



## **INTERAGENCY OPERATIONS ADVISORY GROUP**

### **IOAG-22d Meeting Minutes**

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**Prepared by: Madeleine Bronstein**

**Approved on: April 10, 2019**

**IOAG-22d Meeting Minutes  
Oberpfaffenhofen, Germany  
20 December 2018**

**Attendance:**

Chair: Michael Schmidt

Secretariat: Barbara Adde, Madeleine Bronstein

Members:

ASI: Fabio D'Amico

CNES: Frederic Pradeilles, Jean-Marc Soula

CSA (teleconference): François Alain

DLR: Martin Pilgram, Rolf Kozlowski

ESA: Gian Paolo Calzolari, Ian Harrison, Klaus-Juergen Schulz

JAXA: Kazuo Tachi, Shinji Ogawa

NASA: Cathy Barclay, Greg Mann, Phil Liebrecht, Philip Baldwin, Wallace Tai

Observers:

CNSA: Gan Yong

KARI: Hyo-Suk Lim, Sangil Ahn

Roscosmos: Gudnov Vasiliy, Gulyaev Ivan

UAESA: Adnan Alrais

UKSA: Matthew Cosby, Tony Forsythe

Liaisons:

CCSDS: James Afarin

SFCG: Enrico Vassallo

Presentations are available at: [www.IOAG.org](http://www.IOAG.org).

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**Introduction: Michael Schmidt**

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The Chairman thanked the IOAG delegates for their participation and coordination with the IOP. He noted that feedback from the IOP delegates was positive, however, delegates commented that the Leadership Forum should be a longer session with more opportunity for discussion.

**IOP-4 Working Group & Liaison Presentation Review**

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ISECG

The Chairman asked Mr. Liebrecht to report back to the ISECG on the IOP's feedback.

CCSDS

Mr. Afarin noted that he concurred with all feedback from the IOP.

ICG

The Chairman noted that there was no notable feedback to Mr. Miller and Mr. Enderle. He asked Mr. Liebrecht to debrief with Mr. Miller.

SFCG

The Chairman noted that there was no controversial feedback or major changes to the direction of work. Mr. Soula recommended for the IOAG to receive a brief from Mr. Vassallo following WRC-19. The Chairman agreed that this should be added to the agenda for the next IOAG Fall meeting.

C&MWG

The Chairman noted that there is more activity going on and future of the working group is to be determined. Mr. Calzolari suggested giving an introduction of new work at IOAG-22e.

SECSWG

The Chairman thanked Ms. Barclay for her active participation in the entirety of the IOP and commented that work will go on within the group as planned.

LEO26WG

The Chairman noted that after the report is completed, the LEO26WG would not be an active working group (i.e. in dormant status).

OLSG

The Chairman noted that this is not an active working group and following up on activities will rely on individuals and less on the working group as a whole. Mr. Liebrecht added that the work

is mostly in CCSDS's court and there will likely be a low level of activity in the working group to keep up on current activities.

### SISG

The Chairman noted that this group is dormant and the discussed follow up activity, mostly conducted in CCSDS and Agencies, is implementation of DTN.

### MOSSG

Mr. Smith noted that reports had been sent to the Secretariat to upload to the IOAG webpage. The Secretariat took an action to upload the documents for review by the delegates. After integration of comments from delegates to the MOSSG report, the Secretariat will create an eVote for approval of the document. The delegates inquired about the result of an interoperability demonstration. An action was given to the MOSSG to follow up on Action Item 22-03.

### LCAWG

Mr. Cosby noted that the final report is being compiled and work has been completed, but he does not recommend that the group go into dormant status. Mr. Tai added that he is okay with the group being dormant or active after the working group agrees to the final study. Mr. Cosby responded that it may be good to report to the IOP that the work of the group has been completed and if Mars architecture is required. That work may be completed with the same team.

## **IOP-4 Leadership Forum Review**

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### Interaction with Commercial Providers and Operators

The Chairman asked Mr. Cosby to make a proposal on interaction with commercial providers at IOAG-23. He asked Mr. Cosby to first discuss the proposal with him prior to bringing it to an IOAG meeting for discussion. He also noted that there would need to be a small group organizing the event if the issue is going to be pursued. Mr. Liebrecht noted that since there are various groups to engage, they probably can not be approached and engaged in the same form.

Regarding commercial interaction at IOAG-23, Mr. Cosby noted he would figure out the logistics for the number of people UKSA would be able to host. Mr. Liebrecht added that interaction with commercial entities has to be done in a way that's perceived as fair. Mr. Cosby recommended making a public announcement through various agencies.

Mr. Adnan was asked by the Chairman to take an action to create a proposal on engaging emerging space agencies and academia for discussion at IOAG-22e. Mr. Soula noted that this type of forum could be a special topic at SpaceOps and recommended that Mr. Alrais include this in part of his proposal. Mr. Alrais responded that in addition to SpaceOps, there is an event occurring in April through the IAF for emerging space agencies, so he would include these various platforms in his proposal.

