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

The meeting was called to order at 3.11 p.m.

The CHAIRMAN Good afternoon distinguished delegates. I now declare open the 639th meeting of the Committee on the Peaceful Uses of Outer Space.

This afternoon we will continue and hopefully conclude our consideration of agenda item 9, spin-off benefits of space technology: review of current status; item 11, space and water; item 12, space and climate change; item 13 use of space technology in the United Nations system and item 14, future role of the Committee. We will also continue our consideration of agenda item 7, report of the Scientific and Technical Subcommittee on its forty-eighth session.

I would say following the plenary but we decided with the Secretariat to have the technical presentations included in the session and then, time permitting, we continue with some agenda items so that some delegations can prepare their statements. This is save time for the report tomorrow and the day after tomorrow.

This afternoon we will have three technical presentations. The first by a representative of Australia entitled 'The Climate Regional Readiness Review (Climate R3)'. The second by a representative of the International Academy of Astronautics entitled 'Results of the 2011 IAA Planetary Defence Conference' and the third, by a representative of the Space Generation Advisory Council entitled 'The Space Generation Working Groups: input from the next generation of space sector leaders on the development of space'.

I would also like to inform delegates that the Action Team 14 on near-Earth objects is currently holding its second meeting in the meeting room M7.

Spin-off benefits of space technology: review of current status (agenda item 9)

Distinguished delegates I would now like to continue and hopefully conclude our consideration of agenda item 9, spin-off benefits of space technology: review of current status.

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

Mr. G. BARSEGOV (Russian Federation) (*interpretation from Russian*) Chairman, distinguished delegates. The space industry has very scientifically intensive, highly sophisticated technologies and production processes involved and the artefacts which are produced by it have a very high innovative potential. The use of the results of space activity in the interests of the economical development of our land is a strategic thrust of the whole policy of modernization which is taking place throughout the Russian Federation. The Federal Space Agency, Roscosmos as it is termed, determines the strategy of the innovative development of the space industry, it runs competitions on innovative projects, it organizes and ensures their practical implementation as well as the transfer of space technologies onto other branches of the economy. The integrated structures and space industry

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companies produce innovative production and, inter alia, production which does relate to spin-off benefits within the framework of the Federal Space Programme of Russia, the GLONASS special programme as well as other federal specific programmes.

One of the main innovative products of the space industry are space information management systems which are used to resolve problems which may be socio-economic, scientific or other. They include various space communication systems, broadcasting, remote sensing of the Earth, navigation and coordinate temporal support, search and rescue, etc.

For example, the space communication broadcasting and retransmission systems support the single information area for its subscribers, ensure access and communications with sparsely populated regions which are difficult to access, with far away facilities which may also be portable, ensure the transmission of TV and radio programmes, access to the Internet for schools in regions which are very far removed. The broad based implementation of space products and services into everyday practice is something that enables the betterment of the quality of life.

At present, Roscosmos has concluded over 60 agreements with the authorities of the federal entities of the Russian Federation having to do with issues of the organization of joint work with regard to the possibilities of tapping the capabilities and potential of space information to be harnessed for the improvement in the enhancement of the management of the economies of the regions of Russia. The main purpose of these agreements, and this is the maximum integration of space products and services into the business processes and the system of the State management in all of these regions.

What is planned is the establishment of a qualitatively new regional NAV information infrastructure which ensures the objective and comprehensive monitoring of the basic branches of the country's economy. An important thrust of the activity, which is required if useful side benefits are to accrue for the end users, is the planning and implementation of practical pilot projects having to do with the implementation and the comprehensive application of space information systems and, first and foremost, based on the capabilities of satellite navigation, capabilities which are appropriate for resolving the requirements of the regions.

At present, there are seven major pilot projects which are being conducted to various purposes. A very promising thrust of this innovative activity are all of the projects and activities taking place on board of the Russian segment of the International Space Station (ISS). Russia has retained, and continues to accumulate, a very unique experience of the way in which man can harness outer space and, in the final analysis, the planets of the solar system.

On board the ISS, innovative technologies receiving new preparations and materials in conditions of zero gravity are worked upon, for example ways to protect plants and to enhance the yield of food crops. Plasma crystals in order to create the sources of electric power and to capture dust; preparations in order to clean up the environment, cleaning up petroleum polluted water catchment areas and one of the most interesting results for new materials on board are a special pieces of equipment which are able to test new preparations to address the problem of AIDS and hepatitis, also semi-conductors for the production of micro-electronics.

In the future we are planning to deploy orbital technology laboratories to industrially produce extremely clean materials to use in small size spacecraft OKATMQS? OKATISS? which will be periodically docking with the ISS in order to support it. The companies in the space industry are producing all sorts of artefacts which are not necessarily directly within their occupation of choice but products which are extremely useful and valuable in economics in general. Even the way in which these artefacts are called is already oriented to the complex of fuel and power, transport, various agro food enterprises, the addressing of ecological tasks etc. We are planning to come out with a very broad range of products which are sensors in equipment to gauge and to monitor and control systems, technical complexes of all sorts on the basis of the cutting edge achievements which have been scored by the industry using nano-technologies, inter alia. Among the various, very sophisticated and refined pieces of production which is produced by these organizations included by Roscosmos just in the fuel and power sector and transport sector we have roughly 500 different artefacts and devices.

