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 和平利用外层空间委员会

## 全球导航卫星系统国际委员会第三次会议

## 秘书处的说明

## 目录

	页次
一. 导言 .....	2
A. 背景 .....	2
B. 会议的结构和安排 .....	2
C. 出席情况 .....	3
D. 文件 .....	3
二. 建议和决定 .....	4
三. 联合声明 .....	4
四. 供应商论坛 .....	5
附件	
一. List of States Members of the United Nations and governmental, intergovernmental and non-governmental organizations participating in the Third Meeting of the International Committee on Global Navigation Satellite Systems .....	6
二. Documents of the Third Meeting of the International Committee on Global Navigation Satellite Systems .....	7
三. Terms of reference of the Providers' Forum .....	8
四. Workplan of the Providers' Forum .....	10
附录	
Providers' Forum principles of compatibility and interoperability and their further definition .....	12



## 一. 引言

### A. 背景

1. 大会在其 2008 年 12 月 5 日第 63/90 号决议中赞赏地注意到，已在自愿的基础上设立了全球导航卫星系统国际委员会，作为一个论坛酌情促进成员国就民用卫星定位、导航、正时和增值服务等共同关心问题进行合作，以及就全球导航卫星系统兼容性和互操作性进行合作，并促进利用有关系统支持尤其是发展中国家的可持续发展；该委员会于 2006 年 11 月 1 日和 2 日在维也纳举行了首次会议；于 2007 年 9 月 4 日至 7 日在印度班加罗尔举行了第二次会议；将于 2008 年 12 月 8 日至 12 日在美利坚合众国加利福尼亚州帕萨迪纳举行第三次会议；并将于 2009 年在俄罗斯联邦举行第四次会议。
2. 为了在联合国空间应用方案框架内实施关于全球导航卫星系统的优先专题领域中的活动，秘书处外层空间事务厅于 2008 年 6 月 23 日至 27 日在哥伦比亚麦德林为拉丁美洲和加勒比国家组织了联合国/哥伦比亚/美利坚合众国全球导航卫星系统应用讲习班（A/AC.105/920）。
3. 为进一步支持全球导航卫星系统国际委员会，外层空间事务厅作为全球导航卫星系统国际委员会和供应商论坛的执行秘书处，又另外举行了几次会议（见 A/AC.105/922），以同时配合侧重于在各种领域应用全球导航卫星系统以支持可持续发展的有关主要国际专题讨论会和会议。美国政府对外层空间事务厅举行的这些会议给予了共同赞助，并提供了实质性技术支助。印度政府（通过亚洲和太平洋空间科学与技术教育区域中心）、俄罗斯联邦政府和欧洲共同体为专家们参加这些会议并为会议作出贡献提供了资金。
4. 全球导航卫星系统国际委员会第三次会议于 2008 年 12 月 8 日至 12 日在美国加利福尼亚州帕萨迪纳举行。

### B. 会议的结构和安排

5. 在第三次会议开幕式上，会议主席致了开场白和欢迎辞。美国国家航空航天局（美国航天局）喷气推进实验室主任和外层空间事务厅厅长也作了发言。斯坦福大学的一名代表作了题为“展望 GPtS”的主旨专题介绍。外层空间事务厅的一名代表作了关于全球导航卫星系统国际委员会在 2008 年的活动情况的专题介绍。
6. 会议的安排包括举行若干次全体会议和工作组会议。各次全体会议上所作的专题介绍侧重于全球导航卫星系统服务供应商和增强系统供应商的现状和今后计划，以及在全球、区域和国家各级的全球导航卫星系统应用、教育和能力建设活动。在各次全体会议上，与会者们还审查并确定了拟根据全球导航卫星系统国际委员会工作计划采取的具体行动；这些行动也由 2008 年 12 月 10 日召集的四个工作组进行了讨论。每一工作组侧重于下列问题中的一个：(a)兼容性和互操作性，由俄罗斯联邦和美国主导；(b)提高全球导航卫星系统服务的绩

效，由印度主导；(c)信息传播和能力建设，由外层空间事务厅和美国主导；以及(d)与国家和区域的主管部门及相关国际组织进行互动交流，由国际测量工作者联合会、国际大地测量学协会和全球导航卫星系统国际服务组织主导。

