



INTERAGENCY OPERATIONS ADVISORY GROUP

IOAG-18b Meeting

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Prepared by: Barbara Adde, IOAG Secretariat

Date: 16 September 2014

IOAG-18b Meeting Minutes
Teleconference
16 September 2014
12:00 – 15:00 UTC

Attendance:

Chair: Michael Schmidt

Secretariat: Barbara Adde, Stephanie Wan

Members:

ASI: Fabio D'Amico

CNES: Jean-Marc Soula

CSA: Ken Lord

DLR: Rolf Kozlowski

ESA: Nestor Peccia, Erik Soerensen, Francois Allard, Klaus-Juergen Schulz, Enrico Vassallo

JAXA: Takanori Iwata, Tsutomu Shigeta

NASA: Phil Liebrecht, Les Deutsch, Mike Kearney, Wallace Tai, Madeline Butler, James Afrin, James Schier, James Miller, Marc Seibert

Observers:

KARI: Sanghil Ahn

UKSA: Peter Allan

CNSA: He Shanbao

1) Opening/ Introduction of IOAG participants:

The Chairman opened the teleconference and the members introduced themselves.

2) Secretariat's Report:

Ms. Wan reported that comments had been received and included in the draft IOAG-18a minutes and requested approval for the revised version. The members voted to approve the minutes. The Secretariat reviewed the open actions, and the members discussed status. It was agreed, during discussion regarding Action Item (AI) 18-09, which tasked Mr. Kearney with developing an online communication asset database, that two topics will be added to the next teleconference: 1) determining a policy for database entry (Secretariat or agencies), and 2) determining how optical links should be handled in the database.

3) CCSDS Report:

The CCSDS liaison, Mr. Peccia, provided the status of CCSDS activities regarding books and polls since its last report to IOAG in May 2014. His charts are available on the IOAG website. Mr. Peccia confirmed that no inputs from IOAG were required at this time.

Mr. Schmidt added that he has been invited by the Satellite Systems Workshop in Moscow to give a keynote address. He would like to include the IOAG's SISG activities in that presentation.

4) CCSDS I/F & Top 10 Priorities:

Mr. Soula stated that the CCSDS I/F and Top 10 report had been waiting for closure of several IOAG actions that are now closed. He will work with Mr. Calzolari to finalize this report by the end of the month. There is no further update since the May meeting in Rome, i.e. no short term update of the ICPA seems to be required at this stage. The Chairman requested that this remain a standard item on IOAG meeting agendas. Mr. Soula agreed and requested that AI-18a-08 remain open; he will submit a proposal to the IOAG soon.

5) Status of Spacecraft Emergency Cross-Support Working Group (SECSWG):

Mr. Soerensen and Ms. Butler provided the status of the SECSWG, noting that the participating agencies include CNES, CSA, DLR, ESA, JAXA, and NASA. Mr. D'Amico stated that ASI is also interested in participating. The working group identified nine issues and requested that all contributing agencies provide their positions on these issues. Once collected, the working group will formulate a proposal to the IOAG. They provided their initial analysis from the input to date, stating that NASA was concerned that cross-support agreements don't often list emergency cross-support. Mr. Tai noted that it is a conglomeration of services and service management functions. Mr. Soerensen said that the IOAG should also define the operational interfaces including the identification of the emergency contact points with a standard phone number (similar to the US "911"). Mr. Schmidt asked, "What is a realistic response time?" Mr. Soerensen responded that this was difficult to answer and would need input from satellite operators. Ms. Butler added that it would be different for each mission. Mr. Kozlowski agreed, stating that DLR has 24-hour/7-day emergency support for its missions. Mr. Soerensen stated that he agrees with Mr. Tai and that this needs to be determined by the IOAG. It has traditionally been handled on a First In-First Out (FIFO) basis, but that under circumstances where there are several emergencies at the same time, this might not be the best solution. He also noted the possibility of an IOAG policy that initial support to rescue a satellite is free of charge. This may be dependent on the duration of the support required and bilateral agreements in place. Ms. Butler stated that the SECSWG is holding a teleconference next week and requested a teleconference with the IOAG on just this topic. The Chairman agreed, requesting a midterm report that can be provided to the agencies' higher management, who serve on the Interoperability Plenary, so that the IOAG can get further guidance on a final position. Mr.

Liebrecht closed this discussion with thanks to the co-chairs and participating members for their work on this important activity. The SECSWG charts are available on the IOAG website.

6) Status of Mission Operations Support Study Group (MOSSG):

Mr. Kearney and Mr. Allard presented the status of the MOSSG. They have held regular teleconferences and face-to-face meetings, and have been developing a Service Catalogue-3 template. They are using the ISS and Jason-2 mission to validate their findings in the report. They expect to provide their preliminary priorities to the CCSDS in mid-October.

