

**MINUTES
FROM
IAA COMMISSION V MEETING
Bremen, Germany
Monday, September 29, 2003
13h30 – 15h30**

Room Park 1 of Park Hotel (across the street from Conference Center)

1. Welcome

- a. Welcomed and thanked everyone for coming to the meeting, especially with the long walk from the conference center. Unusually low attendance because of location at a different hotel than the conference center. A list of attendance is attached.
 - **ACTION:** John Logsdon and Gerard Brachet to request to Scientific Activities Committee that all Commission meetings remain in the same vicinity.
- b. Acknowledged the contributions of outgoing Commission V chairman, Philippe Couillard.
- c. Welcomed the new Commission V leadership for 2003-2005:
 - John Logsdon as Commission V chairman, Gerard Brachet as vice-chairperson, Debra Facktor Lepore continues as secretary. Welcomed the new section representatives to Commission V. Contact information for the Commission V members are below.
 - **ACTION:** Since only one of the section representatives was present at the meeting, John Logsdon and Gerard Brachet will contact the Section Representatives and confirm their commitment to participate in the Commission.

2. Study Group Reports

- [S 5.1](#) Space Debris Mitigation Rules for Launch Vehicles and Spacecraft (report by Flury)

The study group on space debris is led by Walter Flury, with Christophe Bonnal and John Hussey. The group has developed text on mitigation measures for spacecraft, which is being reviewed in Bremen. Text on launch vehicle mitigation measures has not been created yet. The plan is to have a draft of the complete report available at the March 2004 IAA Commission V meeting in Paris. The study group is also working on a presentation on debris mitigation to the 2004 session of the Scientific and Technical Subcommittee of UN COPUOS.

- [S 5.3](#) Traffic Management Rules for Space Operations (report by Schrogl)

The study group on traffic management co-chairs are Kai Uwe-Schrogl and Petr Lala, with Corinne Contant as secretary. Currently the study group is finalizing the first complete draft of the study, which will be discussed in the study group on 1st October following the afternoon paper session. The study group is hosting a dedicated IAA paper session in the morning, an IISL navigation and traffic session in the afternoon (where the study group status report will be presented), followed by a study group meeting in the evening. The study group plans to review the current draft report and have a consolidated draft of the report by January. A copy of the study group status report (which will be presented at the IAA paper session) is attached.

- [S 5.4](#) Space to Promote Peace, Initial Focus on Re-construction of Afghanistan (report by Lepore)

The study group on Space to Promote Peace is co-chaired by Prof. Francois Becker and Dr. Kasturirangan, with rapporteurs Mukund Rao and Debra Facktor Lepore. Dr. Kasturirangan is also the new IAA Vice President of Scientific Activities. The study group just completed a workshop in Bremen, with representatives from space agencies, industry, academia, and Afghanistan. The input from the Afghan participants was critical in establishing the priorities for the study group report and recommendations. As a result of the workshop, the study group will prepare a "Version 3" of the draft report to be submitted in parallel to UNESCO and to IAA for peer review. Copies of the workshop materials and conclusion were distributed in Bremen. The conclusions are attached.

- Proposals for New Study Groups

No new study groups have been proposed yet. New ideas or appropriate follow-on studies (such as expanding the Space to Promote Peace study from Afghanistan to other countries) should be discussed.

- Peer Review Discussion

The Space to Promote Peace study group will be the first one to undergo peer review within the new IAA organizational structure. Each Commission is responsible for conducting the peer review of its own study groups, before recommending to the VP Scientific Activities that the report be published under the IAA name. Debra Facktor Lepore has agreed, along with Dick Kline, to create guidelines for peer review to propose for all IAA study groups.

The proposed process for the Space to Promote Peace Study Group was discussed as follows:

- 1) Peer review will be led by the Commission V co-chairs and include all of the Commission V members (including the section representatives). The Secretary will be excused because she is a member of this study group.
- 2) Additional subject matter experts will be solicited to comment on the report recommendations, and to review the following areas:
 - a. health, GIS, disaster, international, technically valid, reasonableness of action plan
 - b. **ACTIONS:**
 - John Logsdon and Gerard Brachet to nominate the peer review members by the end of the year. The additional subject matter experts do not have to be IAA members. Section representatives hopefully can assist with identifying IAA members that may have appropriate expertise.
 - Debra Lepore to write one-page guidelines to peer review members, telling people how to help in the review

3. Program Committee (Conference Symposia) Reports and Planning

- a. Status of Symposia for IAC Bremen Oct 2003

Commission V will conduct the following symposia in Bremen. The only uncertainty is IAA.3.2, and Debra will attend and make sure that the session is covered. A full description is attached.

