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UNIVERSITÄT
DER BUNDESWEHR
MÜNCHEN

To:
Members of IAA Commission IV
Space Systems Operations and Utilization

Fakultät für Luft- und Raumfahrttechnik
Institut für Raumfahrttechnik

Oct. 24, 2001

Subject: Minutes of meeting

Dear colleagues,

please find enclosed the minutes of our commission IV meeting which took place in Toulouse, France, Sept. 30, 2001.

With the best wishes for an active and productive cooperation in our commission,
Sincerely yours

(Bernd Häusler, secretary commission IV)

Annex: Minutes of Meeting
Attachment 1: List of Participants
Attachment 2: Agenda
Attachment 3: Space Systems Operations and Utilization
Attachment 4: Working Group on Knowledge Management
Attachment 5: Call for interest "Knowledge Management"
Attachment 6: Study Group Quality of Space Programs
Attachment 7: IAA Study Groups
Attachment 8: IAA Program Committees

Minutes of Meeting
IAA Commission IV
Space Systems Operations and Utilization

1st Meeting

September 30, 2001-10-14

Location: Hotel Dieu Saint-Jacques, Salle des Pelerins, Toulouse, France

Time : 10 :00 am

1. List of participants (see attachment 1)
 2. Welcome by chairman Pierre Bescond.
 3. Not present are:
A. Valenzuela (Vice chairman) excused, T. Gombosi (section 1), J. Loftus (section 2), M. Giroux (section 4), C. Kessler (member).
 4. Agenda (see attachment 2): Agenda as proposed by the chairman was accepted.
- 3.1-3.7 New structure of the IAA, role of the commissions, scope, organisation, etc.

The chairman explains the new organisation of the IAA (see attachment 3). He reminds everybody of the “blue book” containing all relevant information about the Academy, its structure and goals. He encourages everybody to use and rely on the web for general information about the Academy (www.iaanet.org). He emphasises that the success of the Academy with its Commissions depends critically on an active cooperation among the members.

Proposals for study groups or working groups as well as proposals for special Program Committees are needed to fill commission IV with life. Proposals should be sent to the chairman or secretary by using the official forms which are published in the web. A progress report of a study group is expected at least once a year. Our study groups are also open to specialists from outside the Academy with the restriction that the chairman of a study group has to be a member of the Academy. At the moment Commission IV has two active study groups which are endorsed by the president (“Knowledge Management of Space Systems” and “Quality of Space Programs ”).

The chairman reports that C. Kessler expressed her wish to join in future commission V. G. Sqibb expressed his wish to enter commission IV as a member.

R. Wilde expressed his wish to enter the study group “Knowledge Management of Space Systems”.

R. Sandau points out that his activities “small satellites” are presently foreseen to take place in Commission III. He, however, prefers to be active in Commission IV. The chairman supports the a.m. wishes and plans and will forward these to the president of the Academy for approval.

I. Nejat discusses the question whether “communication satellites” shall or will be a topic of Commission IV. Further, would the “design” or the “operation” be a focus of Commission IV activities? In order to streamline and to terminate a lengthy discussion the chairman asked to introduce potential research topics formally into the commission as well-articulated proposals.

3.8. Study Groups

“Knowledge Management of Space Systems”: Presentation by D. Moura (attachments 4,5)

“Quality of Space Programmes”: Presentation by M. Romero (attachment 6)

The chairman announced that the study group “Space Debris” will go to Commission V.

R. Sandau proposed to transfer all “small satellite” activities into Commission IV (see above).

Note : On 1st October, at the Scientific Activities Committee meeting, it was confirmed that Space Debris activities will be coordinated by Commission V, with secondary interest in Commission IV, and that all small satellite activities will be coordinated by Commission IV.

Further Themes and Proposals: Presentation by the chairman (attachment 7)

Proposals are encouraged and should be sent preferably by e-mail, using the appropriate IAA website forms.

3.9 Programme Committees

Presentation by the chairman (attachment 8)

It was reminded that a Programme Committee has a sole objective of organizing a session or a symposium and therefore has a duration which is limited to the time needed to organize and hold that session or symposium.

3.10 Programme Committees to be proposed for Bremen 2003

Commission IV plans to contribute with a “Quality, Safety and Rescue Symposium”

Coordinators: M. Romero, Mc Gregor Reid(?)

All other proposals must be made without delay and should be sent preferably by e-mail, using the appropriate IAA website forms.

