

**Committee on the Peaceful  
Uses of Outer Space***Unedited transcript***591<sup>st</sup>** Meeting

Tuesday, 17 June 2008, 3 p.m.

Vienna

*Chairman:* Mr. Ciro Arévalo-Yepes (Colombia)*The meeting was called to order at 3.14 p.m.*

**The CHAIRMAN** (*interpretation from Spanish*): Good afternoon delegates, I now declare open the 591<sup>st</sup> of the Committee on the Peaceful Uses of Outer Space.

This afternoon we will first of all continue with item 9, Report of the Legal Subcommittee at its Forty-Seventh Session, that we suspended earlier. We will then continue our consideration of agenda items 11, Space and Society, and 12, Space and Water. And we will begin our consideration of agenda item 13, Use of Space-Derived Geospatial Data for Sustainable Development.

There will be three technical presentations this afternoon. The first one by a representative of Indonesia entitled "Space Technology Education in Indonesia". The second one by a representative of the United Nations Geographic Information Working Group Secretariat on the "United Nations Spatial Data Infrastructure". And the third one by a representative of India entitled "Use of Geospatial Data for Sustainable Development: The Indian Context".

At the end of today's plenary, at 7.00 p.m., Austria invites delegates to the traditional Austrian Heurige Evening, the location to be announced a bit later.

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

Now I would like to re-open agenda item 9, Report of the Legal Subcommittee on its Forty-Seventh Session, that we had suspended.

I have received a request by the distinguished delegate of Colombia to take the floor. Dr. Restrepo, you have the floor.

**Mr. J. RESTREPO** (Colombia) (*interpretation from Spanish*): Thank you very much Chair. Concerning the Legal Subcommittee, we have two small considerations. The first, Sir, has to do with the massification(?) of eco-satellites and other very small objects through private contracts. A private firm in a country that has this technology can sell this to another country that perhaps does not have that technology in the developing area(?). We think that this is very worthwhile, this kind of initiative, at least it is interesting, but we would draw the attention of the Committee to the legal implications that this has. When a developing country does not have any say in this contract between private parties, for example, the re-entry of a Pico satellite into the atmosphere, if there are problems, where does the liability lie? To a government that was not party to this contract between private parties? Does it then, the country would normally have to assume total liability. Is it the enterprise that sold the object? No, though we have not had this kind of incident to date, we do draw the attention of delegates to the legal implication that is here of contracts between private parties where there is no public sector participation. We think that this is just something that the Legal Subcommittee could reflect upon during its upcoming session.

And the other point is this, geostationary orbit. Now we have heard several theories that geostationary orbit is part of outer space and let me remind you that during the COPUOS meetings, whether it is the Legal Subcommittee plenary or the Scientific and Technical Subcommittee, our Ambassador has already made our

In its resolution 50/27 of 6 December 1995, the General Assembly endorsed the recommendation of the Committee on the Peaceful Uses of Outer Space that, beginning with its thirty-ninth session, the Committee would be provided with unedited transcripts in lieu of verbatim records. This record contains the texts of speeches delivered in English and interpretations of speeches delivered in the other languages as transcribed from taped recordings. The transcripts have not been edited or revised.

Corrections should be submitted to original speeches only. They should be incorporated in a copy of the record and be sent under the signature of a member of the delegation concerned, within one week of the date of publication, to the Chief, Conference Management Service, Room D0771, United Nations Office at Vienna, P.O. Box 500, A-1400, Vienna, Austria. Corrections will be issued in a consolidated corrigendum.



position with respect to that. How can we define the geostationary orbit, saying that this is in outer space when we have not, in fact, defined the limits of the lower parts of outer space. If the geostationary is 35 to 86 kilometres altitude, how can we figure whether this is in outer space or not?

Quite respectfully, Colombia continues to believe that the topic of where geostationary orbits cannot be detached from the question of delimit of outer space. However, as we traditionally said as well, independently of this, we have already showed that geostationary orbit is a *sui generis* case in terms of artificial satellites orbits. There are lower and medium and high, all kinds of orbits that we can look at all kinds of technical parameters here. The geostationary orbit is one that cannot be replicated by a human being. This is why it is very unique, very *sui generis*. And this is why we feel that legislation relative to geostationary legislation also should be a *sui generis* kind of legislation, taking into account the special characteristics and this is all the more important, as we heard this morning when we talked about the Scientific Committee's report, the narrowing of the digital divide for remote areas means that we must necessarily work through geostationary satellites.

These are some of these for the consideration of the Committee.

**The CHAIRMAN** (*interpretation from Spanish*): Let me thank Dr. Restrepo.

I have no further speakers on my list. The floor is open.

I see no one asking for the floor, hence we have concluded our consideration of agenda item 9, Report of the Legal Subcommittee.

### **Space and society (agenda item 11)**

And we now continue with item 11, Space and Society.

I have two speakers on my list. The first is the distinguished representative of Italy, Gabriella Arrigo. You have the floor Madam.

**Ms. G. ARRIGO** (Italy): Thank you Mr. Chairman. Mr. Chairman, let me welcome the special theme under the heading entitled "Space and Society", focused to space and education.

We are highly convinced that the education is the only key for a real sustainable development, also in

space, and in particular, in favour of the developing countries.

Mr. Chairman, I am pleased to inform the Committee on some initiatives and projects developed by Italy in the different fields of space matters.

The Italian Space Agency in collaboration with the University and Polytechnic of Bari, as well as with the Industrial Experience of Telespazio(?), is organizing an International Master Course in Remote Sensing Technology at the Space Geodesy Centre in Madeira(?), starting from October 2008 to May 2009. Students will be given also the opportunity to learn how to develop as air applications and elaborate satellite data.

As I have already mentioned on item 8 of our agenda yesterday, the Italian Institute of Navigation, located in Rome, is presently engaged in the preparation of the European Navigation Conference 2009 which will be hosted in the City of Naples from 3-6 May 2009. On this occasion, ASI will also organize a specific Workshop dedicated to the Global Navigation System of Systems Applications. As part of the Italian commitment in the global navigation satellite systems, the Polytechnic of Turin is carrying on a Masters Programme on Navigation and Related Applications, a partnership between the University and the private sector, including international bodies.

Mr. Chairman, as I have already mentioned on item 9 this morning, the European Space Law Summer Course 2008 will be hosted by the University of Genoa next September. Sixty students from all European universities will participate.

Another new initiative in progress is the organization of the first Italian Masters Programme in Space Institutions and Policies, co-sponsored by the Italian Space Agency, the Italian Society for the International Organizations and the International Juridical Studies of the National Space Council which will take place in Rome from November 2008 to May 2009. All sponsors interested in the project will be welcomed.

Mr. Chairman, I would like to also remember that the School of Aerospace Engineering of the University of Rome, La Sapienza(?), in collaboration with the Italian Space Agency, the European Space Agency, the Italian Air Force and the air space industries, organized every year three Master Courses in Satellite and Orbiting Platforms, Space Transportation Systems and Nano-Technologies for Space.

As a means of implementation of the recommendations of UNISPACE III, the Italian Space Agency, in the framework of the Intergovernmental Agreement between Italy and Kenya, on some MARCOS space-based in Malingya(?) in Kenya, last April, has established two joint working groups on two significant projects for sustainable development in Sub-Saharan Africa.

The first one consists on the job training in Italy of young Kenyan graduates in the frame of Neosat Satellites, which is an Italian Obstacles(?) Moon Mission. The training will be focused on mission management and engineering, satellite requirements, mission operations and applicational data processing. This Working Group should also develop a feasibility study on a future Italian/Kenyan Joint Moon Mission, devoted to the hydrological Earth resource monitoring as well as making of great interest for the region.

The second Working Group is focused on the exploration and sustainability of the establishment of a Regional Centre for Earth Observation devoted to the increasing of space-borne remote sensing data acquisition capability at the sites, the installation of space geo-related sensors included a place, a GPS geodetics station and the development of data of data archiving facility, data analysis and inter-federation(?) capabilities, in order to develop and adopt remote sensing and geodetic applications.

Particular attention will be given to the applications linked to monitoring of the certification and early warning of the effect of climate change and planning.

Mr. Chairman, in the framework of the Italian/Argentina satellite system for disaster management \_\_\_\_\_(?) Agreement, as in CONAE, collaborate for the development of the Institute of Aerospace Studies Mario Gulich in Cordoba, Argentina, where many courses, workshops and seminars take place every year. In 2009, a Masters in Space Applications and Risk Management will take place at the Institute with the collaboration of Argentina and Italian universities and research centres.

Mr. Chairman, finally, relating to the heliophysical activities, the Information Centre for Theoretical Physics in Trieste, next October, will host the International Heliophysical Year of the European Heliophysics School. Thank you Mr. Chairman.

**The CHAIRMAN** (*interpretation from Spanish*): I thank Señora Arrigo for her statement on behalf of the Italian delegation.

