

ICG WG-A

Sub-Groups, Task Forces and their activities

Current as of: June 01, 2014



WG-A Focus Areas

- Compatibility (to include spectrum protection) & Open Service Performance Standards
- Interoperability
- Interference Detection and Mitigation
- International Open Service Monitoring & Assessment



2014 WG-A Events

- ✓ Russia Interoperability Workshop, April 24
- ✓ China Interoperability Workshop, May 23
- ❑ IGMA Meeting/Workshop, June 23-27, Pasadena, CA, USA
- ❑ IDM Workshop, July 14-15, Geneva (ITU)
- ❑ Inter-sessional Meeting, July 16-18, Geneva (ITU)
- ❑ Japan Interoperability Workshop, July 30- Aug 1, Osaka, Japan - to be confirmed
- ❑ ICG-9, Prague, November 10-14, 2014



COMPATIBILITY, SPECTRUM PROTECTION AND PERFORMANCE STANDARDS



Compatibility & Performance Standard Sub-group

- Co-chairs:
 - **Takahiro MITOME**
 - **Dominic HAYES**
- Members:
 - China: Jianwen LI
 - European Union: Dominic HAYES
 - India: S. SAYEENATHAN
 - Japan: Ryo IWAMA
 - Russia: Dmitry ARONOV, Alexey BOLKUNOV
 - United States: Doug PEDERSON



Work Plan - Compatibility

- Considering the principle of compatibility and its definition, the working group will:
 - In particular, review existing ITU regulations and recommendations related to the avoidance of harmful interference;
 - Seek common understanding on appropriate methods to determine compatibility among all GNSS; and,
 - If necessary, propose new questions or studies for ITU consideration, through appropriate mechanisms, to further protect the noise floor impacting all GNSS, and to define methodology used between GNSS providers to ensure compatibility.



WG-A Work Plan – Spectrum Protection & IDM

- The Providers Forum has agreed to pursue the protection of radionavigation satellite service (RNSS) spectrum through appropriate domestic and international regulation.
 - When necessary and appropriate, the Working Group will facilitate Provider discussions on their individual views and actions related to RNSS spectrum issues and agenda items under consideration by the ITU and its Working Parties.
- The Working Group will develop a strategy for ICG support of mechanisms to detect and mitigate sources of electromagnetic interference, taking existing regulatory mechanisms into consideration. This could lead to concrete proposals for detecting interference.



Work Plan – Open Service Information Sharing

- Consistent with the principle of transparency in the provision of open services, each individual Provider will strive to publish and disseminate all signal and system information necessary to allow manufacturers to design and develop GNSS receivers on a non-discriminatory basis. The Working Group will develop a template to promote common terminology and definitions in individual GNSS Open Service Signal Specifications.
- The Working Group will also develop a template that each individual GNSS provider may consider using in their publication of signal and system information, the policies of provision, and the minimum levels of performance offered for open services.
- As requested by a provider or providers, the working group will assist in exchanging information with ICG participants important to resolving GNSS open service anomalies that impact users.



ICG-8 Recommendation 8A.2.1

- ICG members are encouraged to actively participate in the ITU-R and regional WRC-15 preparatory work on new IMT spectrum allocations (*including JTG 4-5-6-7 until August 2014*), to ensure that proposals do not impact existing and future GNSS operations. Members may also consider forming links with other satellite groups already defending satellite spectrum.



Open Service Performance Template

- First Step: Identify a point of contact from each system provider
- Second Step: Meet together with the Sub-group co-chairs
- Third Step: Agree on parameters that will be common to all GNSS open service performance documents
- Fourth Step: Agree on methodology for each parameter



ICG-8 Recommendation 8A.2.2

- System Providers should provide updated information regarding global and regional navigation satellite systems and augmentations in time for the publication of a new edition of the Providers Forum's *Current and planned global and regional navigation satellite systems and satellite-based augmentation systems* before ICG-10. The updated information should include observed or expected open service performance



