



## Economic and Social Council

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### Global Geospatial Information Management

#### Report of the Secretary-General

(to be submitted to ECOSOC)

#### *Summary:*

The present report outlines the substantive proposal of geospatial information experts from Member States of all regions on the importance of a global mechanism to discuss critical issues on geospatial information management and the subsequent process of consultation on the establishment of a United Nations Expert Committee. It provides information on the current UN activities in the field of geospatial information, including their legislative background, as well as the major initiatives at national, regional and global levels in this field. It addresses the need for a coordination mechanism facilitated by the United Nations and makes specific recommendations on the way forward, including the creation of a UN Committee of Experts on Global Geospatial Information Management (GGIM) and the organization of a first global Forum on GGIM.

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## **I. Introduction**

1. The rapid advances in geospatial information and technologies, and their easy accessibility, have made such information an invaluable tool in research, policy and business planning and implementation. Across all sectors of society, it is increasingly recognized that the effective use of geospatial information helps address many of the current humanitarian, peace and security, environmental, and development challenges facing the world, such as climate change, natural disasters, disease pandemics, famines, population displacement, food and economic crises, which are of a cross-border nature requiring both global, regional and national policy responses.
2. Building infrastructure for the gathering, validation, compilation and dissemination of geospatial information is as important to countries as the building of roads, telecommunications networks, and the provision of other basic services. This is a critical aspect of the national and global information infrastructure. However, it is increasingly recognized that the major barriers and impediments to building geospatial information infrastructures will not be technical ones, but rather institutional and organizational, including the ability to bring countries to cooperate with one another, to learn from each other, and to promote collaboration on the development of regional and global spatial data infrastructure (SDI) standards. Hence, promoting international cooperation in capacity development, institutional strengthening and knowledge transfer to countries in need is a central development challenge. Progress in the availability and accessibility of global geospatial information will depend on how well the countries cooperate with each other.
3. There is currently no global multilateral or UN inter-governmental mechanism that can play an important leadership role in setting the agenda for the development of global geospatial information and promote its use to address key global challenges; to liaise and coordinate among member states, and between member states and international organizations active in this field; and to ultimately serve as the apex entity of the global geospatial information community. This report proposes that the United Nations takes this important lead.
4. This report has been prepared pursuant to a resolution by the Economic and Social Council adopted at its substantive session in July 2010, which requests the Secretary-General to submit to the Council in 2011 a report on global geospatial information management (GGIM). This builds on the discussion of the same topic by the Regional Cartographic Conference of Asia and Pacific, the Regional Cartographic Conference of the Americas, the annual sessions of United Nations Statistical Commission in 2010 and 2011, the UN Group of Experts on Geographical Names and three preparatory meetings for the proposed UN Group of Experts on GGIM attended by the member states.

5. The report gives a general overview of the UN activities in the field of geospatial information, including their legislative background, as well as the major initiatives, at national, regional and global levels; it addresses the need for a global coordination mechanism and makes recommendations for the way forward, including the creation of a UN Committee of Experts on GGIM and its terms of reference.

## **II. United Nations Geospatial Information Activities**

6. Since 1948, the United Nations has been promoting better understanding of cartography, geographical names and geospatial information among the member states through international cooperation and the organization of conferences, publications, training courses, and technical projects. The member states have recognized the importance of integrating geospatial information in public policy formulation, in disaster prevention and mitigation, and in establishing a sound national information infrastructure.

### **2.1 ECOSOC resolutions on cartography and geospatial information**

7. A set of founding resolutions, adopted by ECOSOC, gave birth to the long established activities of the United Nations Regional Cartographic Conferences and the United Nations Group of Experts on Geographical Names. An overview of these resolutions is as follows:
  - Over 63 years ago, in 1948, ECOSOC adopted resolution 131 (VI) on “Co-ordination of Cartographic Services of Specialized Agencies and International Organizations” recognizing the importance of mapping to global activities and the benefits of coordinating cartographic services of the United Nations and its member states. The resolution highlighted the interest of several member governments in a coordinated programme of international cartography.
  - ECOSOC resolutions in 1953, 1954 and 1974<sup>1</sup> led to the establishment of regional cartographic conferences: the United Nations Regional Cartographic Conference for Asia and the Pacific (UNRCC-AP), the United Nations Regional Cartographic Conference for the Americas (UNRCC-A), and the United Nations Regional Cartographic Conference for Africa<sup>2</sup>.
  - Subsequent resolutions of these regional conferences<sup>3</sup> reaffirmed the need for regional and global cooperation on geospatial information and led to the

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<sup>1</sup> ECOSOC resolution 476 (XV) of 6 April 1953 on “International Co-operation on Cartography”; ECOSOC resolution 556 (XVIII) adopted on 27 July 1954; ECOSOC resolution 1839 (LVI) adopted on 15 May 1974.