I now recognize Mr. Takayuki Aso of the Japanese delegation. You have the floor Sir.

**Mr. T. ASO** (Japan): Thank you Mr. Chairman, distinguished delegates, on behalf of the Japanese delegation, I am honoured to have the opportunity to address the fifty-first session of the Committee on the Peaceful Use of Outer Space under the agenda item of Space and Society. Our delegation would like to express our satisfaction that the Committee continues to consider space and education at the special theme for the focus of discussions in view of its importance.

Japan led the Action Team on Capacity-Building in the implementation of the recommendations of UNISPACE III Conference. Japan places importance on enhancing education, planning and the capacity-building in space-related areas.

Following the five-year review of the recommendations of UNISPACE III or UNISPACE III + 5 Review by the General Assembly in 2004, Japan has contributed to various initiatives in this regard to provide more opportunities for space education planning and capacity-building. The Plan of Action endorsed by the General Assembly in its resolution 59/2 provides that further action should be taken to achieve a systematic exchange of experiences and information and coordination of capacity-building efforts.

By addressing space and education, this Committee provides a global framework for such systematic exchange of experience and information. We noted with satisfaction that in the Scientific and Technical Subcommittee, under various agenda items, member States, entities of the United Nations system, and other organizations having the permanent observer status with the Committee, has continued to exchange information on and experience in the capacity-building opportunities and initiatives in various areas of space science and technology and their applications.

Following the recommendations by the Subcommittee in 2005, they had also continued to report on their efforts to promote their education and opportunities for greater participation of youth in space-related activities.

On social science aspects, the Legal Subcommittee this year considered the agenda item of capacity-building in space law and identified 12(?) specific measures that could strengthen capacity in space law, particularly in developing countries. We support the recommendation by the Subcommittee that member States, permanent observers of the Committee and the Office for Outer Space Affairs should inform the Subcommittee at its session in 2009 on any actions taken for points(?) on the national, regional or international radar on those measures.

We noted with satisfaction that this Committee, with its Subcommittees, had not only provided global forums to exchange experience and information on capacity-building efforts in a comprehensive manner, covering from space science and technology to space law and policy, but also started to take steps forward in focusing international efforts on providing practical solutions to further strengthening capacity-building in space-related areas.

Japan has been providing a regional forum for the regular exchange of experiences and information and the coordination of capacity-building efforts through the Asia-Pacific Regional Space Agency Forum, or APRSAF. Through the work of its Space Education and Awareness Working Group, APRSAF has been taking complete actions in the recent years to offer opportunities, in particular for school children, teachers and educators in Asia and the Pacific to participate in space education activities at national and regional levels.

Examples of such activities include the water rocket competitions and poster contests organized at the regional level every year, as well as space education forums and seminars to increase awareness of school teachers and students of the space benefits for the society as well as to provide training opportunities for teachers in carrying out space education activities.

This year Japan also provided opportunities for students in Asia and the Pacific to address environmental policy issues as they are relating to space applications. Just a few weeks ago, the city of Tamakomayi(?), together with JAXA, organized a Children's Space Summit with the participation of 29 students from six countries in the region. The participating students reviewed the state-of-the-art as seen from space recognized the important role played by space technology is the Moon links the Earth and discussed actions that could be taken to protect the Earth with the behalf(?) just the Earth is damaged by the human beings can be cured by the human beings.

As for university and graduate students, JAXA works together with other members of the International Space Education Board, namely NASA, ESA, the Canadian Space Agency and the French Space Agency, CNES, to provide more opportunities to participate in and contribute to the International Space Meeting as well as hands-on projects and training programmes in space engineering.

Besides, the Japanese university and graduate students, particularly those who are members of the University in Space Engineering Consortium, actively engaged in hands-on space engineering activities such as developing nano-satellites and hybrid rockets by themselves. Some of them pursue international collaborations to carry out their projects. At the end of April this year, we were pleased to hear that the team from the Tokyo Institute of Technology and Hehong(?) University had their nano-satellites successfully launched by ISRO's Polar Satellite Launch Vehicle, through a collaboration with India.

Japan's contributions to capacity-building for developing countries, by providing expert training opportunities and research facilities and equipment data. Further back in the earlier of the basic space science through the Cultural Grant Aid Programme of Optional Development Assistance, the Government of Japan donated seven deflecting telescopes and 20 \_\_\_\_\_(?) systems to 27 institutions in 20 developing countries over a quarter of a century.

These contributions support that the tripod concept promoted by the Office for Outer Space Affairs to provide research tools that can be functionally maintained by the national, social economic infrastructure of the receiving nations, teaching materials that are of space science in middle and higher education and application materials for regional research in basic space science.

In this regard, we were pleased that the UN/ESA/NASA on Basic Space Science and the International Heliophysical Year 2007 was hosted by the National Astronomical Observatory of the National Institute of Natural Science in Japan in June last year, and that JAXA was one of the co-organizers of the following workshops held in Suthavo(?), Bulgaria, earlier this month.

In the area of remote sensing and GIS since 1995, JAXA has provided capacity-building opportunities, namely for governmental staff in Asia and the Pacific through a programme of the Geoinformatics Centre of the Asian Institute of

Technology, AIT. In 2007, this programme started to call for participation in many projects with the focus on resolving the specific (Pacific?) programme. The programme currently enjoys the participation of 10 countries. Japan has long been supporting efforts to strengthen capacity-building in Earth observations with the use of space technology, through the Working Group on Education, Training and Capacity-Building of the Committee on Earth Observation Satellites, or CEOS, and the Capacity-Building Committee of the Group on Earth Observations, to carry out the 10-Year Implementation Plan of the Global Earth Observation System of Systems, or GEOSS.

Mr. Chairman, building upon its past achievements, Japan is making further efforts to establish and strengthen regional and interregional partnerships to expand and enhance space education and capacity-building opportunities. In Asia and Pacific, at its last session held in November last year in Bangalore, India, APRSAF recommended that its participating countries and organizations should truly utilize the United Nations-affiliated Centres for Space Science and Technology Education in Asia and the Pacific, in Latin America and the Caribbean. Through invitations by UNESCO, JAXA's Space Education Centre supported the Space Education Initiative taken by the Pro Tempore Secretariat of the Fifth Space Conference of the Americas to organize the Regional Space Camp in Ibarra(?), in Ecuador, last month, for more than 50 students and teachers from five countries were also provided material assistance to teacher training sessions in Argentina with the use of water rockets. In cooperation with UNESCO, the Space Education Centre responded to needs expressed by teachers and educators in the region, in particular those in Chile, Colombia and Ecuador, and made available for wide distribution in Spanish, the educators manual and DVD that the Centre has developed regionally to promote water rockets for educational purposes in the APRSAF Committee.

In Africa, JAXA's Space Education Centre supported and which participated in UNESCO/Tanzania Space Education Workshop, held only last month in Dar-es-Salaam and Aruja, which were held immediately prior to the International Year of the Planet Earth, IYPE, Regional Mountain(?) Conference. The Centre also collaborates with the Japan International Cooperation NDC(?) for African countries. The Centre has received in the past few years good science teachers from African countries and provided introductory space education training sessions to share space education teaching materials and methods.

Mr. Chairman, there is no doubt that the effort made by this Committee and its Subcommittees, as well as the Office for Outer Space Affairs significantly contributed to increasing space education, training and capacity-building initiatives around the world in the recent years. Useful exchange of information and experiences took place under the special theme of "Space and Education" in the past four years. While such exchange of information and experiences on a variety of initiatives relating to space education in the global context is still important and should continue. It might be useful at this stage also to identify a few specific priority areas where international cooperation should be further strengthened beyond exchange of experiences and information and fair, completely \_\_\_\_\_(?) could be achieved by taking specific actions through coordinated international efforts. This exercise might also include further articulating needs of developing countries in space education with the aim of identifying existing initiatives and programmes or readily available materials and services that could meet those needs.

One of such areas could be identifying ways and means for the United Nations-affiliated Regional Centres for Space Science and Technology Education to serve as regional focal points for providing training sessions for teachers of primary and secondary schools in using advanced(?) space materials in teaching science practice whilst inviting interest and the curiosity of school children. There should be other areas in space education here completely that would be possible to focus international efforts. Those priority areas of space education that might be identified by the Committee could be addressed at special themes under the agenda item of "Space and Society" or symposia to be held in the margins of future sessions of the Committee. Thank you very much for your attention.

**The CHAIRMAN** (*interpretation from Spanish*): Thank you very much Mr. Takayuki of the Japanese delegation for your statement.

I have no more delegations in terms of government representatives on my list. Therefore, I will go on and give the floor to observers.

The first of these is Dr. Kai-Uwe Schrogl of the European Space Policy Institute. You have the floor Sir.

**Mr. K.-U. SCHROGL** (European Space Policy Institute): Thank you Mr. Chairman. Mr. Chairman, I know it is rather late into the session already but since this is the first time I take the floor, please allow me to congratulate you for your election.