### Future Technologies

Mr. Liebrecht suggested that the list of new technologies mentioned at the Leadership Forum be compiled and documented for prioritization. The CCSDS should be involved in this because they have technical experts. The IOAG could ask CCSDS to identify what they believe are the most promising technologies and compare it against the IOAG's list. Mr. Soula recommended creating an action for all agencies to provide input for discussion at IOAG-22e on which technologies should be discussed at IOAG-23. The Chairman agreed with this suggestion and noted that if someone would like to volunteer later on, this action can be given to a specific person.

### Space Traffic Management

Mr. Soula accepted an action to make a recommendation for future work on space traffic management for the IOAG based on comments received during the IOP.

## **Other Remarks & Conclusion of Meeting**

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### Annual Report

Mr. Soula noted that there is a large work plan and various new activities, so the outcome of the IOP should be reflected in the IOAG's annual report. The Chairman acknowledged this comment.

### Scheduling of IOAG-22e and IOAG-22f

The delegates scheduled IOAG-22e for January 31, 2019 and IOAG-22f for April 10, 2019.

### IOAG-23 Logistics

Mr. Cosby noted that IOAG-23 will be held in Cornwall, UK from September 16-20. There will be 3 days allocated for the IOAG and 1 day allocated for commercial interaction. Mr. Soula recommended that the IOAG begin on Monday, followed with commercial interaction on Tuesday and Wednesday, concluding with the rest of the IOAG on Thursday. The delegates agreed to discuss these logistics further. Mr. Cosby also noted there will be transportation provided for delegates from a hotel near the venue and he will provide more information on this in the future.

### Conclusion of Meeting

The Chairman thanked the delegates for their participation and concluded the meeting.

## **Appendix A: Actions**

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AI 22d-01: NASA to debrief with ISECG liaison on IOP feedback. [Assigned to: NASA/P. Liebrecht. Due date: 31 January 2019]

AI 22d-02: NASA to debrief with ICG liaison on IOP feedback. [Assigned to: NASA/P. Liebrecht. Due date: 31 January 2019]

AI 22d-03: Enrico Vassallo to present on WRC-19 results at IOAG-23a. [Assigned to: SFCG/E. Vassallo. Due date: To Be Announced]

AI 22d-04: C&MWG to give an introduction on forward work at IOAG-22e. [Assigned to: C&MWG. Due date: 31 January 2019]

AI 22d-05: Secretariat to upload MOSSG reports to IOAG webpage. Delegates to conduct informal review and provide comments to the MOSSG. Following integration of comments, Secretariat to initiate eVote. [Assigned to: All Agencies; Secretariat; MOSSG. Due date: 1 March 2019]

AI 22d-06: MOSSG to follow up on AI 22-03. [Assigned to: MOSSG. Due date: 1 March 2019]

AI 22d-07: UAESA to make proposal for engaging with emerging space agencies and academia. [Assigned to: UAESA/A. Alrais. Due date: 31 January 2019]

AI 22d-08: UKSA to make proposal for commercial engagement at IOAG-23 (interaction with Chairman first, then submit proposal to IOAG for discussion. [Assigned to: UKSA/M. Cosby; Chairman. Due date: 31 January 2019]

AI 22d-09: Jean Marc Soula to make recommendation on space traffic management forward work. [Assigned to: CNES/J.M. Soula. Due date: 31 January 2019]

AI 22d-10: Delegates to provide input on new technologies for the IOAG to address. [Assigned to: All Agencies. Due date: 31 January 2019]

## **Appendix B: Acronyms**

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ASI	Italian Space Agency
C&MWG	Coding & Modulation Working Group
CCSDS	Consultative Committee for Space Data Systems
CNES	Centre National d'Etudes Spatiales
CNSA	China National Space Administration
CSA	Canadian Space Agency
DLR	German Space Agency
DTN	Disruption Tolerant Networking
ESA	European Space Agency

IAF	International Astronautical Federation
ICG	International Committee on GNSS
IOAG	Interagency Operations Advisory Group
IOP	Interoperability Plenary
ISECG	International Space Exploration Coordination Group
JAXA	Japan Aerospace Exploration Agency
KARI	Korean Aerospace Research Institute
LCAWG	Lunar Communication Architecture Working Group
LEO26WG	Low Earth Orbit 26 GHz Working Group
MOSSG	Mission Operations Systems Strategy Group
NASA	National Aeronautics and Space Administration
OLSG	Optical Link Study Group
SECSWG	Spacecraft Emergency Cross Support Working Group
SISG	Space Internetworking Strategy Group
SFCG	Space Frequency Coordination Group
UAESA	United Arab Emirates Space Agency
UKSA	United Kingdom Space Agency
WRC	World Radiocommunication Conference