Regarding resources, they noted that it was assumed that ESA and NASA would be providing an additional five equivalent persons, but none have been allocated yet. At the current pace of work with the reduced resources, this activity will take many years to complete (not the 18 months previously estimated). Mr. Kearney stated that there is not a pressing mission that is a driver for this activity, so it is not clear what the disadvantages are of a slower response, other than providing inputs to CCSDS very late in the standards development cycle.

The proposed demonstration of mission operations services cannot be done without funding for software development. This item would be the first to be dropped if there are no additional resources available, since it had been considered optional from the start of the MOSSG and by the IOP. The MOSSG team is also concerned that the MOSSG priorities provided to the CCSDS in October may change dramatically by the time that the final effort has been completed.

Mr. Schmidt stated that he will raise the issue of resources with ESA's management. Mr. Kearney noted that it had also been raised at the IOP. Mr. Schmidt also noted that he may include MOSSG's activities in his Satellite Systems Workshop keynote presentation, which Mr. Kearney offered to support.

7) Optical Link Study Group (OLSG):

Mr. Schulz presented the status of ESA's current activities with optical communication. His charts are available on the IOAG website. He noted that the OLSG completed its work in December 2012 and reported to the IOP-3 in June 2013. Nine months into the standardization process, NASA provided an additional proposal at the next meeting regarding deep space optical communication. It will be based on NASA's LADEE and LLCD mission.

Mr. Schulz stated optical communications activities are now focused on demonstrations, creating consensus and support. ESA provided a report for the ESA Director General entitled, "High Throughput Science Data Communication." NASA is following a similar path, he said, and is

currently looking for a low cost flight demonstration in deep space. At the next meeting, he will discuss optical communication opportunities on the International Space Station (ISS). Mr. Schulz's charts are available on the IOAG website.

The agencies were encouraged to provide the same status on optical links. The IOP had encouraged the sharing of knowledge from demonstrations, without technology transfer. NASA, ESA, DLR are doing that; he encouraged the other agencies to do the same.

8) Interface to International Committee on Global Navigation Satellite Systems (ICG):

Mr. Miller reported that the ICG will be holding its next annual meeting, ICG-9, hosted by ESA in Prague on 9-14 November. The agenda is being finalized and will be available on the UNOOSA website: <http://www.oosa.unvienna.org/oosa/SAP/gnss/icg/meetings.html> as well as at: <http://www.icg9prague.eu/>. Mr. Miller serves as NASA's head of delegation, which will include Ms. Adde and Ms. Wan. NASA is also pleased to invite Dr. Brad Parkinson, who originally designed the Global Positioning System (GPS) to speak at ICG-9. Mr. Schmidt noted that he will serve as IOAG's head of delegation. Mr. Miller noted that topics to be addressed at the ICG include interoperable GNSS, Space Service Volume (SSV), Search and Rescue, and other topics.

Mr. Miller also noted that he attended the Institute of Navigation's annual conference in Florida last week. The European Union provided a study on Galileo SSV, which he will provide to Mr. Schmidt when it becomes available. He said that the UN accepted the list of GNSS receivers that the IOAG provided.

9) ISECG International Systems Maturation Team:

Mr. Schier and Mr. Seibert provided an informational overview on their ISECG International Systems Maturation Team (I-SMT) and invited the IOAG members to join this open forum. It is an off-shoot of an internal NASA activity which is addressing the question: What are the enhancing or enabling areas where we are short of technology in specific areas? This may be the occasion to bring products and/or information to an IOAG focus group. Ms. Butler asked if there are any ITAR-related issues with this. Mr. Seibert replied that this is not directly technology; Figure of Merit and capabilities are needed for this effort. Agencies can provide them to their teams to identify technology to meet those needs. Mr. Schier stated that there is high emphasis on interoperability and coordinated cross-support on mission operations. A perfect example of this is cross-support for human exploration missions. Mr. Seibert noted the tie to CCSDS, stating that these capabilities will need new standards. He asked that IOAG members work through Mr. Liebrecht for any questions they may have and to add people to the I-SMT. Individuals may join

as observers only, if they so choose. The goal is to be as inclusive as possible. The Chairman requested that Mr. Schier provide their presentation to the Secretariat to upload to the IOAG website, which he agreed to do. (The charts are now available on the IOAG website.) The Chairman asked how the I-SMT is triggered. Mr. Seibert replied that it is currently a NASA list; it is not in the I-SMT yet. They accept new capabilities identified from the ISECG and IOAG. The Chairman asked if the team will assess new capabilities for the IOAG, to which Mr. Seibert replied affirmatively. Mr. Schier said that a good example of this is high precision navigation for Entry, Descent and Landing (EDL). It is one example of a capability jointly needed in the future. Mr. Seibert added that when a capability is mission-enhancing is where it makes sense to include, by adding capabilities that are “desirements,” not “requirements.” Mr. Soula asked if there are currently any IOAG members participating in the I-SMT, to which Mr. Seibert replied that he was surprised that there currently are not any IOAG members participating in the I-SMT. Mr. Soula agreed that there needs to be IOAG members on the team. Mr. Seibert said that the participants are currently primarily mission planners, not IOAG experts.

