluate them and advance our mission.

Other technologies that are at lower readiness level will be evaluated from different perspectives as we determine the best path forward.

I would like to share with you a short film that captures the essence of this new direction, as expressed by NASA's current leadership team.

Video

"The exploration of space is the grandest adventure challenging humanity. The Universe can surprise and awe us. There is so much more to discover and learn. We explore to understand our place in the Universe, to answer questions about its formation. And what other worlds are like. We explore to understand the fragility of our Earth and how it is changing. We explore to push human capabilities to their highest potential.

NASA has a whole grand date (mandate?) to launch a new journey of innovation and discovery.

What this programme does is it allows to develop technologies and utilize those new innovations and technologies that will allow us to take the next steps.

I want to explore a large number of destinations, both robotically at first, and eventually humans.

We are going to turn science fiction into science fact.

As we seek to explore far beyond Earth, we must invest in critical knowledge and capabilities to enable this journey.

A new generation of NASA's best and brightest is developing innovative new approaches to exploration. We plan nothing less than to create the future of space flight now.

After the safe and planned retirement of the Space Shuttle fleet, the first foothold beyond Earth will be the International Space Station, an orbital laboratory that is re-energized in the Agency's new direction.

The Space Station is an amazing platform because you can do experiments there that cannot be done anywhere else.

There is little doubt that the Space Station has probably been the largest civilian international cooperative science and technology venture in history. Our partners are Canada, Europe, Japan and Russia. They work more tightly as a team than they ever did prior to this programme.

In cooperation with our international partners, this engineering model will now host cutting-edge science research to 2020 or beyond.

Providing solutions to problems on Earth and critical information putting humans further into the solar system.

I think in the next decade we are going to see a broad use of the Space Station by non-NASA organizations and those are going to resolve around national needs and things like public health, energy and environmental applications.

I think if you look at the model, in low-Earth orbit we are going to try and make that more commercial, let more commercial companies handle that business and NASA will focus more beyond low-Earth orbit.

We will prepare astronauts for longer trips in space while working cooperatively with other space-faring nations.

And that outreach has been extremely successful both for that community and for NASA itself.

New businesses have emerged and NASA has developed partnerships that we continue to utilize as we move forward.

Together, we will lay the foundations for a new era of space exploration. The Agency will begin work on transformative heavy technologies that will lead to a new life to carry astronauts beyond Earth orbit.

And development will continue on the Orion Crew Capsule to provide stand-by emergency escape capabilities for the Space Station.

Once the stuff of science fiction, new technologies being developed by NASA engineers and their commercial partners, will revolutionize space flight.

We are investing in at a larger scale so we actually can get there quicker.

New approaches to propulsion will free us from Earth's gravity and send us further and faster into the cosmos. Spacecraft will re-fuel in depots in orbit. New techniques will rendezvous in docking, will allow us to construct the spaceship of the future. Astronauts will visit and live in lightweight inflatable habitats and

live off the land at their destinations. The Agency will partner(?) innovative ways with the commercial space centre to develop safe and efficient systems to transport astronauts to and from the International Space Station. NASA will create new jobs while freeing itself to do what it has always done best, explore the mysteries of space.

Robotic scouts, like the Mars _____(?) and observatories like the new James Webb Space Telescope will comprehensively explore our solar system and galaxies beyond.

If you liked Hubble, you will love James Webb because James Webb will be a hundred times more sensitive.

As always, NASA's spacecraft will demonstrate new capabilities as they pioneer these bold efforts to further unlock the secrets of the Universe.

Closer to home, the President's Plan will strengthen NASA's efforts to study and protect our home planet. An extended suite of Earth observatories will improve our knowledge of climate change, Earth's dynamic processes and the forecasting of major storms and natural disasters. NASA programmes and spacecraft will also stand vigil against potential threats to our planet. An Agency-led effort is underway to ____(?) the paths of asteroids and other near-Earth objects and NASA's satellites are gathering data that will allow scientist to better predict space weather through satellite's communications and power grids(?).