- IAA.3. Symposium on New Business in Space and International Cooperation
- IAA.3.1 Longer Term Prospects for Space Commerce: Beyond Telecommunications
- IAA.3.2. Crafting Productive International Agreements: Applying Experience to the Future

- IAA.5. Space Debris and Space Traffic Management Symposium
- IAA.5.1. Space Surveillance, Measurements and Modeling of Space Debris and Meteoroids
- IAA.5.2. Risk Analysis, Hypervelocity Impacts and Protection
- IAA.5.3. Mitigation Measures, Standards and Handbooks
- IAA.5.4. Space Traffic Management

- IAA.11.4. 4th UN/IAA Workshop on Small Satellites at the Service of Developing Countries

b. Status of Plenary for IAC Bremen Oct 2003

One plenary will be held in Bremen under the auspices of Commission V, “Space to Promote Peace: Initial Focus on the Reconstruction of Afghanistan.” See attached flyer.

c. Summary of Symposia IAC Vancouver, Oct 2004

Commission V will conduct the following symposia in Vancouver. The Call for Papers has been issued, and abstracts are due on *February 20, 2004*. See <http://www.iac2004.ca/> or <http://www.iafastro.com/> for more information. Paper selection will take place at the Spring IPC meeting in Paris in March.

The Symposia Coordinators are responsible for communicating with the Session Co-Chairs and Rapporteurs to ensure timely topics, good content, and reliable speakers. The Session Co-Chairs collect, solicit, evaluate, and select papers, and also have the responsibility to invite specific papers. The Rapporteur should be available to help the Co-Chairs with this process and write a short summary of the session after it is complete.

- IAA.5.12. Space Debris and Space Traffic Management Symposium
- IAA.5.12.1. Space Surveillance, Measurements and Modeling of Space Debris and Meteoroids
- IAA.5.12.3. Mitigation Measures, Standards
- IAA.5.12.4. Space Traffic Management

- IAA.5.13 Symposium on Space Policy, Law, and Economics
- IAA.5.13.1 Emerging Issues in Space Policy and Law
- IAA.5.13.2 Maximizing Both Public and Private Economic Benefits from Space

d. Proposals for Plenary at IAC Vancouver, Oct 2004

Commission V does not have any recommendations for Vancouver Plenary Sessions.

e. Proposals for New Symposia at IAC Fukuoka 2005

The Commission needs to identify ideas for topics, chairs, and co-chairs for Japan. For the past two years, Commission V has made an effort, under the Symposia for “Space Policy, Law and Economics”, to invite a diverse set of co-chairs and rapporteurs, including at least one representative from the host country and one young person (such as an IAA corresponding member or prospective corresponding member, International Space University alumni or student).

For Japan, we would like to see more economics focus in Session 5.13. Also, for legal topics that may be covered, we need to find a way to coordinate with the IISL. Perhaps this could be done with the assistance of Lucy Stojak, co-chair of session IAA 5.13.1.

Applications for IAC Fukuoka 2005 are now open. Proposals for new program committees will be accepted to the IAA and Commission V co-chairs and secretary until *February 15, 2004*. The application form for establishing a program committee is available in the restricted section of the IAA website at: <http://www.iaonet.org/restrict/programc2005.doc>

f. Proposals for Plenary at IAC Fukuoka 2005

Soliciting proposals for Plenary Sessions for Fukuoka is deferred until the Vancouver meeting.

4. Continuation of how to stimulate and organize the commission work

- a. Determined to invite all “Program Chairs” of symposia (e.g., for Bremen, Vancouver, Japan) to participate in the Commission V activities. Also, will invite all “Study Group Chairs, Co-chairs, and Rapporteurs”. This will ensure greatest participation and communication.
- **ACTION:** Debra will include them on the distribution list.
- b. The IAA Commission V home page is operational and contains links to all the study groups (each of which has its own home page) and to a list of all program committees (symposia) for Bremen and Vancouver. See the Commission V homepage on the restricted section of the IAA website at: <http://www.iaonet.org/commissions/commission5.html>