3.11 Next Meeting and work between meetings:

In principle we will have an actual meeting twice a year : once in Paris during the IAC International Programme Committee meeting in Paris in Spring, and once during the IAC at the IAC location in Fall.

Between meetings, the activities and exchanges are encouraged through the IAA website and via e-mail.

The chairman closes the meeting.

Bernd Haeusler (secretary)
26.10.2001

Pierre Bescond (chairman)

Attachment 1

IAA-Commission IV– List of Participants

30.09.01

IAA Commission IV	List of Participants	Toulouse 30/09/2001
Name	Affiliation	e-mail
1. Häusler, Bernd	Universität der Bundeswehr München, Germany	Bernd.Haeusler@unibw-muenchen.de
2. Ashford Ed	SES-ASTRA, Luxembourg	Ed.Ashford@ses-astra.com
3. Gael, Squibb	Jet Propulsion Lab./Calif. Inst. of Technology	gsquibb@usa.net
4. Guell, Antonio	CNES, HQ Paris	Antonio.guell@cnes.fr
5. Skoog, A. Ingemar	Astrium GmbH	Oke.ingemar.skoog@astrium-space.com
6. Wilde, Richard C.	Aerospace Consultant (Hamilton Sundstrand-Retired)	Richard.c.wilde@snet.net
7. Sandau, Rainer	DLR, Berlin	Rainer.sandau@dlr.de
8. Manola, Romero	ONERA Centre de Toulouse, France	romero@oncert.fr
9. Le Feure, Marius	ANAE, Toulouse, France	Marius.Le-Feure@wanadoo.fr
10. Sanchez-Pena, Miguel	Asoc. Argentina C.E. - A.A.C.E.	msanchez@jus.gov.ar
11. Grimard, Max	AEDS Launch Vehicles-France	Max.grimard@launchers.eads.net
12. Traizet, Michel	Thales, HQ, Paris	Michel.traizet@thalesgroup.com
13. Yasushi, Horikawa	NASDA, Tsukuba Space Center	Horikawa.yasushi@nasa.go.jp
14. Hornstein, Rhoda	NASA/ Headquarters	Rhoda.hornstein@hg.nasa.gov
15. Yasaka, Tetsuo	Kyushu University, Japan	yasaka@aero.kyushu-u.ac.jp
16. Graziani, Filippo	University of Roma „La Sapienza“, Italy	Gauss@Caspur.it
17. Balabanov, Bonicho	BTC, Combalsht, Bulgaria	b.balabanov.niss@btc.bg
18. Moura, Denis	CNES, Toulouse, France	Denis.moura@cnes.fr
19. Meirong, Wu	CRESDA, Beijing, China	Cresda@public.bta.cn
20. Laslandes, Guy	CNES, Paris, France	Guy.laslandes@cnes.fr
21. Abramov, Isaak	ZVEZDA, Russia	npstar@npstar.msk.su
22. Shaoan, Liu	BRESDA, Beijing, China	Isa@cresda.com
23. Gargin, Geneviève	CNES, Toulouse, France	Genevieve.gargin@cnes.fr
24. Ince, Nejat	Istanbul Techn. Uni. Turkey	nejatince@ituvsam.org.tr
25. Stoewer, Heinz	SAL, Germany	Heinz.Stoewer@compuserve.com

26. Bescond, Pierre	SATEL Conseil, Paris, France	p.bescond@satelconseil.com
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Attachment 2

IAA COMMISSION IV
Space Systems Operations and Utilization
1st meeting
September 30, 2001 10:00 am to noon
Hôtel-Dieu Saint-Jacques, Salle des Pèlerins
TOULOUSE, France

PROPOSED AGENDA

- 1- New structure of the IAA - Reminder
- 2- Role of the Commissions
- 3- Terms of Reference of Commission IV
- 4- Scope covered by Commission IV
- 5- Commissions Responsibilities
- 6- Organisation of Commission IV
- 7- Operating Mode
- 8- Study Groups
 - 8.1- Definition, goals and working mode
 - 8.2- "Knowledge Management of Space Systems" Study Group
Presentation by Denis Moura, Chair
 - 8.3- "Quality of Space Programmes" Study Group
Presentation by Manola Romero, Co-Chair
 - 8.4- Further themes and proposals for the future
- 9- Programme Committees
 - 9.1- Definition, goals and working mode
 - 9.2- On-Going Programme Committees for Houston, 2002
 - 9.3- Programme Committees to be proposed for Bremen, 2003
- 10- Report to the Scientific Programme Committee and to the Board of Trustees
- 11- Any Other Business
- 12- Next Meeting and work between meetings