In _____|*(not clear)* new technology investments will develop the next generation aviation system for the entire nation and increase its safety and its _____ |*(not clear)* by reducing noise, emissions and fuel consumption.

So in time the flying public will enjoy even safer and more efficient air travel.

The Agency will sponsor new competitions that foster idea and innovation for leading-edge technologies and new industries.

They now have money to put into research and development of the technologies that we need to accomplish the goals we set ourselves.

Our goal is to go away from the planet. We want to go to asteroids. We want to go to Mars. We want to go back to the Moon. We want to do other things. We want to be able to fly higher and faster.

NASA's new path for space exploration puts our nation on a stronger trajectory for achieving our boldest ambitions, both flexible and sustainable. The nation can start moving today towards each challenging and inspiring goals. America's Space Exploration Programme will advance new frontiers and provide inspiration for the world, exploring the Universe while better understanding our home planet in a new era of innovation and discovery.

End of video

Mr. Chairman, per the President's direction, we are working closely with our partners in Russia, Europe, Japan and Canada. We are very near completion of the planned assembly of the International Space Station. As we fly the final few Space Shuttle missions and transition from assembly to steady state operations and utilization. The President has asked us to work with our partners to extend the life of this facility until 2020 and perhaps beyond.

This unique research facility in low-Earth orbit is literally a visible symbol that people around the world can observe nightly, a symbol of what can be achieved through international cooperation.

Later this year, the Space Station Partnership will celebrate the 10-year anniversary of a permanent human presence on-orbit as we continue to support a compliment of six international crew living and working on the Station on a daily basis.

The Station is already serving as an ideal test-bed for technology advancement and for operational experience that is essential for long-duration missions beyond low-Earth orbit. In addition, I am going in future research aboard the International Space Station related to the effects on humans of long-duration space flight will help us to send humans to other planetary bodies in the future.

We also anticipate that the Station will drive significant new investments for the development of commercial crew and cargo capabilities to low-Earth orbit. These capabilities will build on the progress we have already made to date in the development of commercial cargo capabilities. Similarly, we intend to capitalize on the lessons we have learned to date in the development of the Orion Vehicle, to help us to develop a new emergency return module for use with the ISS.

By focusing on development of the commercial sector for access to low-Earth orbit, the President and NASA seek to develop multiple methods of reaching space and to spur an entire segment of the economy that will have worldwide repercussions for job growth and economic prosperity.

In addition to the flagship technologies that will give us capabilities that we do not have today, a major emphasis of our work will be a new heavy lift propulsion initiative. This initiative is intended to increase our technological capabilities, decrease the cost as we increase the number of users and expand the opportunities for all future robotic and human space activities.

We intend to work with our international partners on this transformative research and development effort.

This past month we received proposals to our request for information on heavy lift and we are reviewing them now.

The generation of ideas on this and all of our new initiatives is part of our new way of doing business and examining many possibilities to acquire the capabilities we want. The President has stated that a final decision on the direction of our heavy lift programme will be made no later than 2015 which puts us on an accelerated path for its development as opposed to the previous plans.

Working closely with nations around the world, we also plan to pursue a steady stream of new robotic exploration mission to scout locations for future human missions. While these missions return invaluable data to help plan for the future of human missions, they will also demonstrate new technologies and provide a wealth of scientific dividends and discoveries.

We plan to ultimately visit a variety of solar system destinations that include the Moon, near-Earth objects, the Moons of Mars and Mars itself, with ever more frequency and sophistication to gain the knowledge and capability needed for later human explorers.

We will also maintain and enhance the robust programme of exploration and research we have developed in science and aeronautics. In science, NASA will continue to expand humanity's understanding of Earth, the Sun, the solar system and the Universe beyond with 57 science missions currently in operation and 27 more in various stages of development.

NASA Earth observing satellites provide the bulk of the global environmental observations used for climate change research in the United States and abroad. Translating that data into usable products and valuable information for policy-makers is a key element of our work.

The President's budget proposal provides for a generous increase to Earth observations programmes, about 60 per cent over five years, that will enable us to accelerate missions that the scientific community has told us our priority and launch them in 2014 to 2017 timeframe. Also to begin putting the TIER-2 missions into development.

