Meeting of IOP-3 at the Cité de l'Espace
Toulouse, France
25-26 June 2013

COMMUNIQUÉ

1. Background

The first international Inter-Operability Plenary (IOP-1) was convened in June 1999 at the Headquarters of the European Space Agency (ESA) in Paris, France. As a result of that meeting, the Interagency Operations Advisory Group (IOAG) was established in order to achieve cross-support across the international space community and to expand the enabling levels of space communications and navigation interoperability.

The National Aeronautics and Space Administration (NASA) hosted the second IOP (IOP-2) in December 2008 in Geneva, Switzerland, at which the governmental space agencies engaged in space communication interoperability reviewed the progress made by the IOAG on issues related to cross support and interoperability. A communiqué was issued providing resolutions for guiding the future direction of the IOAG and its related activities, in preparation for a third IOP, to be held in the next 4-5 years. This included the creation of a draft Solar System Internetwork (SSI) Operations Concept and service catalog and a mature architectural proposal for review and endorsement at the third Inter-Operability Plenary meeting.

This third IOP (IOP-3) was hosted by le Centre National d'Etudes Spatiales (CNES) in June 2013 in Toulouse, France to receive the report of the SISG and endorse their architectural proposal, as well as to deliberate on new activities undertaken by the IOAG since IOP-2.

2. Meeting Summary

The IOP-3 meeting was attended by participants from ASI (Italy), CNES (France), CSA (Canada), DLR (Germany), ESA (Europe), JAXA (Japan), KARI (Republic of Korea), NASA (United States), and UK-SA (United Kingdom). Delegates received reports on the IOAG's accomplishments to date, and deliberated on the future course that the IOAG should take through consideration of activities and proposals from the IOAG's four subgroups and four liaisons. A consensus emerged that expanding the current levels of international coordination and interoperability offers strong potential for enabling new missions, reducing costs, and increasing mission safety. Following these deliberations, the IOP formulated a set of IOP-3 Resolutions.

(Communiqué cont'd):

3. Resolutions

Pursuant to the IOAG-17 recommended resolutions to the IOP-3 and the subsequent deliberations of the IOP-3 delegates during the meeting, the IOP-3 unanimously adopted the following resolutions.

IOP-3 RESOLUTIONS

On this Twenty-Sixth Day of June 2013, the IOP-3 meeting in Toulouse, France, unanimously adopted the following Resolutions:

In regard to its relationship with the ISECG:

1. The IOP recognizes the progress made by the IOAG in the establishment of a positive relationship with the ISECG and approves the objectives of the IOAG to avoid duplication of activities and to consolidate this relationship.
2. The IOP recommends that a liaison be established whenever this becomes appropriate between the two organizations to intensify their exchanges and to make sure they remain aligned on user needs, available services and enabling standards.
3. The IOAG is requested to report on the progress made in the interface with the ISECG and with other user organizations requiring Communication and Navigation services, on the occasion of the future IOP meetings.

In regard to its relationship with the CCSDS:

1. The IOP recognizes the improved processes and the important technical accomplishments that have been achieved by the CCSDS agencies.
2. The IOP supports the CCSDS to continue their work to strategically stage interoperable capabilities for the next generation of spaceflight missions.
3. The IOP also recognizes the challenges for CCSDS that have been created by the current resource-constrained environment and therefore encourages CCSDS agencies to address those challenges so that essential on-going work as prioritized by the IOAG is completed.
4. For the topics that are under the cognizance of the IOAG, the IOP encourages further cooperation between the two organizations, and a healthy discourse that enhances the products of both IOAG and CCSDS.

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In regard to its relationship with the SFCG:

1. The IOP acknowledges that the SFCG and IOAG have been successfully cooperating for a number of years on many strategic issues.
2. The IOP acknowledges that performing early mission frequency coordination via SFCG has largely avoided the burden of operational coordination while achieving interference free operations.
3. The IOP recognizes that cooperation of IOAG members in the International Telecommunications Union (ITU) and regional preparation meetings is fundamental in achieving SFCG strategic goals at World Radiocommunication Conferences (WRC) thus securing spectrum access to IOAG.
4. The IOP requests that all IOAG members continue the above missions and ITU WRC coordination with SFCG.