<sup>2</sup> The UN Regional Cartographic Conference for Africa was replaced in 1999 by the Committee on Development Information (CODI) and recently by the Committee on Development Information, Science and Technology (CODIST) and its Sub-Committee on Geo-information called CODIST-Geo.

<sup>3</sup> Resolution no.16 adopted by the thirteenth UNRCC-AP, Beijing, 9-18 May 1994 and resolution no.3 adopted by the sixth UNRCC-A, New York, 2-6 June 1997.

establishment of the Permanent Committee on GIS Infrastructure for Asia and the Pacific (PCGIAP) and the Permanent Committee on Spatial Data Infrastructure for the Americas (PC-IDEA).

- In October 2009, Resolution 7 adopted by the 18<sup>th</sup> UNRCC-AP, held in Bangkok, and decision 10 adopted by the 41<sup>st</sup> session of the UN Statistical Commission, held in New York in February 2010, recognized the importance of global geospatial information management and requested the UN Secretariat to initiate discussion and prepare a report, for consideration by ECOSOC on global consultation on geospatial information management, including a decision on the possible creation of a Committee of Experts on GGIM, similar in structure to the Committee of Experts on Geographic Names. The Economic and Social Council (ECOSOC) endorsed this proposal and decided to request the Secretary-General to submit to the Council at its 2011 substantive session a report on global geographic information management (E/2010/240).

## **2.2 Regional Cartographic Conferences**

8. The United Nations Regional Cartographic Conferences for Asia and the Pacific, (convened every three years; 18 conferences since 1955) and for the Americas, (convened every four years; 9 Conferences since 1976) are regular conferences organized by the United Nations. These conferences constitute an important regional mechanism to exchange information among national mapping and surveying authorities and the international scientific organizations active in geospatial information, and address common and critical issues affecting the work of national mapping organizations in this area.
9. From 1963 until 1990s, nine UN regional cartographic conferences were hosted by the Economic Commission for Africa (ECA) at the UN HQ in Addis Ababa. Since 1999, the regional cartographic conference for Africa is part of the UN-ECA Committee for Development Information (CODI) and its sub-committee Geo-information, now replaced by the Committee on Development Information, Science and Technology (CODIST). CODIST-Geo meets every second year and has recently paid much effort to the development of Spatial Data Infrastructure (SDI) in Africa through the inventory of existing SDIs, the development of a metadata profile for Africa, and human capacity-building activities.

## **2.3 Geographical Names**

10. Since its inception, the UN Group of Experts on Geographical Names (UNGEGN) has worked on a world-wide basis, with the development of geographic/linguistic divisions and working groups established as needed to address regional and specific global issues pertaining to the standardization of geographical names<sup>1</sup>. The United Nations Conference on the Standardization of Geographical Names, the parent body of UNGEGN is convened every five years (9 Conferences with the last Conference held in New York in August 2007). The secretariat has developed an online multilingual, multi-scriptural dataset of names of countries, capitals and major cities.

## **2.4 UN Support to Inter-Governmental Geospatial Activities**

11. The UN Department of Economic and Social Affairs, through its Statistics Division, serves as the secretariat for the implementation of the UN resolutions on geospatial information. It promotes the strategic use of geospatial information in member states through the organization of U.N. Regional Cartographic Conferences (Asia and the Pacific, Americas), U.N. Conferences on Standardization of Geographical Names and U.N. Group of Experts on Geographical Names (UNGEGN) meetings. It has developed methodological guidelines, training courses and technical assistance for the use of geospatial tools in support of census activities to developing countries.
12. The UN Cartographic Section, Department of Field Support (DFS) is responsible for providing cartographic and geospatial information services to the UN Security Council and the UN Secretariat including all UN field missions, in support of the decision-making and operational needs, and for researching and analyzing international boundary issues in support of conflict prevention and border demarcation exercises. The UN Cartographic Section (UNCS) is maintaining primary geospatial data layers as a digital base map in global coverage and small scale (1:1 million), which includes international boundaries, sub-national administrative boundaries, coast lines, roads, railways, airports, drainages, water bodies, physical and populated places and urban areas. These are the fundamental data layers for any thematic mapping of the globe and regions as well as countries.
13. Launched in 2001, the Second Administrative Level Boundaries (SALB) dataset project is providing the countries and international community with a working platform that covers all the member states for the collection, management, visualization and sharing of data/information down to the second administrative level. The project, developed under the leadership of WHO, has been recently handed over to the UN Secretariat and supported by UN Statistics Division and the Cartographic Section.
14. In the context of the 2010 World Programme of Population and Housing Censuses, UNSD has organized a series of expert group meetings and regional and sub-regional workshops on census mapping with use of GIS and other geospatial technologies, census data processing, analysis and dissemination. UNSD, in partnership with UNICEF and UNFPA, has developed a free-cost software package, CensusInfo, to help countries disseminate their census data on CD-ROM and on the web.

