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Special reports on regional and thematic activities

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Note by the Secretary-General

Summary

The present paper summarizes the report¹ transmitted by the Secretary-General to the Committee on the regional and thematic activities of the following five entities: the Permanent Committee on GIS Infrastructure for Asia and the Pacific, the Permanent Committee for Geospatial Data Infrastructure of the Americas, the Committee on Development Information, Science and Technology of the Economic Commission for Africa, EuroGeographics and the Joint Board of Geospatial Information Societies.

The report submitted by the Permanent Committee on GIS Infrastructure for Asia and the Pacific describes the activities of the Permanent Committee's three working groups: (a) geodetic technologies and applications; (b) geospatial data management and services; and (c) spatially enabled Government and society. In addition, it describes the activities of the Economic and Social Commission for Asia and the Pacific. The report also addresses the growing concern and challenges in the Asia-Pacific region on geospatial information management.

The report submitted by the Permanent Committee for Geospatial Data Infrastructure of the Americas describes the Permanent Committee's activities related to: (a) institutional capacity-building; (b) standards and technical specifications; (c) best practices and guidelines for the development of spatial data infrastructures; (d) innovations in national geospatial information authorities; (e) knowledge gathering on topics relevant to spatial data infrastructures for the region; (f) assessment of the status of developments in spatial data infrastructures in the Americas; and (g) technological means for discussion related to spatial data infrastructures. The report provides an overview of the progress of work under the seven thematic areas.

* E/C.20/2012/1.

¹ The full report is available in the language of submission only from http://ggim.un.org/ggim_committee.html.

The report submitted by the Committee on Development Information, Science and Technology of the Economic Commission for Africa describes the efforts to promote the United Nations Initiative on Global Geospatial Information Management in Africa through the Addis Ababa Declaration on Geospatial Information Management, which was adopted by a representative group of African geospatial information practitioners in August 2011. Central to the Declaration is the African Action Plan on Geospatial Information Management.

The report submitted by EuroGeographics describes the regional activities in Europe with regard to: (a) the development of a technical infrastructure to deliver, as the European Location Framework, national reference data; and (b) the support from national geospatial information authorities to the European Commission's disaster and emergency management service by providing access to their national reference data, as stipulated in an agreement signed with the European Environment Agency.

The report submitted by the Joint Board of Geospatial Information Societies addresses the issues identified by the United Nations Initiative on Global Geospatial Information Management working group on inventory of issues. It provides information on the support and input that the Joint Board, collaboratively through its member organizations, can offer regarding the issues identified.

The Committee is invited to take note of the five reports.

I. Report of the Permanent Committee on GIS Infrastructure for Asia and the Pacific (PCGIAP)

A. Summary

1. The present report is a summary of the proceedings of the “Permanent Committee on GIS Infrastructure for Asia and the Pacific (PCGIAP),” which was established in 1995 under a resolution adopted at the 13th United Nations Regional Cartographic Conference for Asia and the Pacific (UNRCC-AP). The report includes the summary of the recent activities of its three working groups under following topics; Geodetic technologies and applications, Geospatial data management and services, and Spatially enabled government and society, as well as the activities of the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP). In addition, the report addresses growing concern and challenges in the Asia-Pacific region on geospatial information management. As the core challenges, adoption of common geodetic framework, data sharing, and the leadership of the national geospatial information authorities are highlighted. In conclusion, future commitment of PCGIAP towards GGIM goals with the collaboration of related organizations is stressed.

B. Background

2. National geospatial information authorities in Asia and the Pacific region regularly meet under the auspices of the UNRCC-AP, where diverse aspects of cartographic activities are discussed and experiences are shared across regional boundaries. Amid rapid socio-economic changes and huge technological progress in geospatial information as well as the emerging trends in the early 1990’s for the spatial data infrastructure development, the members increasingly recognized changing needs in geospatial information among people and governments.

3. In response to these growing needs, a resolution was adopted at the 13th United Nations Regional Cartographic Conference for Asia and the Pacific (UNRCC-AP) to the effect of establishing a permanent committee dedicated to the development of a regional GIS framework, and the “Permanent Committee on GIS Infrastructure for Asia and the Pacific (PCGIAP)”, as it was formally named, was established in Kuala Lumpur, Malaysia in 1995.