5. Next Meetings

- a. IAA / IPC Spring Meeting, Paris, France, March 22 – 25, 2004

IAA has posted the Spring meeting schedule on its website. The International Programs Committee (IPC) meetings for Vancouver paper selection were informed via letter to the symposium coordinators and session co-chairs and rapporteurs. Please check the IAA website, “News and Information” for updates at: <http://www.iaonet.org/future/index.htm>

March 22-23: IAA Meetings

Location: IAA Office – 6 rue Galilée, 75116 Paris, France

- Monday, March 22nd
 - 11h00 – 12h00 Finance Committee Meeting
 - 14h00 – 15h30 Awards & Membership Committee Meeting
 - 16h00 – 17h00 Publication Committee Meeting
 - 17h30 – 23h00 Strategic Planning Meeting of the Board of Trustees
- Tuesday, March 23rd
 - 09h00 – 10h30 Commission Meeting 1
 - Commission Meeting 2
 - Commission Meeting 3
 - Commission Meeting 4
 - Commission Meeting 5*
 - Commission Meeting 6
 - 10h30 – 12h00 Scientific Activities Committee

14h00 – 17h00 Board of Trustees Meeting

20h00 – 23h00 IAA Dinner

* Attendance by all Commission V members is strongly encouraged, including representatives from each of the study groups and 2004 Vancouver program committees.

March 24-25: International Programs Committee meetings (Paper Selection)

Location: Espace Hamelin, 17 rue Hamelin, Paris 16e

– Wednesday, March 24th = IPC Meeting (all day)

– Thursday, March 25th = IPC Meeting (morning only)

* Coordinators, co-chairs, and rapporteurs should coordinate abstract selection before the meeting, and at least one representative for each symposium and session is required in Paris to confirm the final selection.

b. IAC 2004, Vancouver, Canada

– October 3, 2004 = IAA Academy Day

– October 4 – 8, 2004 = Congress

IAA Commission Meetings to be announced

c. IAA / IAC Spring Meeting, Paris, March 2005

Dates to be determined

d. IAC 2005, Fukuoka, Japan

– October 16, 2005 = IAA Academy Day

– October 17 – 21, 2005 = Congress

IAA Commission Meetings to be announced

6. For more general information, please see the following websites.

IAA <http://www.iaanet.org/>

IAF <http://www.iafastro.com/>

Vancouver <http://www.iac2004.ca/>

LIST OF ATTACHMENTS

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ATTACHMENT 1

New Commission V Leadership

Membership 2003 – 2005

FUNCTION	CONTACT	ASSOCIATION	TELEPHONE	FACSIMILE	E-MAIL
<u>Chair</u>	Logsdon, John	George Washington University	1-202-994-7292	1-202-994-1639	logsdon@gwu.edu
Vice Chair	Brachet, Gerald	CNES	33-(0)6-0801-6997		gerard.brachet@cnes.fr
Secretary	Lepore, Debra Facktor	Kistler Aerospace Corporation	1-425-889-2001	1-425-803-3303	dflepore@kistleraero.com
Section 1 Representative	Nishida, Atsuhiro				nishida@gil.isas.ac.jp
Section 2 Representative	Sridhara, Murthi K.	ISRO			ssisro@bgl.vsnl.net.in
Section 3 Representative	Kordyum, Elizabeth				ekordbotan.kiev.ua@relay.ua.net
Section 4 Representative	Schrogl, Kai-Uwe	German Aerospace Center	49-22-3601-3536	49-22-36-5790	kai-uwe.schrogl@dlr.de
Member	Cline, Lynn	NASA Headquarters	1-202-358-0450	1-202-358-4329	lynn.cline@hq.nasa.gov
Member	Favier, Jean-Jacques	CNES			lydie.lafreniere@cnes.fr
Member	Stavriniadis, Constantinos	ESA			constantinos.stavriniadis@esa.int

ATTACHMENT 2

Commission V Meeting, September 29, 2003, Bremen, Germany

List of Attendees

NAME	ORGANIZATION	E-MAIL
Philippe Couillard	EADS – Space	philippe.couillard@eads.net
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Debra Facktor Lepore	Kistler Aerospace Corporation	dflepore@kistlerareo.com
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Corinne Contant	AIAA	corinnec@aiaa.org
Ray A. Williamson	George Washington University	rayw@gwu.edu