We are also working on agreements for long-term cooperation in the field of the development, the manufacture and the delivery of equipment to support and to technologically reprocess various major industrial production processes and, as a result, we are going to be having very broad-based production of this kind of equipment. In the industry and its organization we are also organizing the issue of a fairly broad based series of diagnostic and procedural equipment for medical use. For example, we can also refer to the

hydro-technical type of support systems which are being developed and there are new segments of markets with very high cutting edge production and modernization and broadening of the series of production of all of these above and this will make it possible to stimulate demand and will allow for even more spin-off benefits of a civilian purpose which are being produced. This will allow for the even greater enhancement of the economic sustainability and vested attractiveness of this industry.

Chairman. The space industry is contributing and will continue contributing significantly to the innovative development of the economy of Russia and the role of this industry and its achievements enhancing our economy and it certainly should be enhanced and will be enhanced as the structure and the quality of the staff involved is enhanced and this in turn will stimulate the development of our partnerships between private and public sector and will further stimulate innovative projects on the basis of these dual technologies. Thank you very much.

The CHAIRMAN (*interpretation from Russian*) Thank you very much representative of the Russian Federation for this very interesting and valuable contribution.

(*continued in English*) The next speaker on my list is the distinguished representative of Japan.

Mr. Y. HORIKAWA (Japan) Thank you Mr. Chairman. Mr. Chairman, distinguished delegates, before I make my statement let me take this opportunity to convey and share a great news with you all. Today, 2.12 a.m. local time, Japanese astronaut, Satoshi Furukawa, made a successful lift-off from the Baikonour cosmodrome in Kazakhstan by Soyuz rocket along with his fellow astronaut Mike Fossum and cosmonaut Sergei Volkov. The Soyuz spacecraft, co-piloted by astronaut Furukawa, is expected to arrive at the International Space Station tomorrow, Vienna time, where astronaut Furukawa will commence his long-term stay of five and a half months.

As part of his mission astronaut Furukawa will conduct important space experiments with his medical background and we strongly believe that his endeavour will be met with great success. We would like to thank the Russian Federation, Kazakhstan, and our partners, in this successful launch and to gratefully acknowledge the assistance we have received from several ISS support countries. We wish great success to all the members of this operation and look forward to hearing more about their accomplishments in space over the course of their mission.

Mr. Chairman, on behalf of the Japanese delegation, I am pleased to present to you some examples of Japan's spin-off efforts in the field of space technology at this session of COPUOS. My delegation commemorates the fiftieth anniversary of both COPUOS and human space flight once again. New space technologies are needed to face the challenges of the space age frontier and an unknown world since the first human space flight took place 50 years ago. These technologies are used, not only for space development but also as spin-offs for our ordinary lives. Japan promotes spin-offs and expects the benefit of space development to expand by introducing or sharing their own examples at COPUOS. For this reason, this agenda item is still one of the most important in our view no matter how many years have passed by since this item was introduced.

To begin with, the Japan Aerospace Exploration Agency (JAXA) has established the 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 spin-offs, that is to say, technology transfer, various space technologies and patents and intellectual properties accumulated by JAXA for industry use. It is expected to boost the level of cooperation among public, academic and private sectors according to the previously mentioned Japan's basic plan for space policy.

To offer you an illustration of recent remarkable examples of Japanese space spin-offs, the cohesive insulating material for the _____(?) of H-II launch vehicle is able to harden at room temperature. In addition, Japanese astronauts who stayed aboard the ISS for a long period continuously engaged in the experiment, Bisphosphonates as a Countermeasure to Space Flight Induced Bone Loss, which is a collaborative research project between JAXA and NASA. During orbital weightlessness the process of losing bone density is accelerated to about 10 times that of a person with osteoporosis. This experiment makes it possible for us to obtain medical data regarding bisphosphonates and more specifically to demonstrate the effectiveness of the antiresorptive drug for bone loss in a short amount of time. These experimental results are expected to contribute to research on medical health care for the elderly.

Another experiment, Validation of On-Orbit Digital Holter ECG Monitoring has been carried out and its results are expected to be applied to the medical monitor technology for the tele-medicine on the ground

and special circumstances such as night time irregular and extreme situations.

When the Great East Japan Earthquake occurred last March, space underwear and water filters granted by the JAXA cosmode project were provided to affected areas and distributed to victims. The space underwear was developed for astronauts to be able to work more effectively and comfortably in the ISS. These astronauts were especially worried about getting their clothes dirty and smelly, the clothes are made of fibre that has a unique function to deodorize itself and stay clean. The space underwear also adapts to circumstances where victims are forced to reside in refuge places for longer periods of time. Japan also sent this space underwear to the Chilean miners who had been trapped deep underground last year.

The water purifier, previously mentioned, was developed from the application of research results of recycling the water from waste water in space and contributed to solve the water shortage in affected areas.

Mr. Chairman, these are just a few examples of Japanese space spin-off efforts aiming to _____(?) comparable space spin-off benefits JAXA has undertaken various supportive activities such as the promotion of licensing by business academia collaboration coordinators to support the commercialization of technology based on JAXA's licensing promotion system and opening up JAXA's R&D facilities to private companies in order to support their commercialization plans.

JAXA has also established the JAXA Cosmode project as JAXA's space brand. This project aims to promote the utilization of space technology and its results through direct support from JAXA and also to encourage private companies to enter into the commercial space business market and into the commercialization of these products.