## **2.5 UN Specialized Agencies**

15. The specialized agencies, programmes and funds of the United Nations have focused on geospatial information activities related to thematic mapping in support of their mandates (emergency and humanitarian assistance, poverty mapping, disease pandemics and public health, food security and agriculture,

environmental and natural resources, etc.). Most of these agencies are members of the UN Geographic Information Working Group<sup>4</sup>.

### **III. Developments in national, regional and global geospatial information**

#### **3.1 National initiatives**

16. Several resolutions of the UN regional cartographic conferences<sup>5</sup> have stressed that developing a functioning national spatial data infrastructure (NSDI) will better facilitate the availability and access to spatial data for governmental organizations, the private sector, universities and citizens in general. The NSDI provides a base or structure of practices among data producers and users that facilitates data sharing and use, and avoids costly duplication of data sets. It provides the common geospatial reference base within the country on which thematic geospatial information are built.
17. A growing number of member states are building their national spatial data infrastructures<sup>ii</sup> and enhancing the management of their geospatial information. There are considerable benefits to be derived from effective knowledge management at the inter-governmental level. Furthermore, many national mapping and geospatial agencies are increasingly willing to work on the international level and they have carried out exchange activities and bilateral cooperation work. It is increasingly felt that there is a need for the member states to share their experiences and to engage in discussion on policy and technical issues on geospatial information.

#### **3.2 Regional initiatives**

18. At the regional level, cooperation on geospatial information projects is emerging as in the case of the geodetic reference system for the Americas (SIRGAS), a unique reference frame that has been established for the American continent. Asia has been carrying out the same geodetic reference work for the region (Asia Pacific Regional Geodetic Project) and developing the Asia Pacific Spatial Data Infrastructure (APSDI) Clearinghouse Portal. The African Geodetic Reference Frame (AFREF) project has been recently set up to create a unified geodetic reference frame for Africa<sup>iii</sup>. In Europe EUREF<sup>iv</sup> - a sub-commission of the International Association of Geodesy is responsible for the maintenance of the European Reference Frame (ETRS89).
19. In Europe, significant steps have been taken to establish and develop a comprehensive spatial data infrastructure- called the Infrastructure for Spatial

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<sup>4</sup> UNGIWG is an inter-agency working group, established in March 2000 to coordinate activities and recommend guidelines and policies concerning geospatial information within the UN system. The Working Group consists of focal points from agencies throughout the system.

<sup>5</sup> Resolution no.14 of the fourteenth UNRCC-AP, Bangkok, 3-7 February 1997; resolution no.4 of the sixth UNRCC-A, New York, 2-6 June 1997; resolutions no.5 6 and 7 of the seventh UNRCC-A, New York, 22-26 January 2001; resolution no.1 of the sixteenth UNRCC-AP, Okinawa, Japan, 14-18 July 2003; resolutions no.1 and 2 of the eighth UNRCC-A, New York, 27 June-1 July 2005; and resolution no.4 of the seventeenth UNRCC-AP, Bangkok, 18-22 September 2006.

Information in Europe (INSPIRE). This directive<sup>v</sup>, which entered into force in 2007, aims to make geospatial information more readily available for policy making across the European community. INSPIRE is based on the infrastructures for spatial information established and operated by the Member States of the European Union. It addresses 34 spatial data themes needed for environmental applications, with key components specified through technical implementing rules. This makes INSPIRE a unique example of a legislated “regional” approach<sup>vi</sup>, which is promoted by the European Commission and also by many European organizations such as EUROGI<sup>vii</sup>.

20. The Permanent Committee on GIS Infrastructure for Asia and the Pacific (PCGIAP)<sup>viii</sup>, the Permanent Committee on Spatial Data Infrastructure for the Americas (PC-IDEA)<sup>ix</sup>, the Committee on Development Information, Science and Technology (CODIST) for Africa<sup>x</sup>, and EuroGeographics which is an organization of European national mapping, land registry and cadastral agencies<sup>xi</sup>, are inter-governmental bodies that have been established to coordinate geospatial information activities in the countries of their respective regions. In Africa, discussions have been going on for sometime at various levels and fora to set-up such an umbrella organization to coordinate issues related to spatial data infrastructure in the continent.

### **3.3 Global initiatives**

21. The use of geospatial information is becoming a major thrust of initiatives within the global community. There have been already underway several programs for implementing transnational geo-spatial data infrastructures, by government, military and commercial interests, which aim to improve quality of observations and interpretation, manage large quantities of global data, and communicate the results of global change research to the international community. Below are examples of some major initiatives.

#### Global Spatial Data Infrastructure (GSDI)

22. The Global Spatial Data Infrastructure Association (GSDI)<sup>xii</sup> is a non-profit organization comprising agencies, firms, and individuals from around the world. The purpose of the organization is to promote international cooperation and collaboration in support of local, national and international spatial data infrastructure developments that will allow nations to better address social, economic, and environmental issues of pressing importance.