ATTACHMENT 3

Space Traffic Management Study Group Status Report

IAC-03-IISL.4.02
IAC-03-IAA.5.5.a.06

Status of the IAA Study Group on „Traffic Management Rules for Space Operations“

Corinne Contant, AIAA, Washington, USA (corinnec@aiaa.org)
Petr Lala, formerly UNOOSA, Vienna, Austria (petr@lala-web.cz)
Kai-Uwe Schrogl, DLR, Cologne, Germany (kai-uwe.schrogl@dlr.de)

Abstract

The investigation of space traffic and its management has only recently become a point of wider discussion. In particular the series of workshops organized by the American Institute of Aeronautics and Astronautics (AIAA) and other international organizations on international cooperation highlighted the issue. It was discussed thoroughly at the workshops, which took place in 1999 and 2001 respectively. It was at the 2001 workshop, when the suggestion was made that an International Academy of Astronautics (IAA) Study on the subject of space traffic management should be prepared. This suggestion was taken up and a proposal was presented to the Board of Trustees of IAA, which, in late 2001, accepted this proposal.

Following this, an interdisciplinary study group of around twenty persons was composed. One early milestone in the process of work was the conduct of an International Institute of Space Law (IISL)/European Center of Space Law (ECSL) Symposium alongside the 2002 session of the United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS) Legal Subcommittee. This

symposium consisted of presentations of members of the IAA study group. Also, close coordination with other study projects of IAA, in particular with the one on space debris, is sought.

This paper presents the status of work of the study group, in particular the approach and the scope of the study as well as its preliminary findings. The study group intends to finalize its work in early 2004, in order to be able to put the study before IAA and launch its review process before the 2004 International Astronautical Congress. Following this review, the study will be published and may be expected to make an impact in fora like the UNCOUOS.

The authors of this paper act as the coordinators/the rapporteur to this study. The paper will be presented in the IAA- as well as the IISL-session dealing with space traffic, by that bridging the two areas and seeking input from various sources.

1. Scope of the Study

Space traffic already takes place. It seems, however, minuscule with regard to the dimension of near-Earth outer space. Around 10.000 man-made objects larger

than 10 cm are currently tracked out of which only 650 are operational spacecraft. On the surface, it does not look, as if the management of space traffic was a pressing problem. Investigated further, this judgement has to be challenged. A high level or even growing number of launches from more and more launch sites and space ports, the entering of non-governmental entities, the positioning of satellite constellations, an increase in space debris and the advent of re-usable launch vehicles supports this judgement. Considering this scenario, conceptualizing space traffic management will turn out to become one of the most relevant tasks during the next two decades.

The dimension of this task can be assessed, when the following **definition of space traffic management** is taken into account:

Space traffic management comprises technical and regulatory provisions for guaranteeing safe interference-free access into outer space, operations in outer space and return from outer space to Earth.

Since an authoritative definition of space traffic management does not yet exist, this definition has been set up for the purpose of this study. Through this definition, the purpose of space traffic management becomes clear: it is to provide appropriate means so that space activities can be conducted without harmful interference. By that it supports the universal freedom to use outer space as laid down in the Outer Space Treaty of 1967. It should also be clear that for this purpose of achieving a common good, actors have to follow specific rules, which is also in their self-interest.

The investigation of space traffic and its management has only recently become a point of wider discussion. In particular the series of workshops organized by the

American Institute of Aeronautics and Astronautics (AIAA) and other international organizations on international cooperation highlighted the issue. It was discussed at its 5th and its 6th workshop, which took place in 1999 and 2001 respectively. The results of these deliberations including recommendations have been laid down in the proceedings of these two events.¹ But so far, these activities have not advanced considerably more the subject than it had been analysed with startling far-sightedness by Lubos Perek already in the early 80s² – a pioneering work, which has not been followed-up for more than a decade.

It was, however, at the 2001 workshop of AIAA, when the suggestion was made that an **International Academy of Astronautics (IAA) Study** on the subject of space traffic management should be prepared. This suggestion was taken up and a proposal was presented to the Board of Trustees of IAA, which, in late 2001, accepted the proposal. Following this, the study group was composed, which prepared the present study. One early milestone in the process of work was the conduct of an International Institute of Space Law (IISL)/European Center of Space Law (ECSL) Symposium alongside the 2002 session of the United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS) Legal Subcommittee. This symposium consisted of presentations of members of the IAA study group.³ Also, close coordination with other study projects of IAA, in particular with the

¹ AIAA Workshop Proceedings "International Space Cooperation: Solving Global Problems" 1999, p.35-39 and "International Space Cooperation: Addressing Challenges of the New Millennium," 2001, p.7-14.