INTEROPERABILITY



ICG International Committee on
Global Navigation Satellite Systems

Interoperability Task Force

- **Jeff Auerbach, USA - Co-lead** AuerbachJA@state.gov
- **Xiaochun LU, China - Co-lead** Luxc@ntsc.ac.cn
- Tom STANSELL, Aerospace Corporation tom@stansell.com
- Jun SHEN, China jshen@bnstar.com
- Zhijian LIU, China Liuzhijian@bsnc.com.cn
- Tatiana MIRGORODSKAYA, Russia
tatyana.mirgoodskaya@glonass-iac.ru
- Sergey SILIN, Russia silin_sv@gk-nap.ru
- Satoshi Kogure, Japan kogure.satoshi@jaxa.jp
- Masao NAGAMORI, Japan m-nagamori@cp.jp.nec.com
- Jose-Angel Avila-Rodriguez, ESA
jose.angel.avila.rodriguez@esa.int



Interoperability Tasks from Work Plan

- Consistent with the principle of interoperability and its definition, **consider the perspective of various user applications and equipment manufacturers**
- **Continue efforts to survey** industry and user community experts
- **Sponsor and participate in workshops and meetings** designed to solicit GNSS user input



ICG-8 Recommendation 8A.5.1

- Consistent with the principle of interoperability and its definition, and the implementation of previous ICG recommendations related to interoperability, Working Group A should form a task force to complete efforts to collect and analyze user community and industry views on interoperability
 - The task force will analyze the results of the April 2013 interoperability workshop and adjust the questions for industry accordingly, in preparation for additional workshops to be hosted by each system provider
 - The results of each workshop will be consolidated and analyzed by the Task Force in preparation for the 2014 inter-sessional meeting of Working Group A and ICG-9



Russia Interoperability Workshop

- In conjunction with Moscow Navigation Forum – Moscow EXPO Center, April 23-25
- Purpose: GNSS user community and industry views on interoperability - based on questions prepared by Interoperability Task Force
- Additional subjects to address:
 - interoperability and interference resistance



China Interoperability Workshop

- In conjunction with CSNC 2014 – Nanjing, China, May 21-23
- Purpose: GNSS user community and industry views on interoperability - based on questions prepared by Interoperability Task Force
- Additional subjects to address:
 - Interoperable Signals
 - GNSS Differential System Interoperability
 - Time System Interoperability
 - Role of Monitoring networks in interoperability (IGS, iGMAS, MGM-net)



Next Steps

- Encourage workshops to be held by Europe and Japan
- **Task Force** to analyze the results of the United States, Russia, and China workshops to prepare for the Inter-sessional meeting of Working Group A:
 - Compile a full listing of all questionnaire respondents
 - Correlate questions asked to develop a subset that is common to all three workshops held to date
 - Agree on categorization of respondents for analysis: [Proposed: Aviation, Medium/High precision, Consumer]
 - Analyze responses to questions in this category to determine if there are conclusions that can be easily reached
 - Prepare results to share with respondents for a second round of input



SPECTRUM PROTECTION & IDM



ICG International Committee on
Global Navigation Satellite Systems

Interference Detection Task Force

- Co-Chairs:

- **Rick Hamilton, USCG, Co-lead** stephen.r.hamilton@uscg.mil
- **Weimin Zhen, China, Co-lead** crip_zwm@163.com

- Members:

- Attila Matas, ITU attila.matas@itu.int
- Matteo Paonni, EC JRC matteo.paonni@jrc.ec.europa.eu
- Stanislav Kizima, Vector, Russia kizima@vemail.ru
- Dmitry Buslov, Vector, Russia dmitry.aist@gmail.com
- Daisuke Kawasaki, Japan daisuke.kawasaki@cao.go.jp
- Takahiro Mitome, Japan takahiro.mitome.xp@hitachi.com
- Ryo Iwama, Japan r-iwama@ti.jp.nec.com
- Hiroaki Maeda, Japan Hiroaki.Maeda@LighthouseTC.jp



WG-A Work Plan – Spectrum Protection & IDM

- The Providers Forum has agreed to pursue the protection of radionavigation satellite service (RNSS) spectrum through appropriate domestic and international regulation.
 - When necessary and appropriate, the Working Group will facilitate Provider discussions on their individual views and actions related to RNSS spectrum issues and agenda items under consideration by the ITU and its Working Parties.
- The Working Group will develop a strategy for ICG support of mechanisms to detect and mitigate sources of electromagnetic interference, taking existing regulatory mechanisms into consideration. This could lead to concrete proposals for detecting interference.