Attachment 3
For presentation please double click

IAA COMMISSION IV
Space Systems Operations and Utilization

September 30, 2001

IAA COMMISSION IV
Space Systems Operations and Utilization

September 30, 2001

New Structure of the IAA (Reminder)

- ◆ **Board of Trustees - President - 4 Vice-Presidents**
- ◆ **Members, belonging to 4 Sections**
- ◆ **Standing Committees, dealing with the organisation and operation of the Academy**
- ◆ **VP Scientific Program, with 6 Commissions dealing with the scientific and technical work of the Academy**
- ◆ **Study Groups and Program Committees**

ROLE OF THE COMMISSIONS

- ◆ **Foster multidisciplinary exchange of information and ideas amongst Academicians**
- ◆ **Study, assess, and propose initiation of new focused activities**
- ◆ **measure and evaluate progress of initiatives**

TERMS OF REFERENCE OF COMMISSION IV

The scope of activities covered by Commission IV are :

- Space activities and new concepts that directly relate to space operations and utilisation**
- Communications, Remote Sensing, and Navigation satellites**
- Space debris**
- Small satellites for developing nations, countries emerging in space technology, and earth observation**
- Safety, Rescue and Quality**
- EVA protocols and operations**
- Utilization of space facilities such as Space Station**

COMMISSION RESPONSIBILITIES

- **Establish and maintain a list of topics of interest, within its terms of reference**
- **Assess and validate the proposals for Study Groups and Program Committees from Academy Members, nominate the leaders and approve membership**
- **Generate new Study Groups and Program Committees, that will work on Commission's topics of interest and cover Commission's scope**
- **Monitor and evaluate the work of the Study Groups and Program Committees : these will be required to issue regular progress reports on their activities**
- **Produce synthesis reports to the Academy Scientific Program Committee and to the Board, based on the reports from the Study Groups and Program Committees, and on its own initiatives, monitoring and assessment**
- **Organise interfaces and exchanges with the other Commissions on related topics**

ORGANISATION

- ◆ **Chairman :** P. BESCOND (France)
- ◆ **Vice Chairman :** A. VALENZUELA (Argentina)
- ◆ **Secretary :** B. HAUESLER (Germany)
- ◆ **Section 1 rep:** T. GOMBOSI (Hungary)
- ◆ **Section 2 rep :** J. LOFTUS Jr (USA)
- ◆ **Section 3 rep :** A. GUELL (France)
- ◆ **Section 4 rep :** M. GIROUX (Canada)
- ◆ **Other Members :** G. LASLANDES (France)
C. KESSLER (Germany)
T. YASAKA (Japan)

OPERATING MODE

- **Commission global management assured by Chairman, Vice-Chairman and Secretary :**
 - **Commission meetings preparation and reports**
 - **Relationship with Scientific Program Committee and Board**
 - **Monitoring of Program Committees and Study Groups, and assessment of their activities**
 - **Preparation of an annual report to be presented at the Academy Day**
- **Each Commission Member shall take over some particular responsibilities among the following functions :**
 - **Relationship with, and input from the Sections**
 - **Relationship and Co-ordination with other Commissions**
 - **Publication of Commission work and events through the IAA web site and the Publications Committee**

STUDY GROUPS

- **Multidisciplinary time-limited studies of various topics**
- **May result in Cosmic Study Reports or Position Papers**
- **May include convening special symposia**
- **Proposed by any Academy Member, sponsored by one or several Commissions (Primary and Secondary interest)**
- **Chairpersons and members proposed by relevant Commission(s) and appointed by Academy President**
- **Reporting principle (*proposal*) :**
 - each Study Group shall provide a progress report on its activity every year
 - this progress report shall be addressed to the Commission Secretary
 - its content shall comprise the technical progress, the status with respect to the planning and the deliveries, and a summary of the key events such as symposia or workshops

APPROVED STUDY GROUPS (1)

- **S4.1 :Knowledge Management of Space Systems & Study of major failures**
Scope : Propose a set of recommendations to improve/harmonize the knowledge management in space activities and avoid major failures
Schedule : Setting-up mid 2001
 Session during IAC, October 2001 (IAA 6.7)
 First recommendations : mid 2002
 Final recommendations : end 2003

Proposer : D. Moura (France) **Chair :** D. Moura (France)**Secretary :** C. Kessler (Germany)

Other Members :

IAA : TBD

Outside IAA : M. Warhaut (ESOC Germany), S. Ulamec (DLR Germany) P. Chazalnoel (CNES France)

Other Commission (Secondary interest) : III, Space Technology and Systems Development

APPROVED STUDY GROUPS (2)

- **S4.2 : Quality, Safety, and Rescue working group**

Scope : Make recommendations to improve the Quality, Reliability, Efficiency, and Safety of space programmes, taking into account the overall environment in which they operate : economical constraints, harsh environments, space weather, long life, no maintenance, autonomy, international co-operation, norms and standards, certification. Liaison with ISO SC14/TC20.