² Perek, Lubos, Traffic Rules for Outer Space, 82-IISL-09.

³ Proceedings of the IISL/ECSL Symposium on Prospects for Space Traffic Management, 2 April 2002, Vienna, UN Doc. A/AC.105/C.2/2002/CRP.7 of 4 April 2002.

one on space debris, is sought. At the International Astronautical Congress in Bremen in 2003, this outline of the study will be presented to a dedicated session for discussion.⁴ It will also be presented during the IISL Colloquium.⁵

The approach and scope of the present study are as follows. The **approach of the study** is characterized by interdisciplinarity. The study group consists of experts from the technical as well as from the legal/regulatory fields. It is composed of a core team, which prepares the text. While these members initially draft sections in their particular field of expertise, the work is further done on the text as a whole so that no reference is made on contributors of specific sections but the study as a whole is to be regarded as a joint product of this core team. In addition to that, an independent team of advisors will contribute ideas and suggestions to the first complete draft of the study as a whole. This team will also consist of experts with different backgrounds broadening the input even further.

The **scope of the study** reflects the understanding of space traffic management as given through the definition laid out above and the interdisciplinary set-up by the study team. The study encompasses detailed analyses of the technical background for space traffic management and the regulatory spectrum. It starts with a report of the current status. This comprises the status of space activities as well as the status of the legal and regulatory environment and also comparable traffic regimes. This will provide the basis for identifying the needs for traffic management provisions in the two

⁴ IAC-03-IAA.5.5.a. session on “Space Traffic Management” in the “Space Debris and Space Traffic Symposium”.

⁵ IAC-03-IISL.4. session on “Space Traffic Management and Navigation”.

spheres of technology and regulation. The main part of the study lays out elements for a space traffic management regime for the year 2010. Subdivided into the three phases of space traffic, the launch phase, the in-orbit operation phase and the re-entry phase, needs for technology development and application as well as regulatory provisions are investigated. The result is a set of recommendations, how traffic management rules should look like in around one decade.

Through investigating these issues, the study does not only apply an interdisciplinary approach inside the realm of space. It also has to take into account and touches various other fields as air traffic management and telecommunications regulation and the work conducted by the relevant institutions, in particular the International Civil Aviation Organization (ICAO) and the International Telecommunication Union (ITU). It has to do so, since in these two areas there have already been prepared elements for space traffic management, i.a. for the use of the geostationary orbit. The present study brings these developments together and merges them into a coherent, encompassing approach. The recommendations are prepared in order to take action in the various relevant organisations, in particular in UNCOPUOS.

2. Dimensions and Phases of Space Traffic as a concept used in the study

Space traffic encompasses almost all space activities from their start to their end. Only planetary probes leaving the near-Earth environment fall under it for a shorter part of their lifetime. For the purpose of this study, activities on the Moon and other celestial bodies (except transfer thereto and therefrom) are also excluded.

Space traffic touches **two dimensions**. These are the **scientific and technical area**

and the **regulatory field**. In chapter 2, the status in these two dimensions will be analysed. The relevant technical data for the use of outer space will be presented together with prospects for various space activities including the development of the space debris environment. On the other hand, the current legal and regulatory framework is analysed alongside the respective areas of space law, air law, telecommunications law as well as national space law, air law and licensing provisions. A comparison with comparable traffic regimes for air traffic and maritime traffic completes this chapter. So, this chapter will lay the groundwork for judging the prospects of space traffic, identify existing and lacking provisions for regulation and through this lead to the drafting of elements for a future space traffic regime.

In chapter 3, the two dimensions of space traffic will be applied to analysing the **three phases of space traffic**:

- the launch phase,
- the in-orbit operation phase,
- the re-entry phase.

They provide the structure for the in-depth analysis for elements of a space traffic regime for the year 2010. Each phase is subdivided into an analysis of the status and trends in technology developments on the one hand and the regulatory aspects on the other hand. A brief characterization of the three phases and the related problems could be summed up in the following way.

The **launch phase** does have to take into account expendable as well as re-usable launch vehicles, comprising operators from the governmental as well as the non-governmental field. Particular stress has to be put on aspects of debris mitigation. The regulatory aspects have to respond to a current lack of pre-launch notifications, a little harmonized system of national

licensing provisions. In addition a close link has to be made with air law.