Mr. Chairman, spin-off benefits from space technology constitutes one of the main issues of the space policy of Japan in its basic space plan. Japan is of the belief that spin-offs from space technology will advance economies through the production of new innovative technology thereby contributing to an improvement in the quality of life. Thank you for your kind attention.

The CHAIRMAN I thank the distinguished representative of Japan for your statement. Allow me to congratulate you also for the successful launch of astronaut Satoshi Furukawa from Japan, together with Sergei Volkov from Russia and Michael Fossum from NASA. It is a pretty international crew this time, not two Russians and a foreigner but one Russian and two foreigners. What I can say is that Sergei Volkov is the second generation of cosmonauts. His father is also a very well-known cosmonaut from Russia and the spacecraft they use now, Soyuz TMA-02M is the second launch of this new type of spacecraft equipped with a completely digital control system. I remember 30 years ago when I flew on a simple Soyuz not T, not TM, not TMA, the systems onboard the Soyuz were electromechanical so the difference is huge to the actual systems. Thank you very much once again Dr. Horikawa for your statement.

Is there any other delegation wishing to speak under this agenda item at this afternoon's meeting? Agenda item 9, spin-off benefits of space technology. I see none.

We have therefore concluded our consideration of agenda item 9, spin-off benefits of space technology: review of current status.

Space and water (agenda item 11)

Distinguished delegates, I would now like to continue and hopefully conclude our consideration of agenda item 11, space and water.

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

Mr. M. SUGAMIYA (Japan) Mr. Chairman, distinguished delegates. On behalf of the Japanese delegation I am pleased to present Japanese experiences and future plans for space-based water cycle observations.

On 11 March this year Japan was highly affected by the earthquake, the damage caused by the tsunami consequent to the earthquake were particularly devastating, affecting the entire north-eastern region of Japan. Since the affected area was so large, it was essential to quickly grasp the extent of the damage. Among the various means deployed for that purpose I would like to mention one example.

Japan Aerospace Exploration Agency (JAXA) rapidly evaluated the actual areas of each of the cities and towns submerged by the tsunami, analysing the data from AVNIR-2 and PALSAR onboard the ALOS and reported to the ministries and other entities concerned in the government, including the situation room of the Prime Minister's office. We received thousands of satellite-taken images from many

countries as well through the schemes of International Disaster Charter and Sentinel Asia, for which we are deeply grateful. Thus, Japan really experienced the utility of the great significance and importance of satellite observation in cases of natural disasters.

Nevertheless, satellite observation is not only important in the event of sudden disasters but is also necessary to monitor the water cycle for long range in order to analyse global warming. In this agenda item, Japan would like to introduce our successful cases and future plans in observing water cycles.

I would like to start with the two Japanese geostationary meteorological satellites, Himawari-6 and Himawari-7, which reinforce the Japanese meteorological observation system and are, at the same time, important components of the worldwide geostationary meteorological satellites networks. Japan has made contributions all over the Asia Pacific region through 30 years of observations by the Himawari series. Observation data obtained by Himawari is also being utilized efficiently as the basis for research on climate change including changes in water cycles.

Just recently research has found that, on a global scale, water cycle changes are directly affecting precipitation, water resource and water-related disasters on a regional and national level. Understanding the global water cycle is therefore vital for predicting its future and for ensuring and improving the quality of our daily lives.

Water cycle observations need to be made globally and frequently due to its short-term variability. Thankfully satellite observations provide a single most effective means of making global water cycle observations in this way. For this reason, Japan promotes water cycle observation through its satellites with a focus on precipitation.

JAXA and NASA are, for example, working together to observe global water cycles. Data acquired by the Tropical Rainfall Measuring Mission (TRMM) and by Aqua contribute to the analysis of global water cycle mechanism and the accuracy of weather forecasts. Some sensors on board the TRMM and Aqua were developed by Japan. The precipitation radar (PR) on board the TRMM is the first space-borne precipitation radar that enables three-dimensional observation of precipitation. The improved Advanced Microwave Scanning Radiometer for EOS (AMSR-E) on board Aqua is the most advanced passive microwave radiometer in the world. The data of AMSR-E also contributes to the ongoing observation of Arctic sea ice which has been quickly declining in recent years. The coverage data of Arctic sea ice recorded the lowest levels in the Earth Observation Satellite (EOS) monitoring history during the summer of 2007 and, in 2008, the second lowest.

Observation data is being used not only for research but also for weather forecasting by meteorological agencies worldwide. GSMap which combines a kind of observation data including a weather satellite, microwave imager and precipitation radar, provides hourly precipitation information with four hours time delay after observation and benefits water resource management and reduction of water disaster.

Furthermore, Japan is planning another project called GCOM. The purpose is to monitor water cycle and climate change as well as evaluate those mechanisms through observing atmosphere, oceans, land and snow ice globally, in the long term. GCOM-W1, which is part of this project, will be launched in the current Japanese fiscal year and is expected to contribute mainly to the four following areas.

Firstly, GCOM-W1 will assist in clarifying the mechanism of unusual weather such as El-Niño through its comprehensive observation of oceans, the air and land, including sea surface temperature, chlorophyll level, amount of precipitation and water vapour, vegetation distribution and soil moisture.

Secondly, it will assist in detecting the slightest indications of warming climate through the continuous long-term observation of the change of the distribution of snow and sea ice in the polar regions.