7. 各次全体会议还包括由行业和学术界实体的代表就全球导航卫星系统科学和创新技术应用及未来商业应用问题所作的专题介绍。专题介绍者还就全球导航卫星系统的兼容性和互操作性发表了各自的看法。整个会议期间都可观看全球导航卫星系统展览。

8. 供应商论坛举行了第三次会议，以同时配合 2008 年 12 月 7 日、11 日和 12 日在美国加利福尼亚州帕萨迪纳举行的全球导航卫星系统国际委员会第三次会议（见第 24-27 段）。

9. 经过对收到的各个项目进行了审议之后，全球导航卫星系统国际委员会提出了一些建议及作出了一些决定（载于第 17-22 段），并商定了第 23 段中所概括的联合声明。

### C. 出席情况

10. 下列国家的代表参加了第三次会议：中国、印度、意大利、日本、马来西亚、尼日利亚、俄罗斯联邦、阿拉伯联合酋长国和美国。欧洲共同体的代表也参加了会议。

11. 下列涉及全球导航卫星系统服务和应用工作的政府间组织和非政府组织的代表出席了会议：民用全球定位系统服务界面委员会、欧洲定位系统、国际测量工作者联合会、国际大地测量学协会、全球导航卫星系统国际服务组织、外层空间事务厅。

12. 国际大地测量学协会欧洲参考框架小组委员会的一名代表也出席了会议，该小组委员会被全球导航卫星系统国际委员会确认为一个新的联系成员。

13. 国际计量局、空间研究委员会（空间研委会）和国际导航研究所协会的观察员也出席了会议。

14. 加拿大航天局以及拉丁美洲和加勒比空间科学和技术教育区域中心的观察员因提出了与会请求而应邀出席了会议。

15. 出席了会议的联合国会员国以及政府组织、政府间组织和非政府组织名单载于附件一。

### D. 文件

16. 第三次会议的文件一览表载于附件二。这些文件也可在全球导航卫星系统国际委员会的网站（<http://www.icgsecretariat.org>）上查阅。

## 二. 建议和决定

17. 第三次会议主席概括介绍了全球导航卫星系统国际委员会在第三次会议上所担负的工作，并回顾了在该会议举行的同时所开展的活动。
18. 全球导航卫星系统国际委员会继续作为一项优先事项审议了各工作组各项建议的实施情况，并计划在每一工作组下讨论目前和未来的工作。
19. 全球导航卫星系统国际委员会核可了各工作组关于实施全球导航卫星系统国际委员会工作计划所载行动的各项建议。
20. 全球导航卫星系统国际委员会注意到，空间研委会（这是一个国际科学理事会跨学科机构）以及国际摄影测量和遥感学会和国际无线电科学联盟（这两个机构是国际科学理事会联盟成员）将作为国际科学理事会在全球导航卫星系统国际委员会中的代表。
21. 全球导航卫星系统国际委员会通过了全球导航卫星系统国际委员会关于工作程序、结构和组织的职权范围 D 节，该节业经第三次会议之前于 2008 年在维也纳举行的非正式筹备会议期间作了修订。
22. 全球导航卫星系统国际委员会请外层空间事务厅为其将进行的工作拟订职权范围草案，以支持全球导航卫星系统国际委员会的工作。

## 三. 联合声明

23. 全球导航卫星系统国际委员会以协商一致的方式通过了以下联合声明：
  1. 全球导航卫星系统国际委员会第三次会议于 2008 年 12 月 8 日至 12 日在美利坚合众国加利福尼亚州帕萨迪纳举行，以继续审查和讨论全球导航卫星系统的发展情况，并使全球导航卫星系统国际委员会成员、联系成员和观察员审议关切的问题。全球导航卫星系统国际委员会还讨论了全球导航卫星系统科学和创新技术应用及未来商业应用问题。来自行业、学术界和国家政府的代表们就全球导航卫星系统的兼容性和互操作性交流了看法。
  2. 会议由美国政府主办。与会者包括中国、印度、意大利、日本、马来西亚、尼日利亚、俄罗斯联邦、阿拉伯联合酋长国和美国及欧洲共同体，以及下列国际组织：国际计量局、空间研究委员会（空间研委会）、民用全球定位系统服务界面委员会、欧洲定位系统、国际测量工作者联合会、国际大地测量学协会、国际导航研究所协会、全球导航卫星系统国际服务组织以及秘书处外层空间事务厅。加拿大航天局及拉丁美洲和加勒比空间科学和技术教育区域中心作为观察员出席了会议。国际大地测量学协会欧洲参考框架小组委员会也出席了会议，并被全球导航卫星系统国际委员会确认为一个新的联系成员。
  3. 全球导航卫星系统国际委员会回顾，大会在其 2007 年 12 月 22 日第 62/217 号决议中赞赏地注意到，已在自愿的基础上设立了全球导航卫