The **in-orbit operation phase** has to investigate the rules for the use of various orbits. Only the GSO so far can be seen as basically managed. Specifically movement of satellites on specific orbital plains or in altitude have to be covered by rules (who will have to give way?). This leads to the need of a comprehensive collision-warning system. It will turn out that the existence and access to on-time information about the status of space operations is essential for a functioning space traffic management system, as it is the case with the air traffic management. Another area of regulation in this context will be the mitigation of space debris including the use of disposal orbits. Additionally the question does arise, whether certain space activities should have priority before others (e.g. manned before unmanned?, science before applications?, “useless” activities like funerals in orbit before “usefull”?).

The **re-entry phase** is relevant for the operation of re-usable transportation systems as well as the intentional or un-intentional de-orbiting of other space objects including space debris. Again the link with air law provisions has to be drawn. New requirements for notification will be necessary in this context.

The division into these three phases seems useful with regard to their different technological characteristics and to the possibility to shape distinct blocks of regulatory provisions. In the following the three phases will be analysed in-depth and a synthesis of the findings and recommendations will be given as a model for space traffic management in the year 2010.

3. Preliminary findings

As pointed out, the study aims at an outline of a Comprehensive Space Traffic Management Regime. The preliminary findings can be summed up like this:

Framework:

- drafting of an international inter-governmental agreement building on and not replacing the existing treaties (includes provisions for liability and the basic principle that States are the primary actors but that provisions of the agreement are applicable for private activities as well through national licensing regimes; certain issues will be clarified in the agreement);
- comprises a legal text, which cannot be changed easily and technical annexes which can be adapted more easily
- three parts:

1. Securing the information needs

- definition of necessary data
- provision of the data (including financing)
- establishing a database and distribution mechanisms for data
- [- establishing new installations for surveillance if needed]

2. Notification system

- pre-launch notification with better parameters than Registration Convention as well as other provisions (e.g. ITU and proposed UNIDROIT Protocol)
- information on the end of active/operational lifetime of space objects
- pre-notification of orbital manoeuvres and active de-orbiting (communication rules and cooperation provisions)

3. Traffic management

- provides traffic management rules
 - clarification of "space objects"
 - for launch phase setting delimitation and clarifying the concept of the "launching State"

- right of way rules for in-orbit phase
- prioritisation with regard to manoeuvres
- specific provisions for GSO in harmonization with ITU rules
- specific rules for LEO satellite constellations
- zoning
- clarifying "fault" in case of damage caused in outer space
- gives framework and main features for national licensing regimes, which implement the provisions of the agreement)
- provides overarching debris mitigation mechanisms
- sets out an enforcement mechanism (e.g. renouncement of access to information)
- clarifies institutionalized interlinks with ICAO and ITU

4. Organisation

- the provisions of the three agreements are in a first step monitored by UNCOPUOS and handled by the UN Office for Outer Space Affairs (UNOOSA)
- in a second step (post 2020), the new Agreement may be (together with the existing space treaties) replaced by a comprehensive Outer Space Convention; ICAO's mandate may be enlarged to cover both the aviation and space traffic management legal frameworks; UNCOPUOS as well as UNOOSA functions could be integrated into new ICAO; space activities by private actors will develop into the same legal status as in air traffic

It is planned that the study will also contain draft legal texts for these areas.

ATTACHMENT 4

Conclusion of IAA Study Group “Space to Promote Peace” Workshop, 24-27 September 2003

INITIATIVES

1. Enhancing Healthcare in Afghanistan through Space-based Tele-health services
2. Strengthening Education and Training in Afghanistan through a Space-based Distance education system
3. Providing geo-spatial information from space-based systems in support of developmental activities in Afghanistan
4. Enable Afghanistan to access the International Charter on Space and major Disasters

PRIORITIES

1. One pilot project on tele-health between specialty hospital in Kabul (hub) and 3-4 rural hospitals to be decided.
2. One pilot project on tele-education with hub at Kabul connection few schools, universities and professional training institution.
3. Space based surveys for construction of Secondary Roads
4. Provide access to the International Charter on Space and major Disasters