Schedule : Proposal refinement and Study Group setting up during IAC, October 2001

First topics discussed during IAC/Houston 2002

First draft end 2003

Final reports and publications 2005

Proposer : M.S. Reid (USA) and M. Romero (France)

Chairs : M.S. Reid (USA) M. Romero (France)

Secretary : M. Grimard (France)

Other Members : to be identified, from past IAA Space Quality Committee and other origins (proposed : A. Remondiere (France), M. Greenfield (USA), J. Marcoux (ESA), Lin Y. (China), T. Matsuda (Japan)

Other Commission (Secondary interest) : III, Space Technology and Systems Development

POTENTIAL FURTHER THEMES FOR COMMISSION IV

- **TO BE DISCUSSED DURING COMMISSION MEETING IN TOULOUSE**

All ideas that would fall within the terms of reference of the Commission are welcome and should be addressed to the Commission Secretary.

The proposals will be presented in the format available on the Academy website. Review with the Proposer(s) will be made by the Commission members, calling for input from other interested Commissions and Sections expertise . When validated by the Commission the proposals will be submitted by the Chairman to the VP Scientific Program for approval

PROGRAM COMMITTEES

- **Focused on accomplishing a specific assignment over a period of time**
- **Organise IAC sessions or IAA symposia on a particular topic**
- **Proposed by any Academy Member, sponsored by one or several Commissions (Primary and Secondary interest)**
- **Chairpersons and members proposed by relevant Commission(s) and appointed by Academy President**
- **Reporting principle (*proposal*) :**
 - each Program Committee shall provide every year a progress report on its activity
 - this progress report shall be addressed to the Commission Secretary
 - its content shall comprise a technical summary of the organised sessions, symposia or workshops, focusing on the points of interest, and give conclusions and recommendations for the relevant field of activity.

Attachment 4

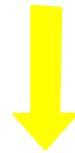
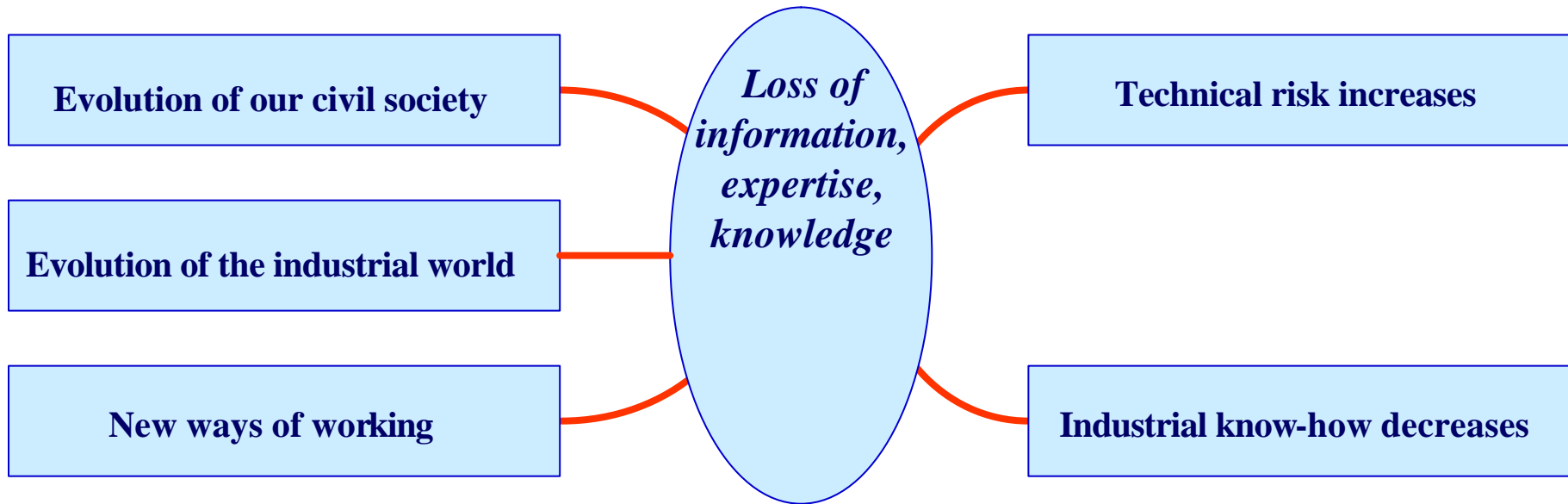
Um Attachment 4 als Präsentation zu sehen, bitte letzte Seite dieses Attachments doppelt klicken.
To see the presentation (attachment 4), please double click last page of this attachment.