星系统国际委员会，以此作为一个非正式机构，酌情促进合作，处理与民用卫星运载定位、导航、正时和增值服务有关的共同利益问题以及全球导航卫星系统的兼容性和互操作性问题，同时更多地利用这些系统支持尤其是发展中国家的可持续发展；该委员会 2006 年 11 月 1 日和 2 日在维也纳举行了首次会议，2007 年 9 月 4 日至 7 日在印度班加罗尔举行了第二次会议。

4. 全球导航卫星系统国际委员会注意到各工作组侧重于下列问题：兼容性和互操作性；提高全球导航卫星系统服务的绩效；信息传播和能力建设；以及与国家和区域主管部门以及相关国际组织进行互动交流。全球导航卫星系统国际委员会还注意到，在推进经全球导航卫星系统国际委员会第一次会议核准的全球导航卫星系统国际委员会工作计划方面取得了实质性进展。
5. 全球导航卫星系统国际委员会注意到供应商论坛通过了职权范围和工作计划。在一次全体会议上，全球导航卫星系统国际委员会还决定附属于联合国的各空间科学和技术教育区域中心将作为全球导航卫星系统国际委员会的信息中心。全球导航卫星系统国际委员会还一致同意设立一个大地测量参考问题工作队和一个时间参考问题工作队，以促进其工作计划上的进展。
6. 全球导航卫星系统国际委员会接受俄罗斯联邦的邀请，即于 2009 年 9 月 14 日至 18 日在圣彼得堡主办第四次会议。全球导航卫星系统国际委员会还注意到意大利和欧洲共同体表示愿意于 2010 年联合主办随后的一次会议。外层空间事务厅作为全球导航卫星系统国际委员会和供应商论坛的执行秘书处，将协助筹备这些会议和临时规划及工作组活动。

#### 四. 供应商论坛

24. 在举行全球导航卫星系统国际委员会第三次会议的同时，还举行了供应商论坛第三次会议，该次会议由三个会议段组成（分别于 2008 年 12 月 7 日、11 日和 12 日举行）。中国、印度、日本、俄罗斯联邦和美国以及欧洲共同体派代表出席了会议。供应商论坛第一会议段开始时由主席致了开场白和欢迎辞。
25. 2008 年 12 月 7 日，供应商论坛会议与会者审查了论坛和全球导航卫星系统国际委员会第三次会议的议程和会议程序，并讨论了供应商论坛的职权范围和工作计划。
26. 2008 年 12 月 11 日，与会者们讨论了全球导航卫星系统国际委员会各工作组就影响系统供应商的问题提出的各项建议。12 月 12 日，与会者们通过了供应商论坛的职权范围和工作计划。
27. 供应商论坛的职权范围和工作计划已分别列入本报告的附件三和附件四。

## Annex I

### **List of States Members of the United Nations and governmental, intergovernmental and non-governmental organizations participating in the Third Meeting of the International Committee on Global Navigation Satellite Systems**

China

India

Italy

Japan

Malaysia

Nigeria

Russian Federation

United Arab Emirates

United States of America

European Community

Canadian Space Agency

International Bureau of Weights and Measures (BIPM)

Civil Global Positioning System Service Interface Committee (CGSIC)

Committee on Space Research (COSPAR)

International Association of Geodesy (IAG)

International Association of Geodesy Reference Frame Sub-Commission for Europe (EUREF)

International Association of Institutes of Navigation (IAIN)

International Federation of Surveyors (FIG)

International Global Navigation Satellite System Service (IGS)

International Steering Committee of the European Position Determination System (EUPOS)

Office for Outer Space Affairs of the Secretariat

Union radio-scientifique internationale (URSI)

Regional Centre for Space Science and Technology Education for Latin America and the Caribbean

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**Annex II****Documents of the Third Meeting of the International Committee on Global Navigation Satellite Systems**