Thirdly, it will assist in accumulating basic information on food resource management such as crop growth conditions on the land and the distribution of fish in the sea by measuring plant activation level, soil moisture content, chlorophyll level of phytoplankton and sea surface temperature.

Lastly, it will be utilized in the numerical weather forecast and assist in improving the accuracy of typhoon track forecast and rainstorm forecast as well as the monitoring of natural disasters such as wildfires, aerially contaminated micro particles level and yellow sand level. Thank you Mr. Chairman.

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

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

Ms. C. YATINI (Indonesia) Mr. Chairman, distinguished delegates, according to the United Nations over 800 million people do not have access to safe drinking water, this issue is more severe in developing nations. Meanwhile the World Health Organization argues that there is a direct relationship between poverty and lack of access to clean and safe drinking water. Poverty in developing countries often includes living in urban slum conditions as well as in rural areas where clean drinking water sources are miles away from villages. The issue of water is not only the issue of clean water scarcity, human tragedies in many cases are caused by water, either by flood or drought. Water is also closely related to food security and energy security, therefore it is extremely important to address the issue of water in a more comprehensive _____(?).

Developing countries that are more vulnerable to such disaster situations unfortunately have no sufficient resources to provide severe weather warning which may worsen their socio-economic situations once severe weather strikes them. Most developing countries are lacking in expertise and technical capabilities to make reliable weather forecasts.

Mr. Chairman. We are all aware that the need of early warning of extreme weather for the general public is very important, both in developed and developing countries to reduce disaster risk. Developed countries need raw data from all over the world including from developing countries to make better models and forecasts in their knowledge products while developing countries need accessible knowledge products including space-based products. In this regard, Indonesia therefore encourages all countries to strengthen cooperation in terms of information and data exchange to enable every country to take necessary precautions in case of extreme water-related disasters.

Indonesia would also like to encourage developed countries to pay more attention to countries which are more vulnerable to natural disasters but lack of expertise and technological capabilities to forecast extreme weather that may cause flood or drought. In this regard, Indonesia stands ready to develop mutual beneficial cooperation and mechanisms in space technology applications which will enable us to deal with extreme water-related disasters. Thank you.

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

Is there any other delegation wishing to speak under this agenda item at this afternoon's meeting? I see none.

We have therefore concluded our consideration of agenda item 11, space and water.

Space and climate change (agenda item 12)

Distinguished delegates I would now like to continue and hopefully conclude our consideration of agenda item 12, space and climate change.

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

Mr. G. CHOI (Republic of Korea)Thank you Mr. Chairman and distinguished delegates. Climate change is the biggest threat which human beings are confronted with nowadays. There are some different theories with regard to the reasons of climate change however, it is generally believed that one of the major reasons for such changes is industry and agricultural activities. The greenhouse gases have been increased 50 per cent since the industrial revolution in the eighteenth century. During the last 100 years the temperature of the Earth's surface has gone up .7 _____(?) on average but in Korea it was 1.5 _____(?) which is twice _____(?). Rise of temperature causes many problems such as occurrence of epidemics, change of vegetation, rise of sea levels, creation of strong typhoons, increase of rainfall and shortage of food due to frequent droughts and harmful insects. Climate change is a global phenomena and utilization of satellites is the best way to effectively deal with such changes.

In Korea, many universities and national institutions are actively conducting research on climate change using satellite data. In June 2010, Korea Aerospace Research Institute developed and launched the first Korean geostationary satellite, COMS-1, which carries a meteorological sensor, an oceanographic sensor and a Ka-band communication payload. The meteorological sensor provides images of one third area of the entire Earth, including the Pacific and Indian Ocean, to observe the formation and movement of clouds and enables us to calculate the quantity of water vapours. A sensor also monitors the occurrence and the transfer pattern of yellow sand which occurs from inside the Eurasian continent. The ocean sensor monitors _____(?) of ocean which area is 2,500 kilometre by 2,500 kilometre centred on the Korean peninsula. Using the data from the sensor, scientists calculate the density of chlorophyll inside ocean water and, from such calculation, we can extract

variable information that enables us to foresee and prepare for the effects resulting from climate change.

Mr. Chairman. Climate change is an extremely complicated global phenomena due to the involvement of a wide area and multiple parameters. Therefore to _____(?) and find an effective solution to deal with climate change. International cooperation on the issues involving various areas such as atmosphere, ocean, land, glaciers and solar terrestrial interactions cannot be over-emphasized. Thank you.

The CHAIRMAN I thank the distinguished representative of Korea for your statement.

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

Mr. M. TARABZOUNI (Saudi Arabia) (*interpretation from Arabic*) Mr. Chairman, the Kingdom of Saudi Arabia, over the last five years, had a sudden change in temperature models which rose to 50° Centigrade, strong rainfall has also occurred in my country, Saudi Arabia. Moreover, between the Red Sea and the Arabian Gulf we have had sandstorms which are unprecedented to the extent that I have never seen in our country and climate change therefore and the study thereof is very important given our geographical position.

Inasmuch as Saudi Arabia is located in a desert area where water resources are extremely scarce, we think that this is an issue that must be addressed with particular attention and we call upon the Committee to step up its efforts and we would like to do any kind of possible research or other information that could be helpful in this respect. Thank you very much.

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

Are there any other delegations wishing to speak on agenda item 12, space and climate change?

I give the floor to the distinguished representative of Brazil.