#### Global Earth Observation System of Systems (GEOSS)

23. The Group on Earth Observations (GEO) is coordinating international efforts to build a Global Earth Observation System of Systems (GEOSS). This emerging public infrastructure is interconnecting a diverse and growing array of instruments and systems for monitoring and forecasting changes in the global environment. This “system of systems” supports policymakers, resource managers, science researchers and many other experts and decision-makers. Currently, 80 countries are members of this organization.

### Global Map

24. Global Mapping Project<sup>xiii</sup> is an international cooperation initiative, launched in 1996, through voluntary participation of national mapping organizations in the world, and led by the International Steering Committee for Global Mapping (ISCGM) and its Secretariat, the Geospatial Information Authority of Japan (GSI). Global Map aims to develop digital geo-information framework datasets ensuring spatial resolution at 1 km (scale of 1:1 million), with standardized specifications and available to everyone at marginal cost. Global Map datasets consist of 8 basic layers (Boundaries, Drainage, Transportation, Population Centers, Elevation, Land Cover, Land Use, and Vegetation). Currently, 180 countries and regions including Antarctica are participating in the project. Datasets for 71 countries and 4 regions have been released, covering 60% of the whole land area, and those for another 64 countries are being validated for future release.

### Multinational Geospatial Co-Production Program

25. Since its inception in November 2003, the Multinational Geospatial Co-Production Program (MGCP) has been working toward developing international cooperative production and coordination of digital vector data (scale of 1:50,000) based on high-resolution satellite imagery in high-interest regions where there are inadequate data. At present, 28 nations are participating in the project<sup>xiv</sup>. All MGCP data co-producers are populating the dataset at International Geospatial Warehouse (IGW), which is established and maintained by the United States National Geospatial-Intelligence Agency (NGA), for storage, exchange and use of geospatial information. The project is scheduled through December 31, 2011.

### Other professional initiatives

26. The Cambridge Conference<sup>xv</sup>, organized by the UK Ordnance Survey, is held every four years with an interim meeting, the Cambridge Conference Exchange, held in the intervening period. It brings together the Chief Executives of national mapping agencies from across the world to discuss ideas and share experiences.
27. The Joint Board of Geospatial Information Societies is a coalition of leading international geospatial societies<sup>xvi</sup> set up to speak on behalf of the geospatial profession at international level, especially to the United Nations and other global stakeholders. The JB GIS is a co-operation network with no obligations to the membership and no membership fees<sup>xvii</sup>.
28. International standards for exchanging geospatial & temporal data have been in development since early 1990s, mainly through the work of International Standard Organization Technical Committee (ISO/TC) 211 on Geographic information/Geomatics and the Open Geospatial Consortium<sup>xviii</sup> (OGC). While ISO/TC-211 produces ISO International Standards for Geographic



information/Geomatics through a country-driven balloting process, the OGC is an international industry consortium of over 423 companies, government agencies and universities developing and establishing common interfaces that "geo-enable" the Web and mainstream information technology (IT). Their work can be seen as complementary in the sense that ISO/ TC-211 standards form the foundation and OGC specifications implement the standards.

#### **IV. Global mechanism on GGIM**

##### **4.1 Need for a global mechanism**

29. At present, the following gaps in the management of geospatial information globally have been identified:
30. (a) a lack of UN inter-governmental processes that could deal with global geospatial information and work with member states for setting global norms on geospatial information, to develop common tools and to bring geospatial information to bear on global policy issues. Among the expert community of member states, there is a general recognition of the need for a global mechanism, a UN multilateral consultative process to effectively coordinate ongoing work in the wide field of geospatial information.
31. (b) Without such a global coordinating mechanism, the risk of further fragmentation is very high. This will greatly hamper the development of national spatial infrastructure and the coordinated use of global geospatial information.
32. (c) Current UN activities have supported the member states in cartography, the standardization of geographical names and the deployment of GIS technology. These are important work and are very well received by the member states. However, there are many more components of a geospatial information infrastructure which the UN could facilitate such as demographic, health, environmental, topographic, cadastral and economic information. This was recognised as early as 1948 when the UN resolution asked for a coordinated programme of international cartography and recognized the importance of maps to global activities<sup>6</sup>.
33. (d) The various national, regional and global initiatives show that expanding the traditional role of cartography and aligning it with the management of geospatial information and spatial data infrastructure is much needed to cater to an extended base of users of information, who require more than just maps but rather location-based applications and services. Global issues such as climate change, natural disaster, food and epidemic crisis, peace and security, and humanitarian assistance all require strong support for geospatial information on a global scale.

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<sup>6</sup> See ECOSOC resolution 131 (VI) of 19 February 1948 on "Co-ordination of Cartographic Services of Specialized Agencies and International Organizations".