I am extremely pleased to see you being such a deepened and experienced diplomat as well as expert in the Chair and chairing the session so successfully. So congratulations Mr. Chairman.

Mr. Chairman, distinguished delegates, it is my great privilege to inform you about the recent activities of the European Space Policy Institute, ESPI, which might of relevance for the work of this Committee.

ESPI is the premier European think tank for space policy issues. Its mission is to carry out studies and reports to provide decision-makers with an independent view on mid- to long-term issues relevant to the use of space. With its activities, ESPI contributes to facilitate the decision-making process of Europe. It also organizes an International Research on Academic Network and cooperates closely with related institutions like the International Academy of Astronautics, UAC, ISU and SGAC.

Most recently, ESPI undertook three initiatives of potential relevance to this Committee's which all have in common an inter-disciplinary approach reaching at opening space activities to other issue areas and communities.

First, an initiative that was undertaken by ESPI last December, to shed a new light on the various works to long-term sustainability on Earth to an inter-disciplinary approach. The main objective of this Conference was to analyze how space could be a tool in prediction, management or mitigation of threats and risks in six sectors, the environment, security, mobility, knowledge, resources and energy, defined by ESPI as the main areas regarding sustainability.

For each sector, one non-space speaker from a think tank covering their respective sector and two speakers from the space sector exchanged their views and ideas in order to identify the common needs for action necessary to ensure sustainability in the field. Such dialogue between sector specialists and space experts committed to examine in detail how space has been becoming a crucial tool in solving a variety of today's problems. It also identified areas where space applications could better respond to the future sector challenges.

Second, an inter-disciplinary approach in discussing the human presence in outer space was undertaken in October 2007 by the European Science Foundation, the European Space Agency and ESPI. The Humans in Outer Space Inter-Disciplinary Outer Space Conference was organized, along with space

experts and scholars from the area of humanities, as well as social sciences, to discuss the role, various disciplines as law, philosophy, ethics, culture, art or psychology increasingly will play in space exploration. The output of the Conference was developed in the form of the Vienna Vision which provided a unique European perspective in identifying various leads and interests of humanities and social sciences linked with space exploration.

Third, ESPI prepared a study entitled "Case for Studies". This Study was intent to present to decision-makers striking arguments for the benefits space provides to society. For all these activities, we have produced \_\_\_\_\_(?) information documents which can be accessed at the table in the back of the Conference Room.

In a few weeks, ESPI will also publish for the first time, a Yearbook on Space Policy, prepared by the publishing house Schpringer(?), which aims to become the reference publication for space policy issues and plans.

ESPI hopes that through its initiatives and the corresponding material which can also be accessed through our website, [espi.org.at](http://espi.org.at), the work of this Committee will be supported effectively.

Mr. Chairman, please allow me also to take the opportunity to extend the invitation we have already distributed last Friday in the pigeonholes to a Reception which is held by the Institute on Wednesday, it is tomorrow evening at 7.30 p.m. at our premises downtown at Schwarzenbergplatz 6. Everybody in this Conference Room, all delegates are cordially invited to attend this Reception tomorrow evening. Thank you very much for your attention. Thank you Mr. Chairman.

**The CHAIRMAN** (*interpretation from Spanish*): Thank you Dr. Kai-Uwe Schrogl, Director of the European Space Policy Institute for your statement and for the kind words addressed to the Chair. Your statement shows that ESPI has become a very important think tank, not only in Europe, but also for cooperation and interrelationships with COPUOS and COPUOS-driven activities. You have participated over the years with great success in our work and the three initiatives that you reported on carried out by ESPI, concur with many of the concerns that drive our own work here in COPUOS. Therefore, we pay close attention to your work and we move forward together. Thank you very much Dr. Schrogl.

I also have a request for the floor under this agenda item. Any other delegations? Syria.

**Mr. O. AMMAR** (Syrian Arab Republic) (*interpretation from Arabic*): Thank you Mr. Chairman. Mr. Chairman, first of all, I would like to congratulate you on your election as Chairman of this Committee, even though this word of congratulation may seem a little belated.

I would like to inform delegations of some of the activities carried out by the National Organization for Remote Sensing, the authorities overseeing space activities in Syria. All of them falling under the overall theme of space and society and outer space education.

In the area of education and training, we pursue ongoing efforts to disseminate and popularize space science and space knowledge. We receive a number of interns and students on a regular basis at various levels of education. We have carried out a series of lectures and information programmes with a special focus on space science and particularly remote sensing and the various benefits derived from remote sensing.

The special syllabi that have been introduced in major Syrian universities and the number of graduate students are currently working on theses in the area of remote sensing. Working together with UNESCO, we have organized a seminar on space education which is jointly put together by three local governments in various parts of the country where school children, students will be invited to attend specialized seminars.

Through youth clubs, we have launched a programme to improve awareness and knowledge among young people with regard to space activities and again with a particular focus on remote sensing and practical benefits that it provides. Students have been very active in attending these information meetings and these lectures. A number of workshops have been carried out on specific space techniques and these again have met with a very good and very positive response.

I would also like to take this opportunity to invite all of you to attend a Symposium to be held in November of this year on the subject "Remote Sensing and Topography". We have prepared a brochure and a folder providing detailed information about the Symposium which will be made available to all delegations in the near future.

Knowledge of space science is something that are all of us responsible for disseminating, for making accessible and making available to the public at large, especially our young people. This is part of spreading the word on the peaceful uses of outer space and the whole space culture. Thank you very much for your attention.

**The CHAIRMAN** (*interpretation from Spanish*): Thank you distinguished delegate of the Arab Republic of Syria for your statement.

We go on now with the list of observers and I have a request, but before the observers, I have a question from the distinguished delegate of Brazil. You have the floor.

**Mr. A. TENÓRIO MOURÃO** (Brazil) (*interpretation from Spanish*): Thank you Mr. Chairman. First of all, let me congratulate you officially on your election. We have an excellent session and your leadership is a guarantee of our success.

I wanted to take advantage of this opportunity to comment, specifically with regard to the statement delivered by our colleague, Kai-Uwe Schrogl, of the European Space Policy Institute. In my opinion, the initiative that he related to us is of great importance at the present time, for all of us involved in space activities. For the first time, a whole continent has come out with an initiative to study political aspects and political issues related to the conquest of outer space. All of us, to some extent, are involved in these political aspects and obviously they are worthy of a more profound and systematic study. It, therefore, seems to me particularly significant that an institute like that has been set up here in Europe to focus on these issues. In Brazil, and I am sure in other countries of Latin America, we could perhaps become involved in various types of cooperation with this European Institute because we, too, are very keen to study the political aspects of space exploration. They are important. In fact, they may play a decisive role in the development of our own space programmes.

Now, Mr. Chairman, let me commend and pay tribute to Dr. Kai-Uwe Schrogl and highlight this new window of opportunity for cooperation among countries and among continents. I would like to suggest that this work be extended to Latin America, involving the cooperation of our own space agencies and related bodies and to set up something from this Institute in my country, Brazil, would be wonderful, in my opinion. Thank you.

**The CHAIRMAN** (*interpretation from Spanish*): Thank you very much for your comments and the Chair is fully in agreement with what you have just said. Indeed, it is an excellent opportunity and it would be very appropriate to pursue this work on the regional level and on the level of interregional cooperation. And the Pro Tempore Secretariat of the Space Conference of the Americas should look at this window of opportunity, multiple, smaller windows of opportunity also that exist throughout our continent in terms of this type of cooperation. And I am sure that Dr. Kai-Uwe Schrogl would respond to your expression of interest and we will have a more detailed comment later. Thank you very much once again.

The next speaker on my list is Mr. Ian Dowman of the International Society for Photogrammetry and Remote Sensing. You have the floor Mr. Dowman.

**Mr. I. DOWMAN** (International Society for Photogrammetry and Remote Sensing): Mr. Chairman, distinguished delegates, I would like to thank you for this opportunity to participate in the fifty-first session of the Committee on the Peaceful Uses of Outer Space under your distinguished chairmanship and I would like to add my congratulations to you on your election as Chair.

I wish to make a statement about the activities of ISPRS and serving society in Africa. This also relates to agenda item 13 in the area of using space-derived geospatial data for sustainable development.

Mr. Chairman, ISPRS is an international non-government organization devoted to the promotion and use of geospatial information, particularly from imagery. We have been involved in a number of initiatives to develop capacity and sustainable development, particularly in Africa. I wish to report on the activities which we have been involved in and comment on the requirements for a successful use of geospatial data.

ISPRS is a participating organization of GEO, the Group on Earth Observation, and we have collaborated with the Open Geospatial Consortium, OGC, and the IEEE in the United States of America to organize workshops on the GEOS architecture and the user. The object of the workshops is to focus on a broad range of users and regional issues, to educate potential users about GEOS and the structures proposed, and through interaction with users, get feedback on their needs for data, information and infrastructure. We also look to create continuing

interactions and continuing activity, including training and case studies.