WORKING GROUP ON KNOWLEDGE MANAGEMENT

Toulouse, October 2001

D.J.P. Moura - corresponding member, section 2 - denis.moura@cnes.fr

GENERAL CONTEXT



New branches in research, organisation, software development ... for enhancing information collection, storage, maintenance, enrichment, extraction and

SPACE ACTIVITIES CONTEXT

As the other fields of activities,
space is concerned by the knowledge management problem, particularly due
to :

- limited production lines
- long development times followed by long operational lives,
sometimes with dormant phases
- sharing between the design /development and operational teams
- industrial merging



***A joint CNES/ESA/DLR workshop has been done in Sept 99 to address
this problem specifically for the Rosetta mission
(10 year mission with very long dormant phases)***

SPACE ACTIVITIES CONTEXT

***WE CANNOT BE PASSIVE ON THE TOPIC,
WE HAVE TO BE PRO-ACTIVE !***

***IAA IS THE BEST FRAMEWORK TO ISSUE
GENERAL GUIDELINES AND RECOMMENDATIONS !***

STEPS

Settle an IAA working group “Knowledge management in space activities”, opened to external participations

Step 1 : issue a **call of interest**

Step 2 : settle a **working team** with motivated members

Step 3 : **joint work** to reach the following objectives :

- issue general recommendations
- act as bridge with the other fields of activities
- organise periodic workshops/conferences (first during IAF' 2001)

Um vorliegende Seiten (Attachment 4) als Präsentation zu sehen, bitte nächste Seite doppelt klicken.
To see the presentation (attachment 4), please double click the following page.



**WORKING GROUP
ON
KNOWLEDGE MANAGEMENT**

Toulouse, October 2001

D.J.P. Moura - corresponding member, section 2 - denis.moura@cnes.fr

Attachment 5

CALL FOR INTEREST OR PARTICIPATION IN A WORKING GROUP ON « KNOWLEDGE MANAGEMENT »

Issued by

D.J.P. MOURA (corresponding member for section 2)

Centre National d'Etudes Spatiales

18 Avenue E.Belin - 31401 Toulouse Cedex 4 - France

denis.moura@cnes.fr

1. Context

Space activities, as the other fields of industry, are facing a new challenge in term of knowledge management.

Indeed, with the evolution of the society (such as the fast turn over of people) as well as the evolution of the industrial work (explosion of the information volume, new information tools, new organization schemes...), the risk of loss of critical information increases. As a result, negative consequences on the technical risk and on the « know how » of the companies are also increasing.

This concern is now sufficiently widely shared for creating a new branch in research and software development : new organization approaches and commercial tools already exist for enhancing the way the information is collected, stored, maintained, enriched and made easy to transfer, extract and use later on.

Long space missions are particularly concerned by this problem. Indeed some of them are developed and operated on duration exceeding 10 to 15 years. As a consequence, the manpower, the organization as well as the technologies cannot be kept constant during all this time : the information and knowledge transfer from the definition phase to the end of the mission is very difficult to achieve. This is particularly true for the deep space missions, where low activity cruise phases still enhance the difficulty.

To address specifically this problem in the framework of the space missions, and particularly for the European Rosetta mission, a first workshop has been organized in September 1999 by CNES, with the support of ESA and DLR. About fifty participants from space agencies, space laboratories and industries debated on their problems, experiences and reviewed the state of art before issuing first recommendations, mainly oriented to the Rosetta project. A second workshop is foreseen in 2001.

However, the topic appears sufficiently generic to be addressed now at much wider level and the Academy of Astronautics seems the best framework to settle a working group on this topic and later on to

issue recommendations to the space business world. Indeed, with increasing cooperation and industry concentration, it should be wise and effective to have such a common approach.