Mr. F. FLORES PINTO (Brazil) (*interpretation from Spanish*) Thank you very much Mr. Chairman. I just wanted to say that we are almost ready to make a statement on this topic and we would like to request your permission to deliver our statement tomorrow morning, if you would be so kind. Thank you.

The CHAIRMAN OK I understand your wish distinguished representative of Brazil. We really wanted to conclude and to include in the report all these things because elaboration of the report takes a long time, all the translation and everything takes at least two days. We will have your statement tomorrow morning.

So we will therefore continue our consideration of agenda item 12, space and climate change, tomorrow morning.

Use of space technology in the United Nations system (agenda item 13)

Distinguished delegates, I would like now to continue and hopefully conclude our consideration of agenda item 13, use of space technology in the United Nations system.

Is there any delegation wishing to speak under this agenda item at this afternoon's meeting? I see none.

We have therefore concluded our consideration of agenda item 13, use of space technology in the United Nations system.

Future role of the Committee (agenda item 14)

Distinguished delegates, I would like now to continue and hopefully conclude our consideration of agenda item 14, future role of the Committee.

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

Mr. C. ARÉVALO YEPES (former Chair of COPUOS) (*interpretation from Spanish*) Thank you very much Mr. Chairman. It is not on behalf of the International Astronautical Federation but rather as the former-Chair of COPUOS that I spoke and there were reactions and I am grateful for them but I do not need to make any comments pursuant to what was said yesterday.

The CHAIRMAN Thank you very much.

Is there any delegation wishing to speak under agenda item 14, future role of the Committee?

Distinguished representative of China has the floor.

Ms. K. PAN (China) (*interpretation from Chinese*) Mr. Chairman the first man-made satellite was launched into space in 1957 and soon after the Ad Hoc Committee on the Peaceful Uses of Outer Space came into being and has been closely involved in space activities ever since. Fifty years ago _____(?) Ling entered space leading mankind into the age of manned space flights. In that same year, the permanent COPUOS held its first session which declared outer space as the common heritage of mankind. This solemn declaration was repeatedly confirmed in subsequent declarations and treaties. On the occasion of the fiftieth anniversary of the first session of COPUOS, the best way to commemorate this historic moment is to look back at the past, to look at the current status and, to look to the future. The Chinese delegation supports this session to discuss the role of COPUOS and to develop a magnificent blueprint for the future.

Mr. Chairman, in the past five decades COPUOS has made great achievements in promoting the peaceful use of outer space, improving space law and deepening international cooperation and has thus contributed greatly to the human endeavours in space. Looking to the future, the Chinese delegation believes that COPUOS should continue to play a leading role in the above-mentioned fields by adapting to the development trends in space activities moving forward with the times and actively expanding the area of work, effectively improving the space capabilities of developing countries and introducing innovative and better working methodologies.

Mr. Chairman. COPUOS should strive to improve the space law system. In recent years, many countries have formulated space policies and programmes and have increased their spending on space activities. Private entities have also become actively involved in space activities, therefore a new feature in the space exploration has emerged which is characterized by multiple players, diverse means and active capital investment. However, in stark contrast with this new development, the space law system has been developing only very slowly and it can hardly cope with the new challenges mentioned previously. Therefore COPUOS should look squarely at the current situation and move ahead with the times by playing a leading role in the development of new space law instruments in order to instil a new vitality of times into the space law system.

Mr. Chairman. COPUOS should serve as an important platform for developing countries to take part in space activities. The Chinese delegation stands for an inclusive development of outer space and the effective improvement of the capabilities of developing countries in space exploration, space technology transfer and application. The benefits derived from space exploration have greatly promoted social economic development and human lives. However, until now, due to technical and other reasons, developing countries have found it hard to effectively benefit from the progress in space on an equal footing. COPUOS should organize more seminars and workshops to promote technology transfer and information exchanges in order to provide developing countries with opportunities to participate in a common development, effectively improve the space science and technology level of developing countries with a view to enabling the space achievements to benefit the entire mankind in an inclusive development.

Mr. Chairman. The Chinese delegation maintains that COPUOS should improve its working methodologies and efficiency. The United Nations should strengthen its support to COPUOS so as to enable it to commit more resources to improve law and order in outer space and to strengthen the space capabilities of developing countries. COPUOS itself should try to better coordinate all activities related to outer space in the UN system with a view to making outer space cooperation more efficient. In addition, COPUOS should improve its working methods, take full advantage of the communication technologies, rationally design agenda items for its sessions, increase coordination between its two subcommittees and, avoid overlapping of work and waste of resources. The annual sessions provides available opportunities for exchanges and learning and all countries should try to strengthen practical cooperation during these sessions.

In the next 50 years, COPUOS shoulders an even more important mission, China will continue to support COPUOS in playing a leading role in the field of space development and stands ready to build a harmonious outer space with all other countries. Thank you Mr. Chairman.

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

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

Distinguished representative of Brazil, you have the floor.

Mr. F. FLORES PINTO (Brazil) (*interpretation from Spanish*) As regards the future role of the Committee, this is a topic of the greatest importance as you can well imagine. COPUOS has what I would call a constructive past history, truly an

exemplary past history during difficult times. For example, during the 60s and 70s in the area of the Cold War which was very dangerous for mankind, here in COPUOS and its two subcommittees we were able to build a very constructive atmosphere where not only was it possible to hammer out plausible solutions which met the needs of the time but also created a climate which was quite different from that which was dominant at the world political level. Hence, COPUOS was very much in keeping with the era in which it was working but now we seem to be out of synch with our present era. There is an atmosphere outside of COPUOS in our contemporary world which is not adequately reflected within the Committee. In other words we, I believe, are underestimating the potential of COPUOS. COPUOS is being considered and used in a way which does not measure up to its potential which would be an open and broad centre for discussion which would be respectful and democratic in its approach.