34. Establishing a more formal framework would enable member states to develop effective strategies on how to build and strengthen capacity for the management of geospatial information, especially in developing countries, and help address the global challenges that are facing the current world, which are interconnected, interdependent, and quintessentially geographical with cross-border and global impacts. The successful response in addressing these global challenges in the years to come, such as natural disasters or pandemics, will depend largely on the quality of the information available to users, and the ways to manage and share essential data.
35. Such a global mechanism, under the auspices of the United Nations, could furthermore raise awareness of politicians and decision-makers of the scope and significance of geospatial (or “location-based”) information, its powerful analytical potential when effectively integrated with statistical and other information systems, and ultimately that location-based information is critically important for sustainable socio-economic development.

#### **4.2 The Committee of Experts on GGIM**

36. Based on the views expressed during extensive consultations among Member States at various informal expert meetings<sup>xix</sup>, it is proposed that a Committee of Experts be established similar to that of the UN Committee of Experts on Geographic Names<sup>7</sup>. The Expert Committee would meet annually and be charged with the identification and coordination of specific areas of work and the preparation of policy papers for consultation among member states.
37. A UN Committee of Experts would perform the following functions:
  - (a) Provides a global forum for discussion on GGIM issues than what is currently offered by the UN Regional Cartographic Conferences (held in Asia and the Pacific, Africa, and the Americas).
  - (b) It will bring the regional perspectives together and help evolve a global community of practice.
  - (c) It will help enhance institutional integration of geospatial information with other types of information such as statistical information or humanitarian assistance information.
  - (d) Its dialogue with the UN Statistical Commission, the Population Commission and other specialized inter-governmental bodies would help create a common information base.
38. The draft Terms of Reference of the proposed Committee are provided in annex.
39. To support the work of the UN Committee of Experts, it is proposed that a UN Forum on Global Geospatial Information Management be organized from time to time to provide an opportunity for in-depth discussion and consultation with

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<sup>7</sup> During the discussions on the mission and scope of this global mechanism, the Experts recommended the use of the terminology “geospatial” information, instead of “geographic” information, because it is more comprehensive and now more commonly used.

the government, the non-government organizations and the private sector. Such a Global Forum could bring all member states and stakeholders together and address current critical issues and exchange information, in particular for sharing best practices in legal and policy instruments, institutional management models, technical solutions and standards, the interoperability of systems and data and the sharing of mechanisms that guarantee that geospatial information and services are accessible easily and in a timely manner.

40. Some member states have expressed their willingness to host such a Global Forum. The Republic of Korea has expressed its commitment to host the first Global Forum in Seoul, 25-28 October 2011.

## **V. Conclusions/Recommendations**

41. Many member states are using geospatial information as an important element in national policy formulation, but, despite the progress made by most developed countries in this area, many developing countries are still experiencing a serious lack of institutional capacity to harness the enormous potential of geospatial information technologies and to build a sustainable national infrastructure. This is combined with a lack of effective cooperation among countries.
42. Regional efforts, like those of the European Union to create the Infrastructure for Spatial Information in Europe (INSPIRE) directive, and those of the Permanent Committees on Spatial Data Infrastructure of the Americas (PC-IDEA) and on GIS Infrastructure for Asia & the Pacific (PCGIAP) to create regional spatial data infrastructures, are an indication of the value of such cooperation. Increased international cooperation in this field could help to develop the full potential of geospatial information and the underlying technologies and make them more useful and accessible to a wide range of users and policy makers.
43. In response to the rapid rise in the availability and access to geospatial information and the need for such information in humanitarian responses and disaster relief operations, the member states have come to the realization that a global consultation mechanism is required to address critical management issues concerning geospatial information in a comprehensive manner. Such a global inter-governmental mechanism would serve as the apex entity of the global geospatial information community to provide global coordination and support.
44. The member states and international professional bodies have widely supported the idea of establishing a UN Committee of Experts on Global Geospatial Information Management (GGIM). The United Nations Regional Cartographic Conference for Asia and the Pacific, explicitly recognized the absence of a United Nations consultation process which is led by member states that deals with global geospatial information management, and the request of member states for a global mechanism - the work to develop common frameworks and

tools and a process of standardization, for which the United Nations has a key mandate.

45. The Council may wish to consider the following recommendations to address the gaps in global cooperation on geospatial information management and sharing:
1. take note of the Secretary-General report on “Global Geospatial Information Management” and the urgent need to take concrete actions to foster and strengthen global cooperation in the area of geospatial information management, particularly through the United Nations;
  2. encourage stronger engagement by Member States, both at technical and policy level, through the establishment of a global mechanisms to address issues of the management and sharing of global geospatial information;
  3. decide to establish the United Nations Committee of Experts on Global Geospatial Information Management to perform the functions listed in the annexure to this report;
  4. recognize the need to hold high level discussions through a global Forum and welcome the offer by the Republic of Korea to host the First United Nations Forum on Global Geospatial Information Management in Seoul, from 25-28 October 2011;
  5. encourage stronger efforts to be made at national, regional, and global levels by Member States and international organizations for facilitating the transfer of knowledge and expertise to develop capacity of the developing countries in this field.