2. Proposed Working Group

It has been proposed and accepted during the last IAF congress (October 2000 – Rio) to settle such a working group within IAA (commission on exploitation & utilization of space systems), but also opened to other members, with the following minimal objectives :

- Issue general recommendations on « knowledge management » to cover the information collection, storage, maintenance, enrichment and use ;
- Act as a bridge between the space business field and other industrial fields ;
- Organize periodic workshops/conferences for helping the debates and better diffusion of the achieved progress.

The preliminary working procedure is based on meetings twice a year (Spring in Paris, in conjunction of the IAF selection of papers, and in Autumn , during the IAF congress). In addition, it is intended to have a workshop/conference/session every 2 years. Of course, in the meantime, technical work will be organized and realized through email. Each year, a report will be issued. The work will be organized by a board of 2 chairmen and 2 executive secretaries which be on duty for 3 years.

In order to review the interest of the space community on this working group, a call for interest or participation is proposed hereafter and people are invited to send the form back. People having expressed their interest will be kept informed on the call result. It is intended to hold the first meeting during the Toulouse IAF congress in October 2001.

EXPRESSION OF INTEREST OR PARTICIPATION
IN A WORKING GROUP ON
« KNOWLEDGE MANAGEMENT »

To be sent back to

D.J.P. MOURA

By email : denis.moura@cnes.fr or by FAX : 33 5 61 28 29 95

Name :

IAA section (if any) :

Current responsibilities :

Firm :

Full mail address :

Phone : FAX : Email :

Remarks (field of interest ...) :

.....

.....

I AM INTERESTED IN BEEN INFORMED ON THE WORKING GROUP
BUT I DO NOT INTENT TO PARTICIPATE

I AM INTERESTED IN THE WORKING GROUP
AND I INTENT TO PARTICIPATE

Date :

Attachment 6

Präsentation bitte doppelt klicken
Presentation: please double click

IAA COMMISSION IV

**Study Group Quality of Space
Programmes**

September 30, 2001

IAA COMMISSION IV
Study Group Quality of Space Pro-
grammes

September 30, 2001

STUDY GROUPS, AS APPROVED TODAY

- **S4.2 : Quality of Space Programmes**

Scope : Make recommendations to improve the Quality, Reliability, Efficiency, and Safety of space programmes, taking into account the overall environment in which they operate : economical constraints, harsh environments, space weather, long life, no maintenance, autonomy, international co-operation, norms and standards, certification.

Schedule : Proposal refinement and Study Group setting up during IAC, October 2001

First topics discussed during IAC/Houston 2002

First draft end 2003

Final reports and publications 2005

Proposer : M.S. Reid (USA) and M. Romero (France)

Chairs : M.S. Reid (USA)

M. Romero (France)

Secretary : M. Grimard (France)

Other Members : to be identified, from past IAA Space Quality Committee and other origins

BACKGROUND (1)

- **Committee on Quality, Safety and Rescue : Long Term Plan 97-01**

“On the area of Safety and Quality, it is proposed to prepare a Position Paper about "New Challenges for Safety and Quality Management in Space Programs", which rationales are given hereunder.

Space programs are living in an environment influenced by constraints such as International Co-operation, budget reduction, or new standards (ISO 9000, ECSS) and affected by "slogans" such as "better, faster, cheaper". This environment is raising many questions related to quality and risk management :

- *how harmonize quality standards and management methods of various major countries, which have lived their space programs independently during three decades, and which are now "obliged" to cooperate stronger and stronger ?*
- *will ISO9000 be an help or a constraint with regard to the harmonization of the standards and with regard to the reduction of costs ?*
- *should the respective roles of Agencies and Industry wrt Quality of space programs evolve in the Space business of tomorrow ? what are the issues of transferring "operations responsibilities" to private sector (e.g. Shuttle) ?*
- *how far Quality and Reliability should be "sacrificed" to reduce the costs ?*
- *what are the new challenges. regarding future programs such as Moon / Mars Human Ex-*

BACKGROUND (2)

- **Round Table organised during IAC 97 in Turin :**

The Challenge of Maintaining Quality and Safety in Space Programs with Reduced Budgets

- **Working Group Draft Proposal, October 1999 : “The Challenge of maintaining Quality and Safety in Space Programs with reduced budgets”**

Terms of Reference

The aim of the Working Group is to make a diagnosis of the effects of cost reduction on the management of the space programmes in terms of quality and risk. Successes and failures should be addressed and the associated lessons learned should be derived.

The Working Group should issue recommendations for the future space programmes.