In regard to its relationship with the ICG:

1. The IOP recognizes that the success of many international space missions is dependent on Global Navigation Satellite Systems (GNSS) capabilities and there are benefits to the IOAG observer member status to the ICG.
2. The IOP recommends that IOAG member space agencies define and share their space user performance needs for their respective GNSS constellations.
3. The IOP encourages IOAG members to strengthen collaboration with other national representatives to international bodies such as ICG to ensure implementation of such capabilities.
4. The IOP recommends the IOAG continue the liaison with the ICG. The next step in this process is IOAG participation at ICG-8 in November 2013 in Dubai.

In regard to the work of the Low Earth Orbit 26 GHz Study Group (LEO26SG):

1. The IOP acknowledges the good work accomplished by the LEO26SG.
2. The IOP recognizes the maturity of the 26 GHz technology for the exploitation of the space to ground communications, the technical benefits, and the identified strategies to mitigate the challenges that this frequency band encompasses.
3. The IOP recommends that new missions of the member agencies consider the use of the 26 GHz band for its LEO to ground communications, especially:
    - Missions requiring very high data rates, and
    - Missions concerned with the use of congested bands.
4. The IOP recommends that the paths for further improvement of the technology and standards are exercised to fully exploit the capabilities offered by the 26 GHz band.

(Communiqué cont'd):

5. The next steps required for further improvement of the technology and the standards require the IOAG to:

    1. Recommend its member agencies expand the propagation knowledge of the 26 GHz band by:
        - Performing experimental campaigns to validate the propagation models,
        - Proposing propagation models to radio regulatory bodies (e.g., ITU-R),
        - Sharing the information gathered in these campaigns and models with all missions.
    2. Request the CCSDS committee complete relevant standards by:
        - Expanding the RF & Modulation recommendations for use of the 26 GHz band for EESS.
        - Further finalizing the VCM protocols to guarantee interoperability.
        - Further developing the ACM protocols to guarantee interoperability.

In regard to the work of the Mission Operations Systems Coordination Group (MOSCG):

1. The IOP acknowledges the interest of and benefit to the agencies in future joint missions with a high degree of interoperability between the agencies' Mission Operations functions.
2. The IOP recognizes the progress already done so far and the potential benefits in the medium and long term for inter-agency cross-support.
3. The IOAG is charged to expand its charter to include Mission Operations functions, and explore appropriate and cost-effective methods of enabling such interoperability.
4. The IOAG should address interoperabilility topics related to emergency support services between the agencies.
5. The IOAG is encouraged to establish a Mission Operations Systems Strategy Group (MOSSG). The scope should encompass all systems and facility types (human and unmanned, flight and ground). The output of the MOSSG should be a study report with recommended priorities for CCSDS and a draft Service Catalog of Mission Operations Services. The MOSSG should assess whether a simulation to quantify the benefits of this work for the users and project community is beneficial considering simulation tools from the CCSDS. This work should apply to the future missions and programs of the IOP, IOAG and CCSDS agencies. IOAG is encouraged to invite other agencies to participate in the MOSSG effort.
6. The IOAG is requested to report progress in the Mission Operations Systems area at IOP-4.

(Communiqué cont'd):

In regard to the work of the Optical Links Study Group (OLSG):

The IOP-3 encourages the member agencies to prepare for optical communications as the next evolution of space communications; therefore:

1. The IOP recognizes the good work of the OLSG and the benefits of developing interoperability in the domain of optical communications.
2. The IOP recommends that the member agencies begin preparing for future cross support of space-Earth and space-space optical communications by developing interoperable standards.
3. The IOAG is requested to provide guidance to CCSDS in the development of the required standards.
4. The IOP urges collaboration on demonstrations, and experiments that may be useful in the standardization and the development of optical communications technology.
5. The IOP member agencies are encouraged to share with other IOAG members their technical and operational experience.
6. The IOP recommends assessing the results of the upcoming technology demo missions to verify the feasibility of a common wavelength for a future intersatellite link in the context of a data relay system in order to facilitate interoperability. This would be similar to the concept of the Space Network Interoperability Panel (SNIP) approach.
7. The IOAG is requested to report progress in the optical communications cross support area at IOP-4.

In regard to the work of the Space Interworking Study Group (SISG):

1. The IOP acknowledges the good work of the SISG and recognizes the completion of the related IOP-2 actions.
2. The IOP endorses the SSI Operations Concept, Service Catalog 2, and the currently available SSI Architecture.

3. The IOP encourages mission demonstrations among member agencies.
4. The IOP member agencies are encouraged to consider for adoption the above listed products in future cooperative missions, in particular Mars and Lunar missions.
5. The IOAG is further requested to report on infusion progress at IOP-4.