One of the things which impresses me the most in the work of the Committee today, in particular on the Legal Subcommittee, is that when the possibility of discussing an item is denied that means such a topic cannot even be broached. When some things are suggested they are just rejected out of hand they are considered to be ineligible as it were for discussion. At the same time we have changes, there are new opportunities that could exist and therefore I consider that that situation is frankly undemocratic. We are speaking openly of the world, of freedom of the Press, human rights, possibilities for peoples to express themselves freely and constructively and here, within our proceedings at some points in time, we have seen that certain topics simply are ignored as if they did not exist, they disappear, and they cannot be addressed. I do not think this is a constructive manner, it is not consistent with the history of COPUOS, it does not take advantage of the opportunities afford to us by COPUOS and it is simply not in keeping with the twenty-first century. We are facing enormous problems and challenges which need broad-based discussions and exchanges of ideas and information. We are living in an age of plurality where a broad spectrum of opinions exist and they must be allowed to express themselves here in COPUOS as freely as possible.

That, Mr. Chairman, is the message our delegation wants to convey. We have an historic link with COPUOS and we are fully confident that COPUOS has a shining tomorrow before it but we have to have it in a more open way, we must have discussions which do not necessarily entail commitment but we have to learn more from each other as to what the various delegations are thinking. This is a pluralistic world that we live in and if we are to reach strong agreements we have to listen to and respect the views of others, this is of the utmost important. Thank you Mr. Chairman.

The CHAIRMAN I thank the distinguished representative of Brazil for your statement.

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

Mr. V. KOPAL (Czech Republic) Thank you very much. Mr. Chairman, two or three years ago the former Chair of this Committee, Ambassador Ciro Arévalo Yepes, drafted and introduced a very interesting and thoughtful paper towards a United Nations space policy. At this session he repeated the main principles of his paper and his paper remains to be very important. After his presentation, some delegations and I remember particularly my distinguished friend and colleague, Ambassador González Aninat, suggested to retain this item on the agenda of the Committee for the next year. I would like to associate my delegation to this suggestion and we also would like to see this paper and all related ideas to this topic on the agenda of this Committee for reasons that have been explained in greater detail by another of our colleagues, Professor Montserrat Filho. I would like to say that our delegation too would be happy to see the item, the future role of the Committee, on the agenda of its next session.

The CHAIRMAN Thank you very much Professor Kopal for your intervention on behalf of the Czech Republic.

Are there any other comments or statements under this agenda item? I see none.

We therefore have concluded our consideration of agenda item 14, future role of the Committee.

Report of the Scientific and Technical Subcommittee on its forty-eighth session (agenda item 7)

Now we open the floor for agenda item 7, report of the Scientific and Technical Subcommittee on its forty-eighth session. We will continue our consideration on this item and, with your permission, I would first like to give the floor to the Chair of the Action Team 14 on near-Earth objects, Mr. Sergio Camacho of Mexico, to inform us on the work of the Action Team 14 at the current session of the Committee.

Mr. S. CAMACHO LARA (Mexico) (*interpretation from Spanish*) Thank you very much Mr. Chairman and I am also grateful to the delegates for giving me this opportunity to address the Committee as the Chair of Action Team 14 on near-Earth objects. AT 14 was established in response to a recommendation made by UNISPACE III.

With your permission I will now switch to English since the text on which we were working on in the Action Team was in English and there has not been time to make a translation available.

(*continued in English*) UNISPACE III gave the following terms of reference to Action Team 14. Review the content, structure and organization of ongoing efforts in the field of near-Earth objects; identify any gaps in the ongoing work where additional coordination is required and/or other countries or organizations could make contributions; proposed steps for the improvement of international coordination in collaboration with specialized bodies.

I would like to inform delegates that during the current session of the Committee the Action Team on near-Earth objects held two meetings and 17 members participated in person and four other members participated via teleconference. During the meetings the Action Team considered further contributions to the draft recommendations for an international response to the near-Earth object impact threat as contained in the interim report of the Action Team presented to the Scientific and Technical Subcommittee last February in A/AC.105/C.1/L.308, annex. In particular we dealt with sections 1 and 3 of that annex dealing with information analysis and warning and mission campaign planning and operations.

The Action Team also discussed the way forward to establish a mission planning and operations group including the drafting of the terms of reference of such a group and considered a few of the tasks that a mission planning operations group might carry out and which would be reflected in its terms of reference. I would like to inform delegates that the Action Team 14 agreed to organize a meeting of representatives of space agencies to discuss the terms of reference of a mission planning and operations group. The meeting will be held in Pasadena, California, in the United States, from 25-26 August 2011. The minutes of the meetings that we have just concluded, Action Team 14 will be sent to all its members immediately following the conclusion of this session of COPUOS while the formal invitations to space agencies and experts, together with the first draft of terms of reference for the mission planning and operations group, will be sent out in July.

I would like also to inform delegates that the Action Team will continue its intersessional work by electronic mail in 2011 and 2012 aiming to prepare our interim report to the Scientific and Technical Subcommittee for its session in 2012. Thank you very much Mr. Chairman.