In order to make the use of geospatial information effective, the users must be educated and their requirements heard. The workshops have identified a number of issues which include provision of better infrastructure and technology, but more importantly, the need to develop spatial literacy in schools and within government. The key issue is to develop good communications between scientists, between disciplines and policy-makers. These objectives are consistent with the mission of GEOS and the results of the workshops are input to the GEO Architecture and Data Committee.

One of the themes which has been adopted is "Water and Health" and the Workshop held in Burkina Faso last November, the participants concluded that little progress has been made in this area in involving the user in Africa. Also there is a need for front-end users to seek information in a friendly and a user-friendly format. Furthermore, it is essential that different communities get together, for example, GI users should present at medical conferences and vice versa.

It was also suggested that more attention should be given to an adaptive approach to distributing data, such as using cell phones, which are more accessible, and the use of the Internet.

Any activities centred on disaster management and on the infrastructure required to predict and management disasters. One initiative specifically commended to the Workshop was the University Network on Disaster Risk Reduction in Africa, or UNEDRA, which was formed during the Workshop held in Makeri(?) University, Kampala, Uganda in September 2005. This was organized in the framework of the United Nations University Programme on Disaster Risk Information Management, as it was then.

The Workshop was attended by relevant participants from universities of Eastern and Southern Africa, but the main aim is to forge interaction amongst universities in Africa with interest in teaching and disaster risk reduction through information-sharing, capacity-building and collaborative research. An objective of the Network is to share experiences on course activities which have already been initiated and identify universities that have interest in developing disaster reduction courses and to develop joint education and training activities for staff and students where different African universities collaborate.



There is also the intention to develop joint research activities and to support the setting up of educational programmes on geo-information for disaster management.

Mr. Chairman, the second activity is the establishment of a data portal for the benefit of national mapping agencies in Africa. The African Geospatial Information Resource Network, or AGIRN, has set up a portal which allows national mapping agencies within and outside Africa to share information on the technical and political issues facing the national mapping agencies in a rapidly changing world. AGIRN has been developed by the South African Human Science Research Council and the IS Africa. The portal is now being populated and African and non-African national mapping agencies are being asked to provide any reports or papers which might be of use to other national mapping agencies and to indicate whether expertise is available to offer to other national mapping agencies and whether any equipment surplus to requirement is also available. The portal includes a Registry of Mapping Agencies, a knowledge database to increase sustainability and to build capacity through knowledge-sharing. It also includes a commitment for an expertise database which includes details of expertise and services which are available, details of recommended consultations, their skills and specialities, details of their opportunities to secondment and placements, commitments to host international visits and information about funds that can be made available for MSc and PhD training programmes.

The portal has commitment from international geospatial players such as the Joint Board of Geospatial Information Societies, Euro-Geographics and the Ordnance Survey in the United Kingdom. The site is heavily used with site visitors mostly from Africa and the Americas.

There is a catalogue of fundamental geospatial data uploaded for each African country and it is planned to use e-mail alerts to raise the visibility on the site.

These two projects underpin sustainable development by providing a base on which to build. ISPRS considers that the key to use of Earth observation for sustainable development is linking remote sensing and the social sciences. Remote sensing determines what and where the changes happen. Social sciences aim to determine why. To socialize the pixels is to take remote sensing imagery beyond its use in the applied sciences and towards its application in addressing the concerns of the social

sciences. Sustainable development is, therefore, linked with physical and sociological characteristics of the region.

From our experience, and from feedback from the workshops which we organized, mainly in Africa, we can list key factors for sustainable development. To socialize the pixels to ensure that the information is appropriate for the application and understandable by the user, to provide examples to demonstrate what can be done, to provide facilities and training to get people involved, to provide data for all projects, distribute information widely and to make distribution easy through standardization. Low-technology solutions should be used and the data should be available free or very low cost with sustainable delivery. There is a need to provide easy-to-use processing power and also, of course, training and capacity-building. We need to involve all levels of government and to educate decision-makers, build on university skills and resources and to use existing structures.

Mr. Chairman, distinguished delegates, next month, in July, the Twenty-First Congress of ISPRS will be held in Beijing, China, and all aspects of acquisition, management and application of Earth observation will feature in the programme. We would welcome delegates to COPUOS to that Congress. Further information is available on our website.

I would also like the Committee to note that ISPRS will be celebrating its hundredth anniversary in 2009 and the celebrations will take place here in Vienna.

Mr. Chairman, in conclusion, I would like to say that ISPRS aims to develop and enhance the use of understanding of geospatial information on the African continent and ultimately the globe. We need to influence decision-makers to use geospatial information and thus provide a base for sustainable use of geoinformation. GEOS workshops and the AGIRN portal are steps towards that objective. Thank you for your attention.

**The CHAIRMAN** (*interpretation from Spanish*): Let me thank Ian Dowman from ISPRS for that presentation. Let me say to him that this is a priority theme for us, anything that has to do with space technologies that can be used to promote sustainable development and especially its link with GEOS. Thank you very much for that statement.

Now, I have a request from Dr. Juan Carlos Villagrán-De León from the Human Security

Development Institute from the United Nations University. You have the floor.

**Mr. J. C. VILLAGRÁN-DE LEÓN** (United Nations University): Thank you very much Mr. Chairman. Please excuse me as I am only joining the meeting this morning but I congratulate you on your chairmanship of this event.

I wanted to take the floor briefly to comment the role of the United Nations University and how we are supporting the United Nations Office for Outer Space Affairs. The United Nations University was established in 1973 by the General Assembly, basically with four goals in mind, as a think tank for the United Nations systems, as a community of scholars linking researchers in developing countries with their larger brother community of researchers, and as a means to go about capacity-building and in a variety of topics.

The United Nations University has its Headquarters in Tokyo but there are 13 research and training institutes around the world, each one of them focusing on selected topics. Within one of these institutes, the Institute for Environment and Human Security was established in Bonn, Germany, in 2004. We focus on those issues related to the environment which are somehow impacting human security. Basically, we look, for example, as how to environmental degradation and some hazardous, such as floods and droughts, impact on people, on societies and on communities. It is with that role that we are participating in the scope of the Programme established by UNSPIDER to contribute to determining how best to use space-based information for risk assessment to the identification of either vulnerability \_\_\_\_\_(?) which are impacting and on disasters.

We are linked, for example, in a project with the German Aerospace Agency, DLR, in a project in Indonesia with respect to the design and establishment of a tsunami early warning system in the use of space-based data to go about risk assessment. I think these programmes offers a very interesting opportunity to network with other universities and research centres in order to promote the use of such space-based data by agencies and developing countries in order to minimize the impact of disasters. Thank you very much.

**The CHAIRMAN** (*interpretation from Spanish*): Let me thank you for that intervention and not just for its brevity, but welcome to the room.

The Ambassador from Chile.

**Mr. R. GONZÁLEZ ANINAT** (Chile) (*interpretation from Spanish*): Thank you. Do I have to brief as well after that one? I will try. First of all, let me express the satisfaction of my delegation with the presence of the United Nations University here, which is totally, can stimulate what we said yesterday when we said at the appropriate paragraph of the resolution from the last General Assembly stating that we needed to take that University into account. And also we think it is very important we have a centre dedicated to human security. Chile is a member of the Network and we are fully convinced that we cannot remain enclosed or cosseted by the old concepts we have had of human security but indeed need to develop this. Thank you.

**The CHAIRMAN** (*interpretation from Spanish*): Thank you. You are almost as brief as the preceding speaker and thank you.

I believe that this brings us to the end of 11, Space and Society.

#### **Space and water (agenda item 12)**

We will be able to consider this tomorrow as well but we now move on to item 12, Space and Water.

China, Bingzhao Li, has the floor.

**Mr. B. LI** (China) (*interpretation from Chinese*): In recent years, the application of space technology has led to some encouraging achievements. We are of the opinion that the space technology has unique advances in comparison with conventional means and will be very significant if it is combined with conventional methods.

Mr. Chairman, the change in the global climate has aggravated the complexity of the water resources leading to a temporal and spatial redistribution of water resources and changes in the data pertaining to them. Therefore, the application of space technology in stepping up research on the kind of changes in the water resources in the context of global climate change and the research on the short- and medium-term trend. We have more effectively guide and implement the development, allocation and despatch of water resources.

By the same token, the development of space technology provides multiple sources of information and technical means to monitor and forecast natural disasters. Therefore, the application of space technology can effectively improve the timeliness and accuracy to monitor and forecast natural disasters.

The earthquake that hit China's Sichuan Province last month has created scores of quake lakes and several lakes might burst and cause secondary disasters. Space technology has played a significant role in handling the situation.

The National Disaster Reduction Centre in China has been closely watching the changes in the quake lakes sphere remote sensing satellites. China's National Satellite Meteorological Centre is working closely to monitor the conditions in the disaster areas through homing water satellites and provide full and accurate precipitation analyses to the rescue(?) of disaster reduction and prevention efforts.