The Working Group should be composed of representative from various disciplines : management, engineering, quality, programmatics, economics, insurance, etc., in order to address all the parameters of the discussion.

BACKGROUND (3)

Planned Activities for the Working Group

Basic questions (Turin Round Table) :

- how to manage cost and delay reduction while maintaining quality ?
- how to define reasonable targets for quality level in accordance with an accepted risk ?
- by which parameters should we quantify an "accepted risk", depending on the project ?
- which basic rules are to be respected for cost control or reduction ?
- how to manage the risk on a "daily basis" : new management rules and/or organization ?
- how to maintain human workforce skills, motivation and commitment ?

Proposed activities :

- review of "faster, better, cheaper" programmes : successes and failures
- analysis of these programmes : Industry/Customer relationship, programme management, technical choices, risk management, human resources management, etc.
- identification of weaknesses or failures in these new approaches
- assess the domain of applicability of the "faster, better, cheaper" approach
- issue recommendations for a better management of cost reduction and quality objectives

BACKGROUND (4)

- **Due to IAA restructuring, the “Better, Faster, Cheaper” Study Group has not been set up**
- **A new proposal was introduced in October 2000, extending the scope to “Quality in Space Programs”**
- **Detailed scope and working program has now to be established**

PROPOSAL FOR TOPICS OF INVESTIGATION

- **Quality/Safety objectives : define a “scale”, depending on**
 - **mission category** : commercial, technology demonstration, exploration, manned, ...
 - **economical stakes** : volume of investments, operations costs, who is the investor/operator (private vs public), ROI objectives, ...
 - **media aspects** : life of astronauts, ecological issues, companies and agencies image, ...
- **Benchmark with other domains** : high tech (aeronautics, nuclear, ...) or classical (cars)
- **Environment constraints** : debris, radiation, space weather, ...
- **Design issues** : off the shelf vs new technologies, redundancy approach, functional architecture, health monitoring, ...
- **Development logic** : technology demonstration, modelling vs testing, ...
- **Management constraints and issues** : standards & norms, international co-operation, public vs private responsibility, ...
- **Economical constraints** : how to balance cost vs quality/safety objectives
- **Tools for Quality/Safety management and improvement** : risk management, knowledge management, lessons learned, ...

WORKING METHOD

- **Establish a document outline and nominate a “Book Captain”**
- **Distribute topics responsibilities over the Study Group Members : “Chapter Captains”**
- **Web exchanges : create a network**
- **Organization of Working meetings during IAC IPC in April in Paris, and Congress in October**

IAA COMMISSION IV
Safety and Quality Topics

September 30, 2001

IAA COMMISSION IV

Safety and Quality Topics

September 30, 2001

CONTEXT

- **Failure is the strongest enemy of space programs**
 - How is it possible to manage the risks ?
 - How insure the performance all along the development, especially in multi-cultural, international context ?
 - How can environmental risks very specific of space activities (such as those due to space radiations, space weather, debris...) be coped with ?
 - What are the specificities of safety and rescue in space activities ?
 - What are the lessons learned and how avoid performing twice the same error ?
- **It is the aim of the « quality, safety and rescue » committee to promote international exchanges and progress on all these topics, through the organization of symposia and the steering of working groups.**

STUDY GROUPS, AS APPROVED TODAY

- **S4.1 : Knowledge Management of Space Systems & Study of major failures**

Scope : Propose a set of recommendations to improve/harmonize the knowledge management in space activities and avoid major failures

Schedule : Setting-up mid 2001

Session during IAC, October 2001 (IAA 6.7)

First recommendations : mid 2002

Final recommendations : end 2003

Proposer : D. Moura (France)

Chairs : D. Moura (France)

Secretary : C. Kessler (Germany)

Other Members :

IAA : TBD

Outside IAA : M. Warhaut (ESOC Germany), S. Ulamec (DLR Germany) P. Chazalnoel (CNES France)

STUDY GROUPS, AS APPROVED TODAY

- **S4.2 : Quality, Safety, and Rescue working group**

Scope : Make recommendations to improve the Quality, Reliability, Efficiency, and Safety of space programmes, taking into account the overall environment in which they operate : economical constraints, harsh environments, space weather, long life, no maintenance, autonomy, international co-operation, norms and standards, certification. Liaison with ISO SC14/TC20.