**Annex: United Nations Committee of Experts on Global Geospatial Information Management**

**Terms of Reference**

The proposed terms of reference of the Committee of Experts on Global Geospatial Information Management include the basic aims of the Committee, its membership and composition, term of office of members, reporting procedures, frequency of meetings, secretariat, meeting documentation and resource requirements.

The basic aims of the Committee of Experts are:

- (i) To play a leadership role in setting the agenda for the management of global geospatial information and to promote its development to address key global challenges (poverty reduction, sustainable development, climate change, early warning, disaster management, peace and security, environmental quality, economic crises, etc.);

- (ii) To provide a vehicle for liaison and coordination among Member States, and between Member States and international organizations, including the United Nations Regional Cartographic Conferences and their regional Permanent Committees on Spatial Data Infrastructures, on work associated with the management of global geospatial information and to demonstrate the benefits to be derived from this coordination;
- (iii) To propose actions to guide the development of principles, policies, methods and mechanisms for standardization, interoperability and sharing of geospatial data and services, and to help countries develop the full potential of the geospatial information and the underlying technology and to make it accessible to and effectively used by a broad range of users;
- (iv) To compile and disseminate best practices of national, regional and international bodies dealing with legal instruments, management models and technical standards for the building of spatial data infrastructures- as one of the vital elements of information management, and facilitate the dissemination of these practices and experiences to Member States of the United Nations;
- (v) To provide a platform to develop effective strategies on how to build and strengthen capacity for the management of geospatial information, especially in developing countries;
- (vi) To support the organization of the United Nations Forum on Global Geospatial Information Management, develops its agenda, and facilitates its arrangements;
- (vii) To implement the tasks assigned as a result of the resolutions adopted at United Nations Forum on Global Geospatial Information Management.

*Membership, composition and term of office*

The Committee comprises experts from all member states and international organizations. The membership will be drawn from the interrelated fields of surveying, geography, cartography and mapping, remote sensing, land and geographic information systems, and environmental protection, in order to avoid the need to engage the assistance of consultants and so as to reflect an adequate geographical and gender balance. The Committee will elect two co-chairs during each session from its membership. The Committee could also establish, as and when needed, informal working groups to deal with specific issues related to its work programme.

*Reporting procedure*

The Committee of Experts will report to the Economic and Social Council.

*Frequency of meetings*

The Committee of Experts will normally meet annually. In years when a United Nations forum on global geospatial information management is held, it will meet on dates immediately preceding the opening date of the forum and immediately following the closing date of the forum.

#### *Secretariat*

The Committee will be supported by UN Statistics Division of the Department of Economic and Social Affairs and the Cartographic Section of the Department of Field Support.

#### *Meeting documentation*

Documentation for the session includes the agenda, the previous report of the Committee, thematic notes prepared by working groups or sub-committees, notes by the Secretariat and other relevant documentation of external experts or expert groups.

#### *Resource requirements*

No fees or honoraria are paid to the Members of the Committee for any work undertaken for the United Nations. No funds have been appropriated under the regular budget of the UN. This activity will be absorbed under current budget.

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i Interestingly, in the process of UNGEGN's establishment, it was from the First UNRCC-AP in 1955 that a resolution was developed through the agenda item "Adoption of a standard method of writing geographical names on maps". At the ECOSOC meeting of 1959, resolution 715A(XXVII) then became the foundation stone of all the work carried out by UNGEGN and by the subsequent UN Conferences on the Standardization of Geographical Names.

ii For example, the Australian Spatial Data Infrastructure (ASDI), the Brazilian National Spatial Data Infrastructure (INDE), the Canadian Geospatial Data Infrastructure (CGDI), the Chilean National Spatial Data Infrastructure (SNIT), and the US National Spatial Data Infrastructure (NSDI), just to name a few.

iii "The African Geodetic Reference Frame (AFREF) was conceived as a unified geodetic reference frame for Africa to be the fundamental basis for the national and regional three-dimensional reference networks fully consistent and homogeneous with the International Terrestrial Reference Frame (ITRF). ITRF is the global reference frame system for the earth as adopted by the International Association of Geodesy (IAG). When fully implemented, it will consist of a network of continuous permanent GPS stations such that a user anywhere in Africa would have free access to GPS data and products and would be at most 1000 km from such stations. Its full implementation will include a unified vertical datum and support for efforts to establish a precise African Geoid". For more details: <http://geoinfo.uneca.org/afref/>.