On the morning of 27 May, China's National Space Administration took the opportunity to launch FUNGYEN-III(?) weather satellite, which is characterized by its global coverage, all weather, 24-hours, multi-spectral three-dimensional and quantitative exploration capabilities. This has significantly enhanced accuracy in China's weather forecasts, more accurately reflected information and change dynamics of the quake lakes and laid a sound basis to correctly selecting ways to neutralize dangerous conditions.

In this connection, I would like, once again, to express my heartfelt appreciation to the countries and international organizations for their support to us in the disaster relief and monitoring efforts.

In recent days, torrential rain and heavy flooding hit parts of South China. We believe that the space technology will continue to play an important role in coping with the disaster.

Mr. Chairman, we have an increasing clear understanding of the positive role of space technology in the area of water resource management. We support the promotion of space technology achievement conversion so that it will work more effectively in the survey, assessment, monitoring and development of water resources, as well as in the efforts to reduce and prevent flooding and drought disasters. Thank you Mr. Chairman.

**The CHAIRMAN** (*interpretation from Spanish*): Thank you very much to Mr. Bingzhuo Li from the Chinese delegation.

Let me know apologize to you. I need to leave for a few moments. Let me ask my first Vice-Chairman, Mr. Vibulsresth from Thailand to be kind enough to lead the work of the Committee, including

these technical presentations in my absence. Thank you.

**Mr. S. VIBULSRESTH** (First Vice-Chairman): Thank you very much Mr. Chairman. Now, I humbly follow the good example of the former Chairman, Dr. Brachet.

### **Use of space-derived geospatial data for sustainable development (agenda item 13)**

Now we come to the next item, Use of Space-Derived Geospatial Data for Sustainable Development, item 13.

Distinguished delegates, I would now like to begin our consideration of item 13, Use of Space-Derived Geospatial Data for Sustainable Development.

I would like to remind delegates that in paragraph 64 of its resolution 62/217, the General Assembly agreed that the Committee should consider at its fifty-first session this agenda item in accordance with the Multi-Year Work Plan adopted by the Committee at its forty-ninth session. In accordance with the Multi-Year Work Plan agreed at its forty-ninth session, this year delegations are invited to make expert presentations on experiences in the establishment of appropriate national infrastructure for space-related(?) or spatial data collection, processing and applications, including human resource training, technical infrastructure, and financial requirements, and institutional arrangements.

The Committee is understanding \_\_\_\_\_(?) at the forty-ninth session that the Work Plan could be revised as necessary for 2009 at the Committee's fifty-first session.

I now turn to the list of speakers.

Since I see names on the list, any delegate would like to take the floor now please?

I see none.

We will, therefore, continue our discussion and consideration of agenda item 13, Use of Space-Derived Geospatial Data for Sustainable Development, tomorrow morning.

### **Technical presentations**

Now, may I now turn to the technical presentations?

Distinguished delegates, I would now like to give the floor to Ms. Erna Sri Adiningshi of Indonesia, who will make a presentation entitled "Space Technology Education in Indonesia".

**Ms. E. S. ADININGSHI** (Indonesia): Thank you Mr. Vice-Chairman, distinguished delegates. First of all, I would like to thank you for the opportunity to speak on space education, particularly from the perspective of developing countries.

Although it looks like a very simple activity but we consider that it is important in our country since such activities are now becoming more steps towards increasing public awareness and knowledge on space science and technology.

Let me begin with the background of my presentation.

First of all, I would like to talk how the underlying situation in Indonesia. This is now trying to accelerate the development on space technology for fiscal uses after the success of the operation of our own remote sensing satellite. Therefore, we have tried to identify space education for the last five years. As you know, that there has been a dramatically increasing science and technology in the world for the last decades. In fact, there is lack of knowledge among communities at the lowest level on the role and importance of space for human life. Consequently, there are needs on increasing education activities in space for communities, particularly in developing countries, like Indonesia, to support the efforts in producing new young scientists and professionals in space science and technology.

And also there are needs to create activities related to space science and technology to increase public awareness on space and through space-mindedness activities. And our targets are the students of elementary and high school, the teachers and seniors(?) as well.

There are some examples in our experience. Some recent activities on space education in the Minister(?) including public awareness on space and space-mindedness activities.

First is the public awareness on space \_\_\_\_\_-equipped observation and space exhibition on education up to \_\_\_\_\_(?). Secondly is the space-mindedness activities which is the National Water Rocket Competition for secondary and high school students. And these activities was aimed at the road to the Regional Competition of Water Rocket

during the APRSAF-14 in Bangalore, India. This is a space-mindedness, a drawing competition for elementary school students and next is public awareness on space press and journalist competitions on space publications and education. And more recently is the public awareness of space to commemorate(?) the Earth Day space education exhibition for 10-Year high school teachers which was held at the \_\_\_\_\_(?) Research Centre. The fourth is the activity of public awareness on space with regard to the Moon and Earth observations, including a space exhibition on education held at Rapan(?).

This is Rapan(?) Earth observation located in West Java and in the exhibit there, we invited students of elementary schools. We are dealing with important(?) of the students in technical preparations affected by space science or space scientists of Indonesia and continued by approaching(?) the Moon eclipse and the students were very enthusiastic during the observations, even though they had to wait in a long line.

Second activities of space-mindedness activities related to the National Water Rocket Competition for secondary and high school students. This activity was held to select the Indonesian representative to participate in the Regional Water Rocket Competition during the APRSAF-14.

This is the opening of the Competition and hundreds of high school students participated in this Competition. You can see how the students were preparing the rocket.

And finally they have something, the rocket and the water rockets will then for launching.

And the winner of the Competition was awarded by Rapan(?)'s Secretary at the forty-fifth anniversary of Rapan(?).

The third activity was related to space-mindedness. It was a drawing competition for elementary school students in Indonesia. The students were drawing objects related to space and the drawings were again verified by some panellists and the winner of the competition was awarded by the Rapan(?) Secretary.

Next is the education activities related to public awareness on space, particularly for press and journalists. It was a competition on space publications on education. Some of the presentations(?) on space from magazines, newspapers, as well as electronic publications, were evaluated by some panellists and the

winner was awarded again by the Rapan(?) Secretary at the forty-fifth anniversary of RAPAN(?).

More recently, Rapan(?) also conducted a public awareness on space to commemorate(?) the Earth Day by conducting space education or exhibitions for senior high school teachers. It was held at Rapan(?) Research Centre. At the opening session, the Deputy Chairman of Rapan(?) delivered his speech to the participants and one of Rapan(?)'s Centre explained about Rapan(?)'s activities to the participants. And teachers from high school participated in the activities and they look very interested and listening to the speaker. And a discussions on space-related matters were also facilitated by the panellists of space scientists.

There was also an exhibition to export the research of space science and technology research. And from such exhibitions, we hope that the teachers can help the Rapan(?) dissemination of space science and technology to the students and eventually can increase the interest of the students in space science and technology.

As for concluding remarks, I would like to emphasize that through simpler(?) continuous activities, communities education on space could increase space awareness and space-mindedness among students, teachers, as well as \_\_\_\_\_lists(?), would eventually could increase their interest on space science and technology.

I believe that great achievements in space could begin with simpler(?) but continuous efforts.

We also recognized the important role of journalists in the dissemination of knowledge on space science and technology to the community.

We hope that Indonesia(?) and the general programmes in space education should also support such major efforts, particularly in developing countries, by creating more collaborative activities in space education.

Last but not least, I would like to suggest that, to propose, or to pay more attention in future programmes on space education for the communities in developing countries and to increase collaborative activities with other United Nations bodies like UNESCO, as well as other international organizations.

And it is our commitment to the importance of space education, Indonesia will continuously support at international as well as regional activities in space

education. Thank you for your attention and thank you Mr. Vice-Chairman.

**Mr. S. VIBULSRESTH** (First Vice-Chairman): Thank you very much Ms. Adiningshi for your presentation.

Are there any questions or comments?

The distinguished delegate from Brazil. You have the floor.

**Mr. A. TENÓRIO MOURÃ** (Brazil) (*interpretation from Spanish*): Mr. Chairman, thank you very much. I have a question to the distinguished representative of Indonesia. The work to disseminate space knowledge is being carried out in Indonesia, a very large country, with many islands, obviously, with many geographic difficulties and obstacles. Could she give us an idea how this is done and how these obstacles and these distances are overcome?

**Mr. S. VIBULSRESTH** (First Vice-Chairman): Thank you. Ms. Adiningshi please.

**Ms. E. S. ADININGSHI** (Indonesia): Yes, we will answer it since Indonesia, my country, with many islands, we are facing some obstacles in how to disseminate space science and knowledge the community. To approach such a problem, we are trying to involve communities at the lowest level, beginning from the students and teachers, from various provinces or islands of Indonesia, and from such activities, we hope that they can help in disseminating space science and knowledge.