<i>Symbol</i>	<i>Title or description</i>
ICG/WGA/DEC2008	Report of the Working Group on Compatibility and Interoperability
ICG/WGB/DEC2008	Report of the Working Group on Enhancement of Performance of Global Navigation Satellite Systems Services
ICG/WGC/DEC2008	Report of the Working Group on Information Dissemination and Capacity Building
ICG/WGD/DEC2008	Report of the Working Group on Interactions with National and Regional Authorities and Relevant International Organizations
ICG/TOR/DEC2008	Terms of reference

**Annex III**

ICG/PF/TOR/DEC2008

**Terms of reference of the Providers' Forum****A. Background**

1. The International Committee on Global Navigation Satellite Systems (ICG) was established on a voluntary basis as an informal body to promote cooperation, on matters of mutual interest related to civil satellite-based positioning, navigation, timing and value-added services, as well as the compatibility and interoperability of global navigation satellite systems, while increasing their use to support sustainable development, particularly in developing countries.
2. In response to a recommended action in the ICG workplan, providers of global and regional navigation satellite systems and satellite-based augmentation systems proposed establishing a Providers' Forum to enhance compatibility and interoperability among current and future systems. The first Providers' Forum meeting, co-chaired by the United States of America and India, was held on 4 September 2007, immediately preceding the second meeting of the ICG. China, India, Japan, the Russian Federation and the United States, as well as the European Community, were present at the meeting.

**B. Objectives**

3. The objectives of the Providers' Forum are to:
  - (a) Promote compatibility and interoperability among current and future global and regional space-based systems by exchanging detailed information about planned or operating systems and the policies and procedures that govern their service provision, consistent with the template for information sharing among providers that was circulated prior to the first meeting;
  - (b) Act as a mechanism to continue discussions on important issues addressed by the ICG that require focused inputs from system providers.
4. The Providers' Forum is not a policymaking body, but provides a means to promote discussion among system providers based on agreed guidelines for provision of open services, including transparency, cooperation, performance monitoring and spectrum protection; and agreed principles for ensuring compatibility and interoperability among systems.

**C. Membership**

5. The Providers' Forum will be open to States Members of the United Nations that are or will be global navigation satellite systems (GNSS) providers. Current members and their respective systems are as follows:
  - (a) *China*: Compass/BeiDou Navigation Satellite System (CNSS);



(b) *India*: Global Positioning System and Geostationary (GEO) Augmented Navigation System (GAGAN) and Indian Regional Navigation Satellite System (IRNSS);

(c) *Japan*: Quasi-Zenith Satellite System (QZSS) and Multi-functional Transport Satellite (MTSAT) Satellite-based Augmentation System (MSAS);

(d) *Russian Federation*: Global Navigation Satellite System (GLONASS) and Wide-area System of Differential Corrections and Monitoring (SDCM);

(e) *United States*: Global Positioning System (GPS) and Wide-area Augmentation System (WAAS);

(f) *European Community*: European Satellite Navigation System (Galileo) and European Geostationary Navigation Overlay Service (EGNOS).

6. Additional Member States who become GNSS service providers will be invited to join the Providers' Forum upon consensus of the current members.

#### **D. Procedures of work, structure and organization**

7. During each meeting, the members will select, on the basis of consensus, a chair for the next meeting. The Office for Outer Space Affairs of the United Nations Secretariat, consistent with its role as the Executive Secretariat of ICG, will also fulfil these responsibilities for the Providers' Forum, in support of the chair.

8. The Providers' Forum will convene once every year in conjunction with the ICG annual meeting and more often if needed. Actions and recommendations developed by working groups of ICG that could impact the compatibility and interoperability, system development and operations, and/or service provision policies and procedures of providers of GNSS will be of particular interest to the Providers' Forum. Therefore, the results of Providers' Forum deliberations and consensus decisions on these and other issues will be reported to ICG as appropriate and when possible, at the next scheduled plenary session of ICG immediately following a Providers' Forum meeting.

9. The meetings of the Providers' Forum will be organized by the chair and designated host, with support from the Executive Secretariat. Each member should designate its principal and additional points of contact.

10. Any recommendations resulting from Providers' Forum meetings will be decided on the basis of consensus of its members.

11. Members will fund their own participation in the activities of the Providers' Forum. Financial support (in-kind or direct funding) to the Executive Secretariat that is above and beyond the annual budget of the Office for Outer Space Affairs or existing funds provided for ICG secretariat services will be provided by members on a voluntary basis.

12. The Providers' Forum may revise these terms of reference on the basis of proposals made by members and adopted by consensus.