4. PCGIAP has been undertaking various projects since its establishment to develop a regional spatial data infrastructure by setting up working groups and managing them through annual plenary meetings and semi-annual executive board meetings. Currently, three working groups are actively involved in the following topics that have been identified as the outstanding issues for the region: Geodetic technologies and applications; Geospatial data management and services; and Spatially enabled government and society. These activities have been contributing to addressing a number of regional agenda, including the development of geodetic reference framework and the improvement of land administration. Our broader cooperation with relevant global organizations, including ISCGM, SALB project, and ISO/TC 211, has also been successful and productive for the development of a regional framework dataset covering 22 countries and for the prototyping of a metadata profile for the region. Given the complex scenario in the Asia-Pacific region, which consists of a broad mix of 56 developed and developing nations, from large continents to small islands, we encounter various economical, political, and cultural challenges. Some countries launch earth observation satellites, develop global/regional satellite positioning systems of their own, and enjoy rapid growth of geospatial industry. On the other hand, other countries are working on modernizing their national mapping program by introducing the latest digital technologies and receiving financial support from donor agencies. Such diversity, combined with the rapid and significant growth of the community that contains 60% of the world’s population, however, puts the region of Asia and the Pacific in a position to provide an appropriate model in identifying global issues in geospatial information management. In this connection, PCGIAP, with its 17 years of successful experience in responding to the regional needs of geospatial information management, will be able to play a vital role in addressing global agenda with the greatest positive impact on GGIM goals, and is committed to contributing to the work of UNCE-GGIM.

5. This report highlights the recent activities and achievements of PCGIAP as well as relevant regional organizations, particularly ESCAP, and identifies major issues and challenges in the region on geospatial information

* E/C.20/2012/1.

management that should also be addressed and discussed in the global context.

C. Regional activities

6. There have been a growing number of regional activities that are relevant to better management of geospatial information in Asia-Pacific region. This section highlights some of those activities conducted by PCGIAP, ESCAP and the industry in the region.

1. Regional geodetic reference framework

7. A common underpinning geodetic layer based on a standard geodetic datum is one of the fundamental requirements of spatial data infrastructure. However, a standard regional geodetic reference framework is still absent from the Asia-Pacific region, known as being most active in tectonic activities on the earth, and therefore some member countries still rely on local geodetic datum. In this connection, PCGIAP has been developing the Asia-Pacific Reference Frame (APREF) based on the data of GNSS networks from about 420 stations in 28 countries in the region since 2010. In order to facilitate the transformation of member countries from a local to a geocentric datum and contribute to the densification of geodetic network of the region, PCGIAP has also been conducting annual GNSS/GPS campaign since 1997. This project assisted the member countries including Australia, China, Indonesia, Japan, the Republic of Korea and the Philippines in improving their GNSS networks.

2. Survey on the status of SDI

8. In order to review and make necessary adjustment in the PCGIAP activities, a survey was conducted on the status of Spatial Data Infrastructure (SDI) development of each member country in the region by sending a questionnaire in September 2011. As of 1 June 2012, a total of 19 member countries out of 56 have responded to the questionnaire. The survey includes questions on responsible government institution, relevant legislation, existence of strategy on SDI development, technical standards, online data services, coordination mechanism on SDI, and market of geospatial industry. The result shows that the responded member countries can be largely divided into two categories: some have been making progress in establishing institutional and legal framework under SDI strategies to facilitate their SDI development with international technical standards and online data services in place; and the others have not yet initiated their SDI program. The member countries in the latter group strongly suggest the need of knowledge and information exchange among the member countries in the region to get technical support/transfer.