In other activities, we also import the \_\_\_\_\_(?) in dissemination of space science and knowledge and for the last two years, we also developed a kind of web-based information for the community to promote space science and technology since we depend very much on space-derived information for most of our development activities in Indonesia. Thank you.

**Mr. S. VIBULSRESTH** (First Vice-Chairman): Thank you very much Ms. Adiningshi.

Any more?

UNESCO please. You have the floor.

**Ms. Y. BERENGUER** (United Nations Educational, Scientific and Cultural Organization): Thank you Mr. Chairman. UNESCO congratulates the Government of Indonesia for its efforts in promoting

space science and technology at the community level. I think, from what I understood, this has been happening in the last five years, and one particular element of the presentation has caught my eye, which is indeed the link that the Government is doing with Namibia, with the journalists. We consider the journalist as an important vehicle, not only in disseminating information but also in disseminating the right information. So organizing workshops with journalists to provide them the correct information on what are the real benefits of space science and technology is highly commendable. And I think this is something which focus should consider as well as one of its action, to probably get the media involved in COPUOS activities and maybe this is something that should be considered within the Committee or something that could be considered as an agenda item for the next Committee's meetings. But this is something that we should, I think, that the Committee should take into consideration and, again I repeat, I commend the efforts of Indonesia in this respect. Thank you Mr. Vibulsresth.

**Mr. S. VIBULSRESTH** (First Vice-Chairman): Thank you very much for your very useful input. In fact, the media has quite an important role in this aspect. I fully agree.

Indonesia, do you have any comments? No? Any other comments?

Nigeria please.

**Mr. J. O. AKINYEDE** (Nigeria): Thank you Mr. Chairman. I just want to report what the distinguished delegate, the representative of UNESCO, has just said. Even in Nigeria, the media or the serious critic of the space programme we have had in most developing countries. We are either criticized that we have not solved the problems of water or food and so on that we are going to face. But in recent years, with the development and the direct application of the space programmes in solving some of these problems, the tempo has changed and the media is eventually being part of the publication of some of the breakthroughs in the application areas. And we in Nigeria have been able to invite them to some workshops organized, to promote the applications and grassroots of some results of space research and so on. So I think Namibia has played a very important role in promoting space science and technology development, especially in the developing countries. Thank you Mr. Chairman.

**Mr. S. VIBULSRESTH** (First Vice-Chairman): Thank you very much distinguished delegate from Nigeria.

Any more comments?

If not, may I thank you Ms. Adiningshi for your presentation.

Now we come to the second presentation which will be presented by Mr. Sohar Ulgen of the United Nations Geographic Information Working Group Secretariat on the "Information Spatial Data Infrastructure".

**Mr. S. ULGEN** (United Nations Geographic Information Working Group Secretariat): Mr. Vice-Chairman, distinguished delegates and observers, before I begin my presentation, I would like to follow the lead of my colleague from UNESCO and express my organization's deep condolences to the Governments of Myanmar, China and Japan.

I also want to convey the best regards of the United Nations Geographic Information Working Group Co-Chairs, Ms. Elsa Heggarty, of the Office for the Coordination of Humanitarian Affairs, and Mr. Carl Spinapero(?), the United Nations High Commissioner for Refugees.

My name Sohar(?) Ulgen. I am with \_\_\_\_\_(?) in Geneva. I am addressing at the Coordinator of the United Nations Geographic Information Working Group Secretariat. I thank you very much for giving me the opportunity to share with you the work of UNGIWIG(?), especially the efforts on the way to establish a United Nations Spatial Data Infrastructure.

We believe that there is potential for UNSDI to contribute to and take advantage of the significant work of COPUOS.

The United Nations Geographic Information Working Group, UNGIWIG as we call, aims and promotes a process we call the United Nations Spatial Data Infrastructure. But before I go into saying a few more things about the UNSPI, I would like to highlight the fact that UNGIWIG is a forum of United Nations agencies where geospatial information, management and professionals discuss emerging technologies, they share best practices and coordinate their actions. It is a collaboration, a platform at a technical level. Our objective is also to formulate certain policies with regards to the United Nations system's use of geographic information technologies, and, of course, we exchange views and address the common geospatial issues, especially in the form of fast(?) (past?) groups that engage in these activities.

For the last three terms, UNGIWIG has been led by Co-Chairs in a rotating capacity, that is for a term of three years, and currently it is the Office for the Coordination of Humanitarian Affairs, OCHA, which is part of the United Nations Secretariat, and the United Nations High Commissioner for Refugees, UNHCR, have been leading it. And for the first time in its seven years of existence, UNGIWIG has now a Standing Secretariat since April 2007 in Geneva.

There are currently 32 members, all United Nations system programmes offices and funds, and some of them obviously are much more active than others.

There are five task groups of UNGIWIG. As you see from the lists, at least two of them have the mandate that very much speaks to the agenda of COPUOS, remote sensing and global navigation satellite systems, but the others obviously take extensive views of those technologies and decisions as well.

UNGIWIG was established in the year 2000 in a meeting in New York. The last two meetings of UNGIWIG, UNGIWIG 2007 set in Santiago de Chile, and UNGIWIG 2008 (2007) in Bangkok, had been a milestone for UNGIWIG in the fact that UNGIWIG has decided to take the strategic direction that is characterized by the efforts to put together the United Nations Spatial Data Infrastructure.

The vision of the United Nations Spatial Data Infrastructure is for a comprehensive and centralized geospatial information framework that facilitates decision-making at various levels by enabling access, retrieval and dissemination of geospatial data in a rapid and secure way. This was adopted in 2006 in Santiago de Chile and since then we have also perhaps incorporated the concept of data services in line with some of the developments that are taking place within the large geospatial sphere.

Obviously, in view of development faces issues of challenges, the internal challenges that we have faced in this process is the fact that the core group that constitutes UNGIWIG are actually GI specialists and they are not decision-makers. The moment we start talking about institutionalizing a particular practice calls for a different set of skills and we are now in the process of learning those skills.

The other challenge that we face is, of course, the United Nations has a series of programmes made up of a series of entities with different business models

and organizational qualities in line with the mandate of United Nations reform, we are trying to align those as much as possible with regard to geospatial information management and that is proving to be a certain level of challenge for us.

Those are rather the level of awareness and practice in terms of spatial data infrastructure. Some United Nations agencies have had a relatively longer practice with these concepts and certain others are very new and we need to harmonize those practices at the different level of expertise as well. There are, of course, a series of steps taken within the United Nations framework to align the high-level recognition of the United Nations moving in the direction of delivering as one. One of them is the establishment of their Master Plan for the United Nations Secretariat, if not for the whole United Nations system. Of course, we need to align the UNSDI with that process. How would that take shape? This is the question that has not been fully answered. And how do we align again and how would the United Nations reform process?

And as far as external challenges are concerned, there are spatial data infrastructure initiatives, globally as well as regionally. There is a very good one, for example, within the European context called Inspire, how does the UNSDI relate to Inspire, for instance. Wide-\_\_\_\_\_ (?) United Nations technical standards and how wide they should be? This is a question that we are trying to come up with answers. Do the United Nations member States play a role in the UNSDI? And if so, what would be the Terms of Reference of what is now being called the National Coordination Offices for UNSDI?

And finally, but perhaps quite significantly in the context of this discussion, does the UNSDI require political endorsement from one of the main bodies of the United Nations? And we think that it would. Perhaps not immediately but definitely somewhere down the line.

So, what is the scope of UNSDI and how it is going to change over a period of time is definitely on our agenda and we definitely need guidance from within and outside the system for that as well.

The approach that is being taken in terms of implementation of the UNSDI is instead of coming up with a grand design, we want to move in small steps but definitely concrete one and also this would allow us to build strong partnerships with outside entities. It is a project approach which is time-bound and this also allows for UNGIWIG, which is specifically a United Nations body, so that it is distinguished from UNSDI

which has partners but they are not strictly United Nations bodies.

The deliverables, the UNSDI deliverables perhaps can be grouped under these major headings, for regional spatial data and information, developing common data services, building capacity, and promoting partnerships and cooperation.

The first two headings are actually the focus of the first phase of UNSDI implementation and I would like to share with you some of the specific deliverables under that heading. Two major headings, UNSDI Interoperable Geospatial Services, and UNSDI Core Geodatasets. You will see in this table the name of that particular deliverable, the responsible agency within the United Nations to take the lead, and the estimated time and budget allocation for that activity.

The ones for spatial data warehouse and one for utilization facility are two deliverables that speak directly to the Chief Executive Board Secretariat, harmonization of business practices, ICT, information communication technology impetus(?), and has received high-level recognition from the bodies within the United Nations that is definitely powering the United Nations reform process. And the UNSDI Core Geodatasets sub-headings, you will see, are those that definitely are going to inform our operational mandates, the one milli\_\_\_\_\_ (?) scale international \_\_\_\_\_ (?) had reinstated boundaries and coastline layers and the one hundredth thousand scale face map layers that we are going to supplement it at the much higher level of resolute.