IMPLEMENTATION PLAN AND SCHEDULE

1. Two stream action in parallel well coordinated – presentation of the draft report to the UNESCO, contact Consulting Group (CG) of the Afghanistan Government through Mr Khaliki
 - Presentation by IAA of the draft report to UNESCO with the Ambassador of Afghanistan in Paris (by end of October 2003)
 - Coordinate with Dr. Khaliki for CG (by end of October 2003)
 - Organisation by UNESCO of a Presentation to CG of the Afghanistan in December 2003 and preparation of implementation plan with appropriate agencies and donors by this time
 - Finalisation of the report (by end of December 2003)
2. Submission of the report to IAA (beginning of January 2004), with approval from IAA Peer Review Process by mid-February 2004, and Final Print by end of February 2004
3. Official presentation by IAA to UNESCO in March 2004
4. Distribution plan and press release/press conference in March 2004
5. IAA continue to work with UNESCO to follow-up implementation throughout 2004, in contact with Afghan CG

ATTACHMENT 5

Bremen Symposium Summary IAA Program Committees 2003 Bremen Space Policy, Law & Economics

IAA.3. Symposium on New Business in Space and International Cooperation

This symposium will focus on new business opportunities in space, particularly on the prospects for space commerce and for applying lessons learned to cooperative international ventures.

Coordinators:

Philippe Couillard
EADS Launch Vehicles – FRANCE
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IAA.3.1 Longer Term Prospects for Space Commerce: Beyond Telecommunications

Successful commercial space commerce face many challenges, such as market, financing, management, and implementation. This session focuses on the longer term prospects for space commerce, from an international perspective.

Chairs:

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IAA.3.2. Crafting Productive International Agreements: Applying Experience to the Future

Today's space ventures cross many boundaries and often involve several international partners. Government and industry have gained considerable lessons learned in how to structure, manage, and implement international programs over the past 10 years. This session explores those experiences that can be applied to future space ventures to ensure success.

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IAA.5. Space Debris and Space Traffic Management Symposium

The symposium encompasses the closely related topics space debris, space surveillance and space traffic management. The complete spectrum of technical debris issues will be addressed: measurements, modeling, risk assessment, re-entry, hypervelocity impacts and protection, mitigation and standards. Space traffic management relies strongly on space surveillance and debris mitigation.

Coordinators:

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IAA.5.1. Space Surveillance, Measurements and Modeling of Space Debris and Meteoroids

The session will address ground-and-space-based measurements (radar, optical/IR, and impact detectors), related processing methods, and results on the derived spatial and temporal distribution of debris and meteoroids. This includes space surveillance concepts (sensor networks), their implementation and operation, and the establishment and maintenance of space object catalogs. Space debris and meteoroid environment models will be another main topic of this session, covering fragmentation and non-fragmentation debris sources, models for their generation and propagation, and methods for collision flux estimation in the short-and-long-term. The validation of debris and meteoroid models against measurement data, as an important link between the disciplines, will also be included.

Chairs:

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IAA.5.2. Risk Analysis, Hypervelocity Impacts and Protection

The session will address methods for in-orbit (collision) and on-ground (debris impact) risk assessments. The in-orbit analysis will cover collision risk estimates (based on statistical populations and catalogs), active avoidance (evasive maneuvers), and passive protection (shielding and damage predictions). Shielding aspects will be supported by experimental computational results of HVI tests. The on-ground risk assessment will address the modeling of the disintegration during the re-entry for orbital and sub-orbital objects (e.g. launch systems), the identification of survivor objects, and the resulting human risk on the ground.

Chairs:

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IAA.5.3. Mitigation Measures, Standards and Handbooks

The session will focus on the definition and implementation of debris prevention and reduction measures (debris mitigation), and on economical issues in this context. Currently implemented debris mitigation measures will be reviewed, and the effectiveness of further reaching mitigation measures for the future space environment will be analyzed. The session will also address space debris mitigation guidelines and standards which exist already or are in preparation at national and international level.

Chairs:

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IAA.5.4. Space Traffic Management

This session will address space traffic management issues during launch, in orbit and during re-entry. It will be concerned with the need, concepts and prospects of space traffic management. It will review existing mechanisms.

Chairs:

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IAA.11.4. 4th UN/IAA Workshop on Small Satellites at the Service of Developing Countries – A Contribution to Sustainable Development

The benefits of Small Satellite programmes at the service of Developing Countries shall be discussed, and their contribution to sustainable development shall be highlighted. Invited and contributed papers shall cover Scientific, Earth Observation and Telecommunication missions. Emphasis shall be placed on international cooperation, education and training, and support to Environment Monitoring and Security, including disaster mitigation. Discussions shall be encouraged, and recommendations shall be prepared at the conclusion of the Workshop.