iv EUREF is the IAG Reference Frame Sub-Commission for Europe, integrated in the Sub-Commission 1.3, Regional Reference Frames, under Commission 1 – Reference Frames, following the implementation of the new IAG structure at the IUGG (International Union of Geodesy and Geophysics) General Assembly held

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in Sapporo, 2003. The Sub-Commission EUREF was founded in 1987 at the IUGG General Assembly held in Vancouver. EUREF deals with the definition, realization and maintenance of the European Reference Frame - the geodetic infrastructure for multinational projects requiring precise geo-referencing (e.g. three-dimensional and time dependent positioning, geodynamics, precise navigation, geo-information) - in close cooperation with the IAG components (Services, Commissions, and Inter-commission projects) and EuroGeographics, the consortium of the National Mapping Agencies (NMA) in Europe.

<sup>v</sup> Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community (INSPIRE) was published in the official Journal on the 25th April 2007. The INSPIRE Directive entered into force on the 15th May 2007 to ensure that the spatial data infrastructures of the Member States are compatible and usable in a Community and transboundary context, the Directive requires that common Implementing Rules (IR) are adopted in a number of specific areas (Metadata, Data Specifications, Network Services, Data and Service Sharing and Monitoring and Reporting). These IRs are adopted as Commission Decisions or Regulations, and are binding in their entirety. The Commission is assisted in the process of adopting such rules by a regulatory committee composed of representatives of the Member States and chaired by a representative of the Commission.

<sup>vi</sup> See the information paper, prepared by Mr. Alessandro Annoni, European Commission/INSPIRE for the Second Preparatory Meeting on GGIM, New York, 10-11 May 2010. ([http://ggim.un.org/docs/meetings/May2010/papers/INSPIRE\\_DIRECTIVE.pdf](http://ggim.un.org/docs/meetings/May2010/papers/INSPIRE_DIRECTIVE.pdf))

<sup>vii</sup> EUROGI had about 20 member countries. Its objectives were to encourage the greater use of geospatial information (GI) in Europe, to raise awareness of the value of GI and its associated technologies, to work towards the development of strong national GI associations in all European countries, to facilitate the development of a European Spatial Data Infrastructure, and to represent European interests in the Global Spatial Data Infrastructure. EUROGI has recently opened its doors to include not only national GI Associations but also members from Industry, Academic institutions, Public Sector bodies, Not-for-Profit organizations, and interested Individuals, setting a network of thousands from the European GI community.

<sup>viii</sup> Permanent Committee on GIS Infrastructure for Asia and the Pacific (PCGIAP) operated under and reported to the UN Regional Cartographic Conference for Asia and the Pacific. Its membership consisted of 55 nations in the region. Its objective was to provide a forum for nations in the region to cooperate in the development of the Asia Pacific Spatial Data Infrastructure (APSDI). PCGIAP had four working groups with the respective tasks of establishing a regional geodetic infrastructure, formulating policy for sharing fundamental data, examining issues related to cadastre, and advocating institutional strengthening and capacity building.

<sup>ix</sup> Permanent Committee on Spatial Data Infrastructure for the Americas (PCIDEA) had 21 member nations and four working groups. Its main objectives were to create seamless regional spatial data, to promote the formation of regional spatial policy and NSDI development, to develop a regional spatial data infrastructure (RSDI) for the Americas in the context of commonly adopted standards and practices of GSDI, to act as an inter-American forum for better understanding of national and regional needs, and to place geo-information production as a strategic sector within national development strategies.

<sup>x</sup> “The Committee on Development Information, Science and Technology (CODIST) is one of the seven subsidiary bodies of the Economic Commission for Africa (ECA) composed of senior officials and experts from member States who meet on a biennial basis. The role of CODIST is to review challenges and issues pertaining to the information and communications technology (ICT), geoinformation, science and technology sectors; formulate policies and strategies to address Africa’s development challenges; and determine priorities to be reflected in the work programme of the ICT, Science and Technology Division of ECA”. “Much attention has been paid to the development of SDI in Africa through the efforts of the CODI Subcommittee on Geo-information. Within the SDI initiative, 10 themes of fundamental data sets have been defined, an inventory of existing ones is in the pipeline, a metadata profile for Africa has been developed, commendable strides have been taken with the implementation of the African Geodetic

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Reference Frame (AFREF), and human capacity-building is improving”, (<http://www.uneca.org/codi/codist1/content/E-ECA-CODIST-1-INF-6-EN.pdf>).

<sup>xi</sup> EuroGeographics is an association formed in 2001 as the membership association and representative body of the European national mapping, land registry and cadastral agencies. It brings together 56 organizations from 44 countries across Europe and aims to further the development of the European Spatial Data Infrastructure through collaboration in the area of geospatial information, including topographic information, cadastre and land information. More details are provided on its website: <http://www.eurogeographics.org/>.