The CHAIRMAN Thank you very much Mr. Camacho for your statement.

I would now like to give the floor to the chair of the working group on long-term sustainability of space activities, Mr. Peter Martinez.

Mr. P. MARTINEZ (South Africa) Thank you Mr. Chairman. Mr. Chairman, in my capacity as chairman of the working group on the long-term sustainability of outer space activities of the Scientific and Technical Subcommittee, I would like to take this opportunity to provide a brief report to the Committee on the progress made thus far during this session towards the development of a terms of reference and methods of work for the working group which many delegations have expressed a strong desire to see adopted at this historic session of the Committee.

Delegations will recall that in February the Scientific and Technical Subcommittee decided to request the Secretariat to circulate the draft terms of reference, contained in A/AC.105/C.1/L.307/Rev.1, to all member States of the Committee in all official languages inviting member States to provide comments by the end of April 2011 with a view to adopting the terms of reference and method of work at the present session of the Committee.

At the start of this session a non-paper was circulated with the Secretariat's incorporation of proposed amendments received from Mexico and the Russian Federation into these draft terms of reference.

Informal consultations were held on Friday, 3 June, Monday, 6 June and Tuesday, 7 June, to discuss and improve the draft terms of reference and methods of work of the working group. These informal consultations were very well attended and delegations engaged in them in a very positive and constructive spirit to reach agreement on the terms of reference and methods of work for the working group so as to allow their adoption at ... [digital recording cut off and switched to Chinese language - about 15 seconds] the views of all delegations that participated in the various informal consultations has been prepared and will be

circulated in all official languages in the pigeon holes tomorrow with a view to its adoption as an annex to the report of this session of the Committee.

Mr. Chairman, I would like to take this opportunity to remind member States that have not yet done so to provide to the Secretariat their national point of contact for this working group and to consider nominating their experts to participate in the expert groups. The nominations received to date are reflected in a non-paper which was distributed to all delegations at the start of this session. It is my understanding that some additional nominations have been received and that these will be consolidated into a conference room paper to be distributed soon.

In conclusion, Mr. Chairman, I would like to thank you for keeping this item of the agenda open to give me an opportunity to report on the successful outcome of our informal consultations this week. I would like to thank all the delegations that have participated in these extensive informal consultations which helped to improve the document that will be before the Committee for adoption in the next day or two. Thank you Mr. Chairman.

The CHAIRMAN Thank you Mr. Peter Martinez for your statement.

I would now like to open the floor for statements.

Mr. Y. ZHAO (China) Mr. Chairman, China would like to take this opportunity to congratulate the chairman of the working group on long-term sustainability for the excellent job done in finalizing the draft terms of reference and method of work. I would also like to take this opportunity to thank the distinguished delegate of the Russian Federation and many others for their efforts and compromise in the informal consultation. Our thanks also go to the Secretariat for their assistance and support during this week's work.

With the adoption of the terms of reference and method of work of the working group, the first phase of the work of the working group comes to a happy ending. The terms of reference and the methods of work which serves as a sound basis for the working group and guarantees a constructive functioning of the working group and we are also encouraged by the creative and frank dialogue we had during the informal consultation which I hope that it will continue in the future work of the working group and its expert group.

We would like to take this opportunity to call upon all the delegates and experts to work together in line with the draft terms of reference and the methods of work in good faith and in an efficient way. We would also like to appeal to the Director of UNOOSA and her team for the continued assistance and help in the future. We very much look forward to the substantial work of the working group under the leadership of Mr. Peter Martinez and wish all success for the historical, far reaching endeavour. Thank you Mr. Chairman.

The CHAIRMAN Thank you distinguished representative of China. I fully agree with you with all this congratulations to the chair of the working group, Mr. Peter Martinez, for the hard work he did and also for all delegations taking part in the work.

Is there any other delegation wishing to speak under this agenda item? I see none.

We will continue our consideration of agenda item 7, report of the Scientific and Technical Subcommittee tomorrow morning, only to deal with the nomination of experts under the working group on long term sustainability.

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

Mr. N. HEDMAN (Secretariat) The Secretariat has circulated in the pigeon holes of all delegations during this afternoon, a revision to this non-paper, this actually quite funny, non-paper/Rev.1, it is the first time ever used. Just to distinguish between the first non-paper that was distributed earlier in the session.

This revised version is based on certain additions and corrections from member States that we have received throughout this week and it will be converted into a conference room paper during tomorrow, so that all delegations have a unified document with the updates as far as this session of the Committee is concerned.

I would like to refer to the following. Delegations may recall that there are four expert groups, expert group A, B, C and D. There are several member States that have nominated experts to take part in this work and within these various expert groups. We also have nominations for chairpersons. In expert group B, there are two co-chairs, Mr. Claudio Portelli of Italy and Mr. Dick Buenneke of the United States; expert group C on space weather, we have the nomination for the chair of Mr. Takahiro Obara of

Japan and for expert group D on regulatory regimes and guidance for actors in the space arena, we have the nomination for the chair of Mr. Sergio Marchisio of Italy.

Having said that, the Secretariat has not received a nomination to the chairmanship of expert group A on sustainable space utilization supporting sustainable development on Earth. As you, Mr. Chairman, pointed out tomorrow morning, agenda item 7 will continue and be concluded only to deal with this list of nominations, delegations are invited to provide to the Secretariat any corrections to this document and also if there is a nomination for the chair of expert group A that is most welcome during tomorrow morning when we bring up this item. Thank you.