In addition we have a rare second chance to re-fly a mission and plan to re-launch in early 2013, the Orbiting Carbon Observatory that failed on launch last year.

Later this year, we plan to launch the GLORY Mission, and with Argentina, the AQUARIUS Mission.

We are also implementing a yearly competition for smaller venture class missions for instruments to be flown on missions of opportunity. These will be led by principle investigators and partner institutions. We plan to develop a common instrument interface that will make it easier for us to take part in international partner missions, as well as private and commercial missions and respond more rapidly to other partnership opportunities.

The current NASA planetary missions continue to make new startling discoveries and return amazing images, many of them in cooperation with our friends from other countries.

Recent accomplishments include the discovery of a previously unknown large and obscure ring of Saturn and data that has enabled scientists to compile a near complete map of the surface of Mercury.

The Mars Rover Spirit is now an in situ Prospector while the Rover Opportunity continues to roll towards the Crater Endeavour. On 19 May, Opportunity surpassed the duration record set by NASA's VIKING-1 Lander, of six years and 116 days operating on the surface of Mars.

The Mars Reconnaissance Orbiter has recently looked beneath the surface of the Red Planet to help us understand its ice sheets and possibly provide clues to the planet's climate change.

The Mars Science Laboratory will launch in the fall of 2011, beginning the most comprehensive astro-biology mission to the Red Planet to date.

In March of this year, Messenger will enter its orbit around Venus to add to the amazing data it has already returned from several fly-bys.

The Golden Age of Astrophysics from Space continues with 14 observatories in operation and this makes the NASA Keppler Telescope has discovered five exo-planets ranging in science from Neptune to larger than Jupiter.

NASA's newest space observatory, the Wide Field Infrared Explorer, WISE, has captured its first look at the starry skies that begins it survey in infrared light. WISE will uncover objects never seen before including the cooler stars, the most luminous galaxies and some of the darkest near-Earth asteroid encompassed.

The Hubble Space Telescope is operating at its peak performance thanks to the very successful servicing mission last year by the Space Shuttle crew.

We look forward to the launch of the James Webb Space Telescope in 2014. Webb will see further than Hubble can. It is expected to discover galaxies and other worlds invisible to all other satellites and ground-based telescopes. It will peer deeply into the dark hearts of nebula where new stars and planets are born. It will probe the atmospheres of planets outside our solar system looking for signatures and elements related to life.

In the area of heliophysics research, the Solar Dynamic Observatory launched in February this year has already begun to provide images of the Sun with unprecedented resolutions yielding new understanding of the carbons of solar variability and its impact on the Earth and on our space infrastructure.

Already we have seen amazing images of the surface of the Sun and the material streaming from sunspots. We look for this mission to transform our understanding of solar activity.

NASA partnership are providing real benefits for people around the world. A prime example of this is the SERVIR Programme through which NASA, NOAA and the US Agency for International Development are helping the countries of Central America, Eastern Africa and in the near future, East Asia, to develop a regional high-tech visualization and decision support system to integrate satellite imagery, forecast models and field data to address environmental changes and respond to natural disasters such as floods and wildfires.

Our new budget also expands support for GLOBE. There are now more than 40,000 GLOBE-trained teachers representing over 20,000 schools around the world. GLOBE students have contributed more than 18 million measurements to the GLOBE Database for use in their Inquiry-Based Science Project about the environment and the Earth system.

NASA's aeronautics research and development activities are pursing technological solutions to current and future challenges. The commercial aviation enterprise is vital to the national and global economy. Worldwide, over 2.2 billion passengers fly every year. Airline passengers expect these flights to be safe, affordable and convenient. The continued health of the Global Aviation Enterprise is to find the ability to increase system capacity while reducing environmental impact through next-generation aircraft and air transportation systems.

The global nature of air transportation systems require us to work with partners beyond our own borders. There are many area where we face common global challenges such as safety, green aviation and air traffic management. Our partnerships extend to Europe, Asia and Australia. We are working with international partners to understand and address critical safety issues, such as aircraft icing, and to develop and refine data mining tools that can help airlines to better understand and assess complete performance and safety, just to name a few.