<sup>xii</sup> The Global Spatial Data Infrastructure Association (GSDI) is an inclusive organization of organizations, agencies, firms, and individuals from around the world, dedicated to international cooperation and collaboration in support of local, national and international spatial data infrastructure developments that would allow nations to better address social, economic, and environmental issues of pressing importance. The mission of the GSDI Association is to (i) serve as a point of contact and effective voice for those in the global community involved in developing, implementing and advancing spatial data infrastructure concepts; (ii) foster spatial data infrastructures that support sustainable social, economic, and environmental systems integrated from local to global scales, and (iii) promote the informed and responsible use of geographic information and spatial technologies for the benefit of society. GSDI has successfully conducted regular world conferences every 12-18 months since 1996; the last GSDI-12 was held in Singapore, 19-22 October 2010. More details are provided on its website: <http://gsdi.org>.

<sup>xiii</sup> The Global Mapping Project is an existing initiative for global geographic information management. It has achieved some solid results such as the release of Global Map Version 1 including Global Land Cover and Percent Tree Cover data in 2008 and technology transfer to the developing countries concerning the development of SDI. In 2009 Global Map Specifications Version 2 was adopted which reflected the opinions of participating countries to the project, and by 2012 Global Map Version 2 will be developed. Global Map Specifications are compliant with international standards including those of ISO/TC211, World Geodetic System is adopted as its coordinate system. In addition, “administrative boundaries” feature has administrative code and SALB code as its attribute. These characteristics enable Global Map to be used in combination with other geospatial information including statistics and satellite imagery. If the cooperation between national mapping organizations and national statistical organizations is strengthened for GGIM, the use of statistics through administrative codes will be fostered.. (<http://www.iscgm.org/cgi-bin/fswiki/wiki.cgi>).

<sup>xiv</sup> The 28 nations taking part in the Program are: Australia, Belgium, Bulgaria, Canada, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Italy, Latvia, Lithuania, Moldova, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Slovakia, Spain, Sweden, Turkey, United Kingdom, United States.

<sup>xv</sup> Cambridge Conference 2007, the international meeting of chief executives from national mapping organizations around the world, originated from a more modest meeting in the summer of 1928, when some leading surveyors were heading to Cambridge for the International Geographic Congress. The British Colonial Survey Committee decided to take advantage of this to organize an Empire Conference of Survey Officers - 45 people attended, representing countries from Australia to Zanzibar. This was a tremendous opportunity for all these surveyors with similar roles in very different places to meet, exchange ideas and share experiences. Scattered around the world, they rarely met or communicated with each other. The 1928 conference proved such a success, with many friendships forged, that it was repeated three years later. Since then, it has been organized at quadrennial intervals. As international events unfolded, the term Empire gave way to Commonwealth, and in recent years more delegates were being invited from non-Commonwealth countries, to give a wider scope to discussions. By 1995, the decision was taken to extend the Commonwealth meeting into a new Cambridge Conference - a global event for all national mapping organizations - always in Cambridge. It is now a modern inclusive event, keeping the traditional emphasis on opportunity for discussion, both formal and informal. <http://www.cambridgeconference.com/>



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<sup>xvi</sup> The major professional organizations, active in the field of geospatial information and leading in their respective field, who attended the UN preparatory meetings on GGIM are the International Cartographic Association (ICA), the International Federation of Surveyors (FIG), the International Society of Photogrammetry and Remote Sensing (ISPRS), the International Association of Geodesy (IAG), the International Geographic Union (IGU), and the International Hydrographic Organization (IHO). These non-profit professional organizations expressed their interest and willingness to assist countries and noted that a number of them have the potential to do this, since some already have working groups dealing with capacity building and training issues.

<sup>xvii</sup> The current members of the JB-GIS are the Global Spatial Data Infrastructure (GSDI) Association, IEEE Geoscience and Remote Sensing Society (IEEE-GRSS), the International Association of Geodesy (IAG), the International Cartographic Association (ICA), the International Federation of Surveyors (FIG), International Geographic Union (IGU), the International Hydrographic Organization (IHO), the International Map Trade Association (IMTA), the International Society of Photogrammetry and Remote Sensing (ISPRS) and the International Steering Committee for Global Map (ISCGM).

<sup>xviii</sup> The Open Geospatial Consortium (OGC) is an international industry consortium of 423 companies, government agencies and universities participating in a consensus process to develop publicly available interface standards. OGC® Standards support interoperable solutions that "geo-enable" the Web, wireless and location-based services and mainstream IT. The standards empower technology developers to make complex spatial information and services accessible and useful with all kinds of applications.

<sup>xix</sup> UNSD, in collaboration with UNCS, has organized three preparatory meetings of the proposed UN Committee of Experts on the Global Geospatial Information Management (UNCEGGIM) to consult with the member states on the mandate and terms of reference on this Committee of Experts, and the desirability of the First Global Forum on the Global Geospatial Information Management.