The next two slides highlight the annexes to the core geospatial data entries. These are thematic core datasets and UNSDI in Phase I implementation will not look at these but nevertheless, a series of United Nations agencies are now engaged in developing these and this is definitely recognized as a component part of UNSDI. However, the funding will be coming through the agencies themselves.

Capacity-building again is a longer term agenda. It is a very important part of it but it has been decided that the Phase I implementation of the UNSDI project will not be focusing on this. Nevertheless, it definitely encourages the United Nations agencies to proceed on that and you will see a number of United Nations agencies here who are very close to the process and the procedures that you are following here in the Office for Outer Space Affairs and UNOSAT(?) and the Italian(?) OSAT(?) and so on.

I will not spend much time with UNSDI institutional structure but this is how we are going to position UNSDI within the larger United Nations system. As you see from the bottom up, going up, the United Nations is also informing UNGIWIW to operationalize the guidance that is being provided to us in the form of the UNSDI project. There will be sponsoring agencies who are actually going to have a MoU with the UNOB(?), which is the business cooperation entity, that is going to address to the project. And perhaps the most significant part of this graphic is that now on the left side you will see the UNSDI Partners Group which will be the entity that is going to help the United Nations proceed on the specific deliverables that we have commented on.

So this particular framework also allows us to identify how we are going to work with partners and those partners will actually help us with the UNSDI deliverables. The partners will be accredited by the UNSDI Board and they will have their own group to engage in policy and \_\_\_\_\_ (?) discussions with the United Nations.

In terms of implementation strategy, a time-bound project approach is being chosen. We are already adopting certain deliverables that is very much in line with the Chief Executive Board marching orders. And we are trying to interject these particular recommendations into the ICT Master Plan and we will be soliciting long-term political endorsements by United Nations member States. And in that context, the UNGIWIW Co-Chairs wish that COPUOS take note of and encourage the development of a UNSDI.

Major milestones for this year. This is a two-year project. First Phase Implementation. We have developed the interim deliverables documents. This Friday there is going to be a meeting in Geneva and United Nations agencies, who are members of UNGIWIW, are coming together to finalize that framework and endorse and adopt the particular deliverables that I have just shared with you. The Project Team will be established with an MoU with UNOB and in Vienna, in early November, UNGIWIW-9 is meeting and at that point, the UNSDI Project Team will have been fully set up and the Board will have given its directives for the implementation to take place, full blown in 2009.

The year 2009 is the year for UNSDI project activities and it will start their recruit(?). And I hope we will be given the opportunity to report back to COPUOS at its fifty-second session. Thank you for your attention.



**Mr. S. VIBULSRESTH** (First Vice-Chairman): Thank you Dr. Ulgen of OCHA for your presentation.

Any questions or comments?

If not, thank you again.

There is a final presentation for this afternoon which will be made by Mr. K. Radhakrishnan of India. He will make a presentation entitled "Use of Geospatial Data for Sustainable Development: Indian Context".

**Mr. K. RADHAKRISHNAN** (India): Thank you Mr. Chairman. Mr. Chairman and distinguished delegates, you will recall that in the fiftieth session of COPUOS, the Indian delegation had made a presentation on space-based geospatial data for sustainable development. What I intend to do in this presentation is to give a comprehensive view of the system that exists in the country on generation of data on the use of this data and also some case studies.

We have presented several times in this Committee the major issues that gave birth to an application-centric(?) space programme in the country where predictability of monsoons and even righted(?) distribution of rainfall are two important concerns for a predominantly rain-fed agricultural country like India. We have declining per capita availability of land and water, low irrigation efficiency, or exploitation of ground water, and also about 57 per cent of our land is degraded. We also have a large part of the country prone to multiple hazards. It is in this context that we look at the end(?) issue, how we can use geospatial data for sustainable development.

This is an excellent framework which I \_\_\_\_\_(?), essentially to report in internal \_\_\_\_\_(?) dimensions how India has been doing and how we are looking at the land and the oceans and the growth there at an integrated system.

Coming back most years, we have a long history of institute(?) -measuring systems and for the last couple of years, \_\_\_\_\_(?) rockets have been used to study our atmosphere. There are ground-based systems like the MSCR System, one of the few in the world that is in India. And we have a series of Doplar Radar for the radar monitoring, automatic weather stations and we have in situ in \_\_\_\_\_(?) for getting this data all over the satellite networks for use in our predictions of weather.

In constellations of operations(?), we have a long history. The International Indian Ocean Expedition of the late 1960s, in fact, started this process, ship-based observations. And we also have an area of intricate measuring systems of data \_\_\_\_\_(?), of mooring and the R-Group(?) providing growth and we are also part of a unified Ocean Observing System for the Indian Ocean because the lead characteristics, as our land is concerned, we have almost 150 years of legacy in topographic mapping, in thematic mapping, surveys related to soil, related to geology.

Aerospace observations, of course, came about 30 years ago and we decided to integrate the Convention Survey Systems along with the space system under the National Natural Resource Management, some NMR this year reported several times in this Committee. And, of course, we have an excellent network in the country for disaster processing and provision of information systems, information products, to the various users in the country.

Enabling technologies, especially the wide-band connectivity that is possible today, the great computing that is possible today, has again revolutionized the India process. And today we have an institutional mechanisms, basically the one by the Aerospace Observations who look at the planet Earth in an integrated way through all these windows.

In the \_\_\_\_\_(?) sustainable development, it is well known that we look at the sustainable agriculture and we made a presentation a couple of years ago on this subject and we have a long coastline, the fishery resources again is important for us, water security, environmental assessment and monitoring, weather and the forecasting of the Ocean State, the disaster management support, \_\_\_\_\_(?) process of development as \_\_\_\_\_(?) and also the \_\_\_\_\_(?) of the global stage that is taking place.

All these are conferred at different levels in the country for India.

And if you look at what space can provide towards sustainable development, essentially we are looking at the land, water irrigation and atmosphere, water, inland and oceans, and the use of the platforms to collect this data and we look at the resources in terms of its extensive(?) State spatial distribution. We also look at the vulnerability of these areas to the natural disasters and the getting to the decision support tools for optimal resource use, enhance use efficiency and \_\_\_\_\_(?) return.

And for this we have \_\_\_\_\_(?) several programmes and this is obtained the proper feedback mechanism with a long-term time domain.

And we have also in place an aerospace data acquisition processing, geospatial database generation, data organization, dissemination and finally, we get the spatial temporal business and support workshop. We also have the main \_\_\_\_\_(?) and geostationary thematic data standard.

Coming to the Earth observation satellite constellation, we have one of the best constellations looking at meteorology, looking at land and water, the ocean, as a high-resolution imagery. A recent addition to this constellation is the CARTOSAT-2A with spatial(?) acceleration less than a metre. And we also have a small satellite, Indian Mini-Satellite-1, which has two sensors, one a multi-spectral sensor with 36 metre spatial resolution, and a hyper-spectral sensor with 64-Band.

We are waiting for getting the OCEANSAT-2. It will be a follow-on for the OCEANSAT already in the orbit. The AERO\_\_\_\_(?) imaging satellite that will take us into a capability for microwave imaging and presently we are using the data from the RADARSAT, INDISAT, and also OCEANSAT-2(?) will be for our own \_\_\_\_\_SAT-1, which is today in the orbit, and also the geosynchronous satellite INDSAT-3B, and the megatropics which is a joint project of India and France.

This is an illustration of the kind of results(?) that we can get from all these satellites today but more importantly, we have a system today in the country for \_\_\_\_\_(?) acquisition, \_\_\_\_\_(?) processing of the satellite data and the objective is for any disaster-related, crisis-related applications of data be available on the web for the user within one hour of acquisition and for the other users, it should be available in a couple of days. These are the kind of multi-mission data acquisition and processing system that is being put on there.

And we also have a national data policy with specific guidelines on how we need to treat data of high-resolution or medium-resolution and core resolution.

We also complement the spatial observations through a series of aircraft-based sensors. A CON\_\_\_\_-2A(?) provides us manned of the level of 1 to 4,000 but we need for in processor planning, maps of better scale, one is to 2,000, and one is to 1,000, and

we employ the large format camera. We need to get the right information of the level of point by metre or better. We use a laser terrain mapper and in the event of disasters like floods, we need to also fly over cloudy areas and the use of a depressor radar for this purpose. At the moment we have two aircraft and \_\_\_\_\_(?) and they are acquiring a lighter(?) aircraft at the moment so particularly designed for the disaster management support applications.

I will tell on the major initiatives that we have taken on the use of geospatial data. If you look at it historically, 1985 the country instituted a national natural resources management system encompassing all the agencies in the Central Government, State Government and the Department of Space, applying to understand \_\_\_\_\_(?) trying to define, trying to drive the way the space systems have to be tailored-made for looking at the natural resources, and also to the capacity and capability in the country, the use of that space data in conjunction with the remote sensing data. And we started with an experiment nation-wide mapping of various plans for 1985.