This collaborative research will form the development of global standards and recommended practices that will reduce the environmental impact of aviation, in part by reducing noise and fuel consumption and making travel more efficient overall.

Mr. Chairman, as we look to the future of space exploration, it is becoming more apparent that this endeavour is truly international in nature. I know this Committee has been advised on the development of the Global Exploration Strategy, a multilateral initiative born in 2006 out of a commitment by 14 national and international space agencies to identify a shared vision of space exploration. These agencies have published the "Global Exploration Strategy: the

Framework for Coordination", a document that articulates the shared vision of space exploration focused on solar system destinations in which humans may some day live and work.

Next week these space agencies are planning to meet in Washington to continue the coordination of their respective space exploration plans leading to a global human exploration roadmap.

We look forward to other interested nations perhaps joining these discussions in the future.

Mr. Chairman, distinguished delegates, as I said in the beginning of my remarks, President Obama has provided a call to action for NASA that assumes increased cooperation with our international partners. We will continue to rely on your help to meet that challenge. For more than 50 years, the United States working in partnership with the United Nations COPUOS has taken a leadership role in the peaceful use of outer space. This partnership has been driven by a clear understanding that issues of global importance, such as those addressed in this Committee, call for global involvement. Together we have been working to share discoveries and knowledge of the Universe to bring the benefits of space technology to developing countries and to encourage the use of space as a tool for sustainable development here on Earth.

So please accept my Agency's thanks for your continuing strong support and guidance and our new era of global partnerships, the exploration of space is one area where all of us can demonstrate for other fields how to cooperate and how larger goals for the planet can be reached by people of all nations working together.

Thank you Mr. Chairman.

The CHAIRMAN: Thank you Ms. Garver for your very interesting presentation.

Are there any questions or comments?

One question please.

Mr. R. GONZÁLEZ ANINAT (Chile) *(interpretation from Spanish)*: Thank you so much Mr. Chairperson. Naturally I will have a neutral point to put as a neutral representative because I am a Vice-Chairperson of this Committee but I cannot fail to take this opportunity to thank NASA for the outstanding, really extraordinary part played helping Chile providing images immediately after the earthquake that occurred on 27 February. Tomorrow morning we will have a presentation from the representative of the Agency to explain this in greater detail.

Since often we are reduced to human beings and not just planets and the like, I really would like to thank the team of Mario Bedes(?). He is a Chilean national who has been working for NASA for 25 years or so, together with Marianna Campbell, and, of course, there are other teams as well, that really assisted us. And, of course, I am referring to a different matter. But I do have two questions in addition to thanking you for that.

In one instance, we had had conversations with NASA and the State Department over many years as to the possibilities of extending the SERVIR Programme to South America. At this point in time, it is restricted to Central America. This has been a long-standing aspiration of Chile and I am sure that it remains uppermost in our minds. It is a new way of cooperating in the spirit that you have described which inspires hope in us.

And another aspect that you have mentioned and that it is very significant for all the countries of the world, and I was able to monitor this, it is the GLOBE Programme. The whole issue of education and access to knowledge, as UNESCO says, is really of the utmost to overcome problems that derive from extreme poverty and in order likewise to achieve the Millennium Development Goals, as contained in resolution 52/22 of the General Assembly.

So the SERVIR Programme, will it be extended further down south and could the GLOBE Programme be extended as far as possible.

And finally, reiterate the words of thanks to the team that I mentioned, the NASA team specifically and NASA generally, so well represented today in the form of this outstanding presentation.

Thank you.

Ms. L. GARVER (United States of America): Thank you. First, of course, your welcome for NASA for our role in helping be responsive and share our data, that is exactly the kind of thing that we want to be doing more of and, of course, you are most welcome.

SERVIR, as I mentioned in my talk is a Programme that the President feels strongly about going forward. In fact, Charlie Baldman(?), a NASA Administrator, and I talked with the Secretary of State, Hilary Clinton, about this, and we have in our budget request for 2011 and beyond greatly increased the

budget for SERVIR that would allow us to expand generally. I do not know where we would intend to go next and, of course, that budget has not been passed by the US Congress but we have made a request for a significant increase and should that pass, we will be looking for it expanded and we will look certainly at the possibility of doing that in Chile.