10) Interface to International Space Exploration Coordination Group (ISECG):

Mr. Schmidt informed the members that the ESA IOP representative, Mr. Thomas Reiter, has asked whether the IOAG can also deal with issues that are not directly related to space communications in connection with ISECG, e.g. rendezvous & docking and proximity operations. The intention is to avoid creating another international working group unnecessarily. Mr. Schmidt asked the members for their feedback on this proposal, either during this teleconference or in the future. Mr. Soula said that he is not sure that the IOAG has the right expertise to address these topics or if this is the right forum. Mr. Schmidt suggested that this be discussed within each agency. Mr. Soula added that there is currently no mandate for the IOAG to address these topics, but would take the question to his management. If it was approved to re-assign a new mandate to the IOAG so it may cover these domains, then this issue could be resolved.

11) Status of Coding/Modulation Schemes:

Mr. Vassallo, and Dr. Deutsch addressed the status of the IOAG study of coding/modulation schemes. The team has created a template to show which CCSDS coding and modulation schemes are in use or planned to be used by each agency. CNES, ESA, and NASA have uploaded their filled-in templates to the IOAG website, although NASA’s template is not yet complete. They requested that each agency fill in a similar template. They will use these template submissions to determine if there are schemes that are not being used. These would be candidates for deleting for future cross-support.

12) Discussion of Potential Refocusing of IOAG:

The Chairman raised the topic of refocusing the IOAG so as to be more strategically focused. He noted the discussion at the IOAG-18a meeting in Pasadena as an example of the current focus on communication standards, which is the role of the CCSDS. Mr. Kozlowski concurred with this statement. Mr. Soula stated that the IOAG needs to discuss its requirements with the CCSDS liaison and answer their questions. All agencies need to agree on the future IOAG requirements. Mr. Peccia recommended to look in particular at the cross support aspects. The IOAG should look at practical implementation and lessons learned, for example the Euclid mission or NASA's James Webb Space Telescope, but not at every IOAG meeting, he said. The Chairman suggested a slight revision in the IOAG. Mr. Soula said that each agency should come with requirements so that the IOAG can share joint requirements with the CCSDS liaison, bringing their information so that the IOAG can determine a vision for the future together. Technical discussion is needed, he stated. The management body is the IOP. The Chairman requested that this topic be added to the agenda for the IOAG-18c meeting. Mr. D'Amico aligned himself with the Chairman's proposal, stating that the last meeting was too detailed at times. Mr. Lord supported the Chairman's proposal also, stating that he thought the technical discussion had gone far deeper than required for the IOAG mandate for a long term roadmap to bring interoperability to the participating agencies. He said that the IOAG should focus more on capabilities and where to focus their joint efforts, rather than getting into technical details. Mr. Kozlowski said that the IOAG gives priorities to CCSDS to work on requirements. Sometimes the IOAG does need to address details to gain a better understanding of the work involved. NASA concurred with the proposal as well. Mr. Kearney added that the recently developed ICPA can help with the communication between the IOAG and CCSDS on technical details. Mr. Liebrecht agreed, stating that the IOAG should focus on services and not on the detailed standards to get us there; the IOAG and CCSDS should communicate on these technical details through the ICPA. The Chairman thanked the members for their feedback and the discussion, and asked them to continue to think about this issue.

13) Next Face-to-Face Meeting in South Korea:

Dr. Ahn presented the logistics for the IOAG-19 meeting to be held in Daejeon, South Korea. His charts are available on the IOAG website.

The Chairman requested that the next teleconference be held two weeks after the next CCSDS meeting. IOAG-18c will be held on 9 December 12:00 – 15:00 UTC. The previous date of 27 January, 2015 will be held until it is determined if another teleconference is needed. He thanked everyone for their participation and closed the meeting.

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Action Items

AI 18b-01: IOAG members to review the data current inputted in the SANA automated communication assets database and provide any comments/edits by the end of September. [Assigned to: All IOAG Agencies, Due Date: 6 October 2014]

AI 18b-02: All IOAG agencies to provide an update on their organization's optical communications at the next IOAG telecom. [Assigned to: All IOAG Agencies, Due Date: 09 December 2014]

AI 18b-03: All agencies to assess the potential interaction between the IOAG and the ISECG International Systems Maturation Team. [Assigned to: All IOAG Agencies, Due Date: 15 November 2014]

AI 18b-04: All agencies to assess the proposal of the chair to widen the activity areas of the IOAG and to advise the chair on how to react on possible related requests from the ISECG. [Assigned to: All IOAG Agencies, Due Date: 15 November 2014]

AI 18b-05: All member agencies to populate the coding and modulation templates to provide better information on the number of active standards for cross support. [Assigned to: All IOAG Agencies, Due Date: 09 December 2014]