ICG-8 Recommendation 8A.3.1

Education & Outreach Regarding Sources of GNSS Interference

- The ICG should develop educational material such as a downloadable pamphlet or other web content on sources of interference to GNSS. The material should include an explanation why radio navigation satellite services (RNSS) are different than radio communications services and more vulnerable to interference, and will emphasize the importance of GNSS services to critical public and private sector functions, infrastructure, and economic activity

The WG-A Task Force on Interference Detection will lead the development of sample educational material on GNSS Interference for ICG consideration



Interference Detection Task Force Preliminary Work Plan (to implement ICG-8 Recommendation 8A.3.2)

Initially the task force will focus on developing a common set of information to be reported to GNSS civil service centers.

- The U.S., China and the ITU have presented existing interference reporting forms that are used to report interference
- The task force leaders will distribute the forms to the members of the task force and coordinate by e-mail. Findings and decisions will be reported to the next IDM workshop

Next the task force will focus on establishing routine communications among the (provider service) centers.

- Some center activities are more mature than other emerging providers organizations. Best practices will be shared by e-mail and the task force members agreed to share “after action reports” of interference activity on a regular basis.

Finally, the task force will develop guidelines for common capabilities to be considered in the development of future national IDM networks.

- The task force agreed that presentations could be made at future IDM workshops and that providers will come prepared to brief capabilities being considered.



INTERNATIONAL OPEN SERVICE MONITORING AND ASSESSMENT



ICG International Committee on
Global Navigation Satellite Systems

IGMA Sub-Group

- Co-Chairs:
 - Satoshi Kogure, JAXA, Japan
 - Xurong Dong, CSNO, China
 - Ruth Neilan/Urs Hugentobler, IGS
- Members:
 - Oleg Denisenko, Russia
 - Igor Silvestrov, Russia
 - LI Jianwen, China
 - Hideshi KAKIMOTO, Japan kakimoto.hideshi@jaxa.jp
 - Nobuo HIROE, Japan n-hiroe@cj.jp.nec.com



Work Plan - Service Performance Monitoring

- The Providers Forum has agreed to consider the development and discussion of proposals to widely monitor the performance of their open signals and provide timely updates to users regarding critical performance characteristics such as timing accuracy, positioning accuracy and service availability.
- Working Group A will support this activity by focusing on potential cooperation in the development of the necessary ground infrastructure to monitor signal and service performance for open services, recognizing that the actual implementation of this infrastructure is subject to the budgetary limitations of each system provider, and the completion of provider-to-provider agreements as necessary and appropriate.



ICG-8 Recommendation 8A.4.1

- The task of the joint IGMA sub-group of WG-A, B & D will be to:
 - Determine Service Parameters to Monitor – definition and methodology to be coordinated with WG-A Compatibility sub group study
 - Determine what gaps exist in current and planned monitoring and assessment
 - Consider organizing workshop on IGMA parameters, services and methodologies
 - Recommend what should be monitored by:
 - Individual GNSS monitoring/control segments
 - Shared sites of 2 or more GNSS through bilateral agreements
 - Global monitoring of Multi-GNSS parameters
 - Propose an Organizational Approach that:
 - Avoids Duplication
 - Coordinates and integrates the related activities for identifying parameters
 - Considers the role of the current/planned IGS and
 - Defines the Relationship of the proposed organization to ICG
 - Explore methods to disseminate monitoring and assessment results, considering specific proposals from system providers