For the GLOBE Programme, we have continued our strong support working with other agencies within NASA, including NOAA, and I know Dr. John Holdren, the President's Science Advisor, has taken a particular interest in this GLOBE Programme. They recently did a review of it and have reiterated the President' support as well. So these are exactly the kind of programmes that we hope to pursue more strongly in the future.

Thank you.

The CHAIRMAN: I thank Ms. Garver for your answers.

The final presentation that we will hear this morning will be by Mr. Satoru Otake of Japan on JAXA's Industrial Cooperation.

Mr. S. OTAKE (Japan): Thank you Mr. Chairman. Mr. Chairman, distinguished delegates, I am honoured to present the JAXA Industry Collaboration Programme today and I have already informed you of several parts in a statement as well.

And JAXA promotes industrial cooperation through industrial collaboration through the Industrial Collaboration and Coordination Centre and our industrial collaboration is divided into three categories shown in this slide.

The first one is so-called spin-off which is to apply JAXA technology to both aerospace and non-aerospace industries. The second one is the so-called collaboration for companies to collaborate with JAXA in conducting commercial space business. Lastly, the third one is space certification which is for JAXA to certify the products as usable in space.

With these three programmes that go with the respective title of industrial collaboration with the intellectual property utilization programme or the _____(?) programme and the Japanese space programme.

First Intellectual Property Utilization is designed to promote spin-off. The object of this Programme is to widely utilize JAXA's intellectual property not only in the field of aerospace but also in the various fields of industries.

JAXA promotes spin-off through a Patent Coordinator.

And the result of the Programme, JAXA's spin-offs have been contributing to different fields such as environment and medicine.

Now I would like to introduce three examples of JAXA spin-offs.

The first example is the heat insulation technology, especially developed for the faring of the HII launch vehicle has high-heat insulation capacity and it is lightweight. Utilizing this technology the Michi Sanyo Corporation, has developed an advanced ceramic paint with high-heat insulation efficiency and they have commercialized it by the name of GAINA. Now GAINA can meet different industrial needs such as building, vehicles and other facilities in a wide range of temperature control. Because GAINA is highly heat paint type of material which can endure the vibrational launching. It can be used on the curved surface as well as the flat surface. GAINA needs to be applied only one or two millimetre thick to demonstrate its heat insulation effect. It could potentially contribute to the prevention of global warming.

The next one I will introduced is waste recycling technology. JAXA has been researching organic waste recycling technology as a part of sufficient life support technology which is necessary to actualize long-term human space exploration. Utilizing this technology, the Tokyo Koatsu Corporation has created the waste disposal facilities for livestock waste and organic waste produced in the food industry. This technology is fundamentally different from the conventional organic waste processing which only dilutes the waste to meet the standard value. Tokyo Koatsu Corporation is aspiring for the disposal of organic waste by making the waste usable as an energy and aquatic resources. Once achieved, this technology could greatly contribute to the solution of environmental problems. In the photo you can in the bottom waste fluid is generated into clean water, that is shown in the slide.

So the last example is that JAXA's protein crystal creation equipment. JAXA has been conducting a space experiment to establish a method to generate high-quality protein crystals in the micro-gravity environment where there is minimum hindwinds(?) from the gravity forces. It is effective to use high-quality protein crystals to understand their

structure for the development of new medicines. Thus applying this method of the space experiment by Confocal Science Corporation has developed a bio-macro molecule crystallization equipment. This can be effectively generated high quality protein crystals of high productivity and reliable at lower cost. Confocal Science Corporation has also patentized a protein crystallization experiment kit by the name of C2 kit, as well as C-Protein which is an integrated service for the protein structure analysis with higher resolution thus service also encompass production and distribution of a software.

Research developments are contributing to the basic analysis for R&D of new medicine for an illness such as Alzheimer's' Disease.

The Open Lab collaboration, I will show you some examples.