**Annex IV**

ICG/PF/WP/DEC2008

**Workplan of the Providers' Forum**

In order to accomplish the objectives of the Providers' Forum as described in the terms of reference, the members of the Providers' Forum have agreed to pursue the following actions.

**Promotion of compatibility and interoperability**

1. The principles of compatibility and interoperability and their definition were adopted at the first meeting of the Providers' Forum, held in Bangalore, India, in September 2007 (A/AC.105/901). At the third meeting of the Providers' Forum, held in Pasadena, California, United States of America, in December 2008, these principles and their definition were updated (see appendix). The Providers' Forum will continue to refine these principles of compatibility and interoperability and their definition.
2. The providers will actively support the actions of the working group of the International Committee on Global Navigation Systems (ICG) on compatibility and interoperability, which is focused on defining these principles from the perspective of various user applications and equipment manufacturers. This may require sponsoring and participating in workshops and meetings designed to solicit input from users of global navigation satellite systems (GNSS). It may also require elaboration of an approach for quantitative interoperability evaluation.
3. The providers will draft individual reports on their respective planned or operating systems and the policies and procedures that govern their service provision, consistent with the template for information sharing:
  - (a) The reports will be consolidated and maintained by the ICG Executive Secretariat on behalf of the providers and updates will be provided at least annually in preparation for each major meeting of ICG;
  - (b) The reports will emphasize each provider's current and planned efforts to ensure compatibility and interoperability among the global, regional and augmentation system components of the global system of navigation satellite systems.

**Open service information dissemination**

4. 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.
5. Based on individual publication of open service signal information, the Providers' Forum will consider developing a template for sharing and disseminating information from individual GNSS open service signal specifications and service standards.

**Service performance monitoring**

6. Providers will 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.
7. These discussions should focus 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.

**Spectrum protection: interface detection and mitigation**

8. The Providers' Forum will pursue the protection of radio-navigation satellite services (RNSS) spectrum through appropriate domestic and international regulation. When necessary and appropriate, providers will share their views on RNSS spectrum issues and related agenda items under consideration by the International Telecommunication Union and its working parties.
9. In addition, the Providers' Forum will pursue the development of a strategy to detect and mitigate interference in GNSS worldwide by supporting the efforts of the ICG working group on compatibility and interoperability in this regard. This could lead to concrete proposals for detecting interference.
10. This workplan will be reviewed on an annual basis and revised as necessary in order to address important issues that require the attention and focus of system providers.

## Appendix

ICG/PF/WP/DEC2008

### **Providers' Forum principles of compatibility and interoperability and their further definition**

Global and regional system providers agreed that at a minimum, all global navigation satellite systems (GNSS) signals and services must be compatible. To the maximum extent possible, open signals and services should also be interoperable, in order to maximize benefit to all GNSS users. For many applications, common carrier frequencies are essential to interoperability and commonality of other signal characteristics is desirable. In some cases, carrier frequency diversity may be preferable to improve performance. The Providers' Forum will continue to investigate the benefits of carrier frequency commonality and diversity, as well as of compatibility and interoperability, as these latter terms are defined below:

(a) *Interoperability* refers to the ability of global and regional navigation satellite systems and augmentations and the services they provide to be used together to provide better capabilities at the user level than would be achieved by relying solely on the open signals of one system:

- (i) Interoperability allows navigation with signals from different systems with minimal additional receiver cost or complexity;
- (ii) Multiple constellations broadcasting interoperable open signals will result in improved observed geometry, increasing end-user accuracy everywhere and improving service availability in environments where satellite visibility is often obscured;
- (iii) Geodetic reference frames realization and system time steerage standards should adhere to existing international standards to the maximum extent practical;
- (iv) Any additional solutions to improve interoperability should be encouraged.

(b) *Compatibility* refers to the ability of global and regional navigation satellite systems and augmentations to be used separately or together without causing unacceptable interference and/or other harm to an individual system and/or service:

- (i) The International Telecommunication Union provides a framework for discussions on radiofrequency compatibility. Radiofrequency compatibility should involve thorough consideration of detailed technical factors, including effects on receiver noise floor and cross-correlation between interfering and desired signals;
- (ii) Compatibility should also respect spectral separation between each system's authorized service signals and other systems' signals. Recognizing that some signal overlap may be unavoidable, discussions among providers concerned will establish the framework for determining a mutually acceptable solution;
- (iii) Any additional solutions to improve compatibility should be encouraged.