The CHAIRMAN Thank you Mr. Hedman.

The distinguished representative of Portugal has the floor.

_____ (Portugal) Portugal would like to present to the Committee the nomination of Professor Filipe Duarte Santos for the chairman of Group A. Thank you.

The CHAIRMAN Thank you distinguished representative of Portugal for your proposal.

Are there any other comments?

Mr. V. KOPAL (Czech Republic) Just a question Mr. Chairman. Will there be the final composition of the groups re-published?

The CHAIRMAN I give the floor to the Secretariat.

Mr. N. HEDMAN (Secretariat) Well, the revised version of the non-paper will be transformed into a conference room paper for this session. This is not the closed list for eternity, this is just so that delegations have an understanding after this session. Now the Secretariat will continue to invite member States and intergovernmental organizations with permanent observer status with the Committee to provide updates on focal points, more States to provide focal points and also members to the expert groups. This we will continue, this is an ongoing process but we would like to see if tomorrow there are any more updates and then we close it for this session.

The CHAIRMAN Thank you Mr. Hedman.

The distinguished representative of China has the floor.

Mr. Y. ZHAO (China) China welcomes many delegates to nominate their experts to lead the expert group but I have a question of clarification. My reading of what we adopted in the informal consultation is that each expert group would select its own chair from the participating member States, although we welcome volunteers to chair the expert groups. It seems to me it is up to the expert group themselves to decide who will be the chair of the expert group. Perhaps we can, through you, make an inquiry to our chairman of the working group whether we should decide at this stage each chairmanship of the expert groups or, is it just provisional? then it is still up to each expert group to decide which _____(?) co chair or only a single chair. Thank you Mr. Chairman.

The CHAIRMAN Thank you distinguished representative of China. As you heard from the Secretariat, and I also pointed out, this is an ongoing process, this is just the step at the level of this Committee this year and for sure Mr. Peter Martinez could coordinate this process if necessary.

I give the floor to the chair of the working group.

Mr. P. MARTINEZ (South Africa) Our Chinese colleague's understanding is correct. These are nominations at this stage but I think it would be very helpful for all the member States to see the nominations of the proposed experts and chairs of these groups at this point. That is why it would be helpful to have nominations for Group A received during this session as well.

The CHAIRMAN Thank you Mr. Martinez.

Are there any other comments? I see none.

Distinguished delegates I would now like to proceed with the technical presentations. Presenters are kindly reminded that technical presentations should be limited to 15 minutes in length. The first presentation on my list is Ms. Michele Clement of Australia entitled 'The Climate Regional Readiness Review (Climate R3)'.

[Technical presentation]

The CHAIRMAN Thank you Ms. Clement for your presentation.

Is there any delegate who has questions to the presenter? I see none.

The second presentation on my list is by Mr. William Ailor of the International Academy of Astronautics entitled ‘Results of the 2011 IAA Planetary Defence Conference’.

[Technical presentation]

The CHAIRMAN Thank you Mr. Ailor for your presentation.

Is there any delegate who has questions to the presenter? I see none.

The third presentation on my list is by Ms. Ariane Cornell of the Space Generation Advisory Council entitled ‘The Space Generation Working Groups: Input from the Next Generation of Space Sector Leaders on the Development of Space’.

[Technical presentation]

The CHAIRMAN Thank you Ms. Cornell for your presentation.

At this stage I want to stress myself the high importance the Space Generation Advisory Council puts into the education of the new generation of leaders. We really need very focused, very well prepared leaders for future space activities and the Space Generation Advisory Council deals in a very good way with this task.

Are there any comments or questions to the presenter? I see none.

Distinguished delegates, before adjourning the meeting I have two announcements.

The first, the informal consultation on organizational matters will take place tomorrow morning at 9-10 a.m. in room M7.

I would also like to inform delegates that tomorrow from 10 a.m. to 3 p.m. the demonstration of the desktop random positioning machine will take place in room M0E15. The demonstration is organized by the Office as part of the Human Space Technology Initiative (HSTI) and shows how the machine can simulate weightlessness for living objects like plants, cells, bacteria, etc. The machine is an affordable means to get involved with micro-gravity research activities and allows scientists to prepare experiments for space flight to run controlled experiments in parallel with space flight. It can also be used as an educational tool for students to learn about micro-gravity science. All delegates are cordially invited to this demonstration for tomorrow from 10 a.m. to 3 p.m. in room M0E15. Just pass by, take notes, see how it works, come back. It is not necessary to stay from 10 a.m. to 3 p.m.

Distinguished delegates I would now like to inform you of our schedule of work for tomorrow morning. We will reconvene promptly at 10 a.m. At that time we will continue and conclude our consideration of agenda item 7, report of the Scientific and Technical Subcommittee on its forty-eighth session. We will continue and hopefully conclude also agenda item 15, organizational matters.

Following the plenary there will be three technical presentations. The first by a representative of India, the second and third by representatives of the International Academy of Astronautics.

Are there any questions or comments on this proposed schedule?

Brazil will also have a statement tomorrow morning.

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

Delegations are now cordially invited to the traditional Austrian heurigen event at 7.30 p.m.

This meeting is adjourned until 10 a.m. tomorrow morning.

The meeting closed at 5.04 p.m.