Chairs:

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ATTACHMENT 6

IAA PLENARY EVENT Space to Promote Peace

“Initial Focus on the Reconstruction of Afghanistan”

Panel Description: Have you ever thought about the role that space can play to promote peace? Many under-developed countries do not have access to space assets, and even if they did, they would not know how to use them. The International Academy of Astronautics (IAA) is conducting a study on “Space to Promote Peace – Initial Focus on the Reconstruction of Afghanistan,” is establishing a model for utilization of space applications in under-developed countries, using the case of Afghanistan as a test-bed. This study was undertaken at the behest of UNESCO, which has significant responsibility to help rebuild Afghanistan, to study how space applications can accelerate the process of rebuilding infrastructure, economy, education and health support. In this plenary, hear about the unique tools and solutions of space applications that can aid in the international efforts of reconstruction and promotion of peace. Prominent members of the international community will also address the challenges and issues faced when implementing large-scale recovery plans.

Moderator



Prof. Francois Becker
Dean, International Space University,
France

Participants

Prof. Dr. Alef Shah Zadran
Specialist Education, Afghanistan



Dr. Krishnaswamy Kasturirangan
Honorary Member of Parliament, India
(former Chairman, Indian Space
Research Organization)

Mr. Martin Hadlow
Director, UNESCO Kabul, Afghanistan



Dr. Ghassem Asrar
Associate Administrator for Earth
Science, NASA Headquarters, USA



Dr. Josef Aschbacher
Programme Coordinator, Directorate of
Earth Observation Programmes,
European Space Agency, France

Organizers

Dr. Mukund Rao, Indian Space Research Organization, India (IAA)
Ms. Debra Facktor Lepore, Kistler Aerospace Corporation, USA (IAA)

Date: 30 September 2003

Time: 11:30 – 12:30

Room: ??

ATTACHMENT 7

List of Symposia for Commission V – Vancouver 2004

IAA.5.12. Space Debris and Space Traffic Management Symposium

The symposium encompasses the closely related topics space debris, space surveillance and space traffic management. The complete spectrum of technical debris issues will be addressed: measurements, modeling, risk assessment, re-entry, hypervelocity impacts and protection, mitigation and standards. Space traffic management relies strongly on space surveillance and debris mitigation.

Coordinators:

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IAA.5.12.1. Space Surveillance, Measurements and Modeling of Space Debris and Meteoroids

This session will address ground-and-space-based measurements (radar, optical/IR, and impact detectors), related processing methods, and results on the derived spatial and temporal distribution of debris and meteoroids. This includes space surveillance concepts (sensor networks), their implementation and operation, and the establishment and maintenance of space object catalogs. Space debris and meteoroid environment models will be another main topic of this session, covering fragmentation and non-fragmentation debris sources, models for their generation and propagation, and methods for collision flux estimation in the short-and-longer-term. The validation of debris and meteoroid models against measurement data, as an important link between the disciplines, will also be addressed.

Chairs:

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IAA.5.12.3. Mitigation Measures, Standards

The session will focus on the definition and implementation of debris prevention and reduction measures (+debris mitigation) and on economical issues in this context. Currently implemented debris mitigation measures will be reviewed, and the effectiveness of further reaching mitigation measures for the future space environment will be analyzed. The session will also address space debris mitigation guidelines and standards which exist already or are in preparation at national and international level.

Chairs:

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IAA.5.12.4. Space Traffic Management

This session will address space traffic management issues during launch, in orbit and during reentry. It will be concerned with the need, concepts and prospects of space traffic management. It will review existing mechanisms.

Chairs:

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IAA.5.13 Symposium on Space Policy, Law, and Economics

This symposium will provide an opportunity for discussions of significant space policy, law, and economic issues, particularly those issues of international, not just national, significance.

Symposium Coordinators

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IAA.5.13.1 Emerging Issues in Space Policy and Law

This session will focus on significant space policy and policy-related legal issues that will shape the governmental agenda for space activities in coming decades. Particular attention will be given to issues that have multinational dimensions, either regional or global.

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IAA.5.13.2 Maximizing Both Public and Private Economic Benefits from Space

This session will assess how space activities may produce economic benefits for society. Some benefits taking the form of public goods or services delivered through government space efforts. Others resulting of profitable commercialization of space activities by the private sector through the delivery of space services or products.

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