In this programme JAXA collaborates with companies and universities with unique ideas in research technology aiming at the creation of new commercial business, we also expect the technology into space. For example, the Japan's Women University, Goldwing Corporation and other entities have conducted research for life support in space. In this research, special clothes were developed for the astronauts to be able to work efficiently and comfortably in the International Space Station. Astronaut Dr. Doi actually wore this underwear in his recent flight. Water is precious in space and astronauts cannot do laundry or a clothe wash in the International Space Station. So therefore they especially worried about getting their clothes dirty and smelly.

In order to solve this problem, special clothes were created with the fibre that is processed. They odourize themselves and stay clean. Using this technology, the odourized underwear is now on the market by the name of Maxifresh Plus, shown here as an example, and is attracting people's attention.

Lastly, the Japanese Space Food Programme, I would like to show you.

Nutrition food and minimal _____(?) for astronauts for staying at the Space Station for a long period of time to fulfil their ambition. JAXA has established qualification criteria for Japanese space food. Choices include not only traditional Japanese cuisine but also home cooking. So for 28 recipes from 11 countries have been certified as a Japanese space food. Some of the examples, space curry, I show you this example, and they are from House Food Corporation, traditional red bean jelly known as Yohkan from the Yamazaki Baking Corporation and green tea from Mitsui Norin Corporation.

JAXA has launched our own space brand named JAXA Cosmode, as I mentioned in a statement, to encourage more companies to enter and conduct space-based. We would like people to use space development technology more widely and more popular.

We would like to people to feel the space environment more relevant to their lives. Therefore, this product development project was established to bring the cutting-edge ideas that came out of Japanese space development into the daily life of the common people.

In this Cosmode Project, goods and services are produced for general consumers. We are branding such goods and services by granting the use of JAXA Cosmode the Project logo which you can see on this slide.

JAXA granted the use of the JAXA Cosmode Project logo to more than 20 companies. We are expecting even more companies to use this logo.

Thank you very much for all your attention for our effort about the industrial applications.

Thank you.

The CHAIRMAN: I thank you Mr. Otake for your presentation.

Are there any comments or questions?

I see none.

Distinguished delegates, I will shortly adjourn this meeting of the Committee. Before doing so, I would like to remind all delegates that this afternoon, the Committee will not meet. Instead, as agreed by this Committee, the Working Group on the Long-Term Sustainability of Outer Space Activities of the Scientific and Technical Subcommittee, will hold a meeting to discuss its Terms of Reference and methods of work.

A proposal by the Chairman of the Working Group is contained in document A/AC.105/L.277, which was distributed to all delegations last Friday. Today, at 6.00 p.m. following the ceremony to inaugurate the International Committee on Global Navigation Satellite Systems Exhibit, at the Permanent United Nations Office for Outer Space Affairs Exhibit,

there will be a reception hosted by the United States of America. All delegates are cordially invited to attend.

Are there any questions or comments on this proposed schedule?

Yes, the distinguished representative of Venezuela.

Mr. R. BECERRA (Bolivarian Republic of Venezuela) *(interpretation from Spanish)*: Mr. Chairperson, I would like to have this perfectly clear. It was a very fast explanation and I was not able to grasp all of it. It is my understanding that we will have a meeting of the Working Group. Is that going to be this afternoon and not tomorrow?

The CHAIRMAN: That is right. This afternoon, as we decided at the beginning of the session, the Working Group on Long-Term Sustainability of Outer Space Activities of the Scientific and Technical Subcommittee will hold a meeting from 3.00 p.m. to 6.00 p.m.
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Are there any other questions or comments?

The distinguished representative of Austria.

Mr. J. AIGNER (Austria): Thank you Mr. Chairman. Just a short housekeeping announcement. I would like to once again remind delegations of the Austrian reception tomorrow evening and I would like to invite the delegations that would like to participate to forward the names of participants to the Austrian delegation.

Thank you Mr. Chairman.

The CHAIRMAN: Thank you.

This meeting is now adjourned until 10.00 a.m. tomorrow morning.

The meeting closed at 1.12 p.m.