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M. Romero (France)

Secretary : M. Grimard (France)

Other Members : to be identified, from past IAA Space Quality Committee and other origins (proposed : A. Remondiere (France), M. Greenfield (USA), J. Marcoux (ESA), Lin Y. (China), T. Matsuda (Japan))

PROGRAM COMMITTEE FOR HOUSTON 2002

- **P4.3 : Contribution to Quality, Safety, and Rescue symposium**

___ **Coordinators :** Manola ROMERO (France)

Mac Gregor S. REID (USA)

Format : 3 sessions

IAA.1.1 Is there a Common Quality Approach for Space Programmes ?

Chairs : Max GRIMARD (France)

Michael GREENFIELD (USA)

IAA.1.2 System Safety and Risk Management

Chairs : Jacques MARCOUX (ESA)

Takafumi MATSUDA (Japan)

IAA.1.3 Space Weather : Research and Applications (with COSPAR)

Chairs : Manola ROMERO (France) - IAA

Terry ONSAGER (USA) - COSPAR

Eamonn DALY (The Netherland) - COSPAR

PROPOSAL FOR BREMEN 2003

- **Contribution to Quality, Safety, and Rescue Symposium**

Coordinators : Manola ROMERO (France)

Mac Gregor S. REID (USA)

Format : 4 sessions

Session 1 : Safety and Quality Topic in relation with the Study Group 4.2

Scope Proposal : Max GRIMARD, Michael GREENFIELD

Session 2 : Risk Management Topic

Scope Proposal : Jacques MARCOUX, Takafumi MATSUDA

Session 3 : Space Environment and Space Weather Topic

Scope Proposal : Manola ROMERO, LIN Yunlong

Session 4 : Knowledge Management Topic in relation with the Study Group 4.1

Scope Proposal : Denis MOURA

Attachment 7

International Academy of Astro-
nautics (IAA) Web Site

IAA Commissions

IAA Study Groups
Primary interest:

I	II	III	IV	V	VI
Space Physical Science	Space Life Sciences	Space Technology & System Development	Space Systems Operations & Utilisat.	Space Policies Law & Economics	Space & Society Culture & Education
Next Steps in Exploring Space		Advance Propulsion: Prospective	Knowledge Management of Space Systems	Space Debris Mitigation Rules for Launch Vehicles and Satellites	Multilingual Space Dictionary
Lunar Farside Radio Lab		Low-Cost Earth Observation Missions	Quality of Space Programs	Space Debris Mitigation	Education in Space
		Quantum State Reduction Tests in Space		Traffic Management Rules for Space Operations	SETI permanent SG
		Infrastructure for Human Space Exploration			IAA History papers
		Earth Threatening Asteroids & Comets			
		Future Exploration and Commercial Development			
		Techniques for Mitigating Impairment of Astronaut			

IAA Study Groups

Secondary interest:

I	II	III	IV	V	VI
Space Physical Science	Space Life Sciences	Space Technology & System Development	Space Systems Operations & Utilisat.	Space Policies Law & Economics	Space & Society Culture & Education
Quantum State Reduction Tests in Space	IAA History papers	Lunar Farside Radio Lab	Infrastructure for Human Space Exploration	Multilingual Space Dictionary	
IAA History papers		Next Steps in Exploring Space	Future Exploration and Commercial Development	IAA History papers	
		Knowledge Management of Space Systems	Low-Cost Earth Observation Missions	Lunar Farside Radio Lab	
		Quality of Space Programs	IAA History papers		
		IAA History papers	Space Debris Mitigation Rules for Launch Vehicles and Satellites		
			Traffic Management Rules for Space Operations		

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IAA Paris September 2001

Attachment 8

International Academy of Astro-
nautics (IAA) Web Site

IAA Commissions

IAA Program Committees

I	II	III	IV	V	VI
Space Physi- cal Sc	Space Life Sciences	Sp. Tech & Syst Devlp	Sp. Syst Op & Utilis	Sp. Pol Law & Econ	Sp & Soc Cult & Educ
SETI	Human Fac- tors	Adv. Space Propulsion	Safety , Rescue & Quality	Economics & Commercialization	History
Materials		Small Sat. Earth Obs. I	Space Debris	Space Policies & Plans	Mutlilingual
		Small Sat. Earth Obs. II	EVA Protocols	UN/IAA Workshop Small Sat.	Arts & Litera- ture
		Low-Cost Sat. Missions	Space Weather		Activities & Society
		Small Sat. Mis- sions	Risk Manage- ment		
		Human Space Exploration	Small Sat. Operations		
		Moon Mars Exploration	Space Access Small Sat.		
		Space Missions beyond			

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