Then in 1987, we had a major drought in the country. We wanted to see how States can really help to combat the drought and 16 districts tried to essentially derive the space-based information by analyzing the satellite data and with the necessary collateral data and finally synthesizing the thematic layers with the lead of the local that was done in 16 districts and based on the focus of this, we extended this to 175 districts in the country and discovered 84 million hectares almost 25 per cent of the geographical area of India was covered in this mission, during 1992 to 2000.

Around this time, we also monitored the R&D and pilot projects and in those days we were looking at the imageries available in the visible and infrared \_\_\_\_\_(?) and also applications with GIS. And we started a pilot project that is called Natural Resources Information Systems done in about 20 locations from various parts of the country. In fact, the Integrated Mission for Sustainable Development, there are thematic layers available and the pilot scale experimenting going into visible(?) domain through the NRIS, they all opened up a new structure in the use of geospatial data in the country. And once before immediately, by using the high-resolution data available at that time, we went to scale for 1 to 25,000, the National Agriculture Technology Project and also the Integrated Resources Information System for Research Areas, essentially using the same methodology. The \_\_\_\_\_(?) to have in the

country, NMR-standard for mapping and for digital maps especially.

We also decided to mount at that time a sensor of natural resources, periodic sensors on various thematic layers and details of it I will explain at \_\_\_\_\_(?) and we also have the delivery mechanism that will relay to those centres on which my distinguished colleague in the morning gave a presentation.

And currently, we are on national GIS, \_\_\_\_\_(?). Maps of 1 to 50,000 scale is available and from there we can go down at different low, better scales to the lower administrative union. We also have the Spatial Decision Support System and primarily we are now concentrating on the disaster-related decision support system, large ground assistance. And we also are now on the near-real-time dissemination of data and information products and also we have created thematic web servers in many areas.

Currently, the R&D is towards the micro-remotes sensing applications for different themes. The use of high-resolution satellite data, especially on applications like industrial waste(?) and where we need to go for the end of the country to see how to get better database on 1 to 4,000 scale demonstrates with the industrial maps, it is a large volume of work using aircraft or the ground service. So how best can we use high-resolution data for this purpose and also now on the hyper-spectral images. And we also have an \_\_\_\_\_(?) in the forthcoming CHANDRIAN Mission.

Modelling is another area we have graduated from mapping to modelling and that is so we are getting into the spatial decision support system.

This is essentially an analysis of the satellite data, the acceleration of different types of thematic layers, making a composite mapping unit using the GIS and the decision support system and trying to find out specific action plans for sustainable development on small watersheds of areas of 1,000 hectares where the local people collectively stick together and use this information and decides what needs to be finally put. So you can have a macro(?) -level teacher and finally they get into a micro-level where the local people are involved.

This is the detail on the NMR-standard. Essentially, we have a spatial framework, a \_\_\_\_\_ standard, mapping standard, and also on the \_\_\_\_\_(?) periphery(?) and also we have got the

quality assurance process for all the maps that are generated.

On the Natural Resources Centres, these are the main elements that are being addressed to for means on the land use and land cover mapping. We have two sites of offices, one is to 250,000 scale, one is at 1 to 50,000. The first one the objective is to get immediately the \_\_\_\_\_(?) area, whereas 1 to 50,000 scale, we have detailed land use, land cover maps.

On soil again, there is a cycle which is once in five years. You get in a land degraded mapping once in three years and you get in the geo-morphology for 10 years is sufficient for this purpose, and precipitation cover mapping that is falling once in two years and the backlands as the snow and glacier mapping.

Now these are the typical thematic surveys available today. This relates to the land use and land cover and users who were authorized can get information, we call it the GOD(?) site. And this is an information specifically on the wastelands including which relates to what type of wasteland is available, whether it is reclaimable or not. And we can relate that to the database created under the Integrated Mission for Sustainable Development to what purpose it can best be used for.

This is an excellent project that we completed recently. This is a biodiversity mapping at landscape-level using remote sensing data and ground-based information and for about 90 per cent of the forest area in this country its data is available on diversity.

Now, urban planning is a major thrust and we have a national urban renewal mission. As part of it, we are creating database at free(?) level, one is to 10,000 scale using satellite data of one metre resolution or better, and 1 to 2,000 scale using the aerial data, and one is to 1,000 scale essentially on the utilities by the ground-based information. We are doing this for 137 towns from various parts of the country as a joint activity of the Central Government and the State Government by two major institutions, the \_\_\_\_\_(?) India and the Department of Tugatha(?) and this is right available, we are, in fact, even the public can look at what best way they can use these lands for.

We have a national GIS which started only to 250,000 scale and one can get into different administrative units, State onwards and this is a typical example in a State like \_\_\_\_\_(?) from the southern most part of India, how we can get into the level of

districts, the level of \_\_\_\_\_(?) or block, and finally the Punjab and Village(?). So what we have today is a themeless(?) (seemless?) transition from one in to 250,000 scale to, one is 4,000 scale when it comes to a Punjab or Village(?).

This is an application which we had made at the beginning, the UC High-Resolution CARTOSAT Data for benchmarking the irrigation systems to understand the irrigation potential that is created in the country and part of it will be covered tomorrow in a presentation on the water resources and this is a new initiative. Here are the whole country developing a water resources information system looking at the surplus water, looking at the groundwater, looking at the snow and glaciers, and on the efficient utilization of this water in the country. We have something like 400 million hectare metres of precipitation every year and today we are talking about a single digit number as utilization. There are plans available for improving this at micro-level by proper structures which have become the regulatory requirements when you construct buildings and also at the macro-level by inter-linking \_\_\_\_\_(?) and for towards(?) already a feasibility is now being worked out.

Again, in a \_\_\_\_\_(?) sustainable agriculture, if you found specific advisory, remote sensing data is used along with the data available from the theme, specifically we are looking at the strength of the 5.8 metre multi-spectral data coming from the results of these applications.

And we also made at the beginning on the use of such data for decision support systems for disaster management. What you are seeing is a portion of \_\_\_\_\_(?) there. We have got the tsunami inundation(?) studies there. In fact, for the entire coastline of the country, 7,500 kilometres for 225 kilometres from the coastline depending on where you have estuaries or lagoons, we have created a database, we have put the land use information, we have put the socio-economic information, and, today, as part of the tsunami early warning system, we have a system available to find out the kind of inundation, kind of \_\_\_\_\_(?) ability and also the ISRO(?) for the relief operations.

And finally, in the country we have developed a transistor and capacity and two dimensions are given here when it comes to the R&D, potentially it is done by ISRO and the academia, and it comes to larger levels applications, it is done by the Assemble(?) and State Government agencies and non-governmental organizations when it comes to the \_\_\_\_\_(?) place of \_\_\_\_\_(?) climbing(?) and at the grassroot

level the latest. And there is an industry, the \_\_\_\_\_(?) industry developed over the last 15 years, in private and public, and today their turnover must be around US\$40-50 million from the new spatial activities and this is going to grow exponentially over the coming five years.

And coming to the development of people who can do this in the country, we have a system of Indian remote sensing in Deharadun(?) and several universities and authorities(?) essentially given the Masters Degree in Informatics, Post-Graduate Diploma as a certificate programme. When in actual, we have \_\_\_\_\_(?) in the country they make use of, be better, from a satellite constellation, it is sustained. We have a system for the utilization of this data properly and reach to the end-user and we also required \_\_\_\_\_(?) to ensure that this system. Thank you Mr. Chairman.

**Mr. S. VIBULSRESTH** (First Vice-Chairman): Thank you Mr. Radhakrishnan for your presentation. This is an excellent example of a country having the use of geoinformatics in the full cycle from satellite launch, satellite manufacturer, to users and also to the community. So I think you have set a good example for the developing countries to follow.

Are there any questions or comments?

I see none.

Distinguished delegates, I will shortly adjourn this meeting of the Committee. Before doing so, I would like to inform delegates of our schedule of work for tomorrow morning.

We will reconvene promptly at 10.00 a.m. At that time, we will continue our consideration of agenda item 11, Space and Society, 12, Space and Water, and 13, Use of Space-Derived Geospatial Data for Sustainable Development.

Time permitting, we will also continue our consideration of agenda item 14, Other Matters.

There will be four technical presentations tomorrow morning. The first one by a representative of the Russian Federation entitled "International Project Rimpamera: The Investigation of the Cosmic Anti-Particle Structures.

The second one by the \_\_\_\_\_(?) Ambassador of the International Year of Planet Earth on "The International Year of Planet Earth".

The third one by a representative of India entitled “Water for Livelihood: Watershed Management and Development: Strategy to Space”.

And the fourth one by a representative of Colombia on the “Use of Geospatial Data”.

Are there any questions or comments on this proposed schedule?

I see none.

Delegations are invited to attend the 7.00 p.m., the traditional Austrian Heurige Evening.

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

*The meeting closed at 5.26 p.m.*