3. Land administration forum

9. PCGIAP has been primarily focusing on subjects related to SDI development based on topographic mapping. However, it is found that during the last few years there has been growing recognition and interest in the region for a better and more formal land administration to facilitate good governance and to support secure ownership of land, investments and other private and public interests in real estate. Starting from an international workshop in 2007 in Mongolia, three additional international workshops have been successfully convened in the region (Malaysia, Iran, and Australia) on land administration under the auspices of PCGIAP. In particular, the 3rd Land Administration Forum in Iran have successfully attracted over 410 people from 15 countries and 4 international organizations, and adopted the Tehran Declaration on Land Administration to Support Sustainable Land Markets and e-Government. Such elevated interests on land administration in the region, and the importance of the role that land administration and the cadaster plays in providing large-scale, people-relevant geospatial data within SDI's, led the 18th UNRCC-AP in 2009 to adopt a resolution. The resolution recommends that PCGIAP facilitate an annual land administration forum within the bounds of spatially enabled governments to discuss and share wide ranging land administration issues including access to land and security of tenure, the role of land administration in supporting sustainable development, cadastral surveying and mapping, and best practices and experiences.

4. Management against natural disasters

10. Effectiveness of disaster risk reduction and management depends greatly on the efficiency in managing relevant information, particularly the geospatial information. However, due to ongoing and persistent factors that are challenging

the establishment and use of geo-information in disaster risk management, disaster management authorities in developing countries, especially least developed countries, land locked developing countries and small island developing states in the Asia-Pacific region have trouble with disaster preparedness, response and recovery. A number of endorsed study activities were conducted under international collaborative efforts in order to support the disaster management, improving access to data in a number of ways including capturing timely data to support regional hazard assessment, and enabling nations to understand and pursue the principles of data integration.

11. For example, in Jakarta, the Australia-Indonesia Facility for Disaster Reduction (AIFDR) was established in April 2009 in order to quantify the prevailing natural disaster hazard and risks in Indonesia. As one of tangible responses of AIFDR, post-disaster data collection was supported after the earthquake in West Sumatra, Indonesia on 30 September 2009. This information facilitated the development of Indonesia's reconstruction policies and drove AIFDR to implement the Build Back Better Campaign to encourage safer building practices through a massive public awareness and advocacy campaign. This first systematic survey of the range of earthquake damage for input to community risk assessment was jointly led by Geoscience Australia and Indonesian government. It will also develop a more integrated geospatial capability of Indonesian and the Asian region to support the disaster management through the partnerships with APEC, ASEAN and the United Nations.

12. Another collaborative study was conducted between the Philippines and Australia. The Philippine National Mapping and Resource Information Authority (NAMRIA) has undertaken a scoping mission with Geoscience Australia since May 2009, with the purpose of identifying specific areas of engagement where Geoscience Australia could support NAMRIA in the delivery of fundamental spatial data for enhanced natural hazard identification and risk modelling. The scoping mission found that the ability of NAMRIA to deliver timely base datasets, in part through the implementation of a spatial data infrastructure, was the highest mapping priority and this would facilitate more efficient dissemination of data and products to NAMRIA's clients, many of whom undertake in natural hazard analysis and mapping. By the recommendation of scoping mission Geoscience Australia provided a targeted technical assistance to NAMRIA over the period between July 2009 and June 2010. This project is now completed and under the umbrella of this case study, a new activity "Enhancing Risk Analysis Capacities for Flood, Tropical Cyclone Severe Wind and Earthquake for greater Metro Manila Area, Philippines" has been endorsed.

5. Spatially Enabled Government and Society

13. Spatial enablement refers to the ability to add location to almost all existing information. This requires information collection, update, analysis, representation, and communication in a consistent manner to underpin good governance, public safety and security towards the well being of societies. In order to achieve this goal, PCGIAP undertook a study to understand, compare and determine the state of spatially enabled government and society, including levels of maturity and governance of SDI in the region. In February 2012, an International Symposium on Spatially Enabled Government and Society – "Towards Spatial Maturity" was organized by PCGIAP in collaboration with FIG. The symposium identified key issues that will make the spatial enablement from a concept to the reality in the region, and adopted "Kuala Lumpur Declaration on Spatially Enabled Government and Society," while reaffirming the importance of the initiative of the United Nations to implement global mechanisms to foster geospatial information management among the Member States, international organizations, and the private sector. The Declaration reflects the future vision of the community towards transcending the concept of "special enablement" to unlock the wealth of the existing knowledge about the environment, its legal and economic situation, its existing and potential resources, its historical and future use, its ownership and custodianship that are foundational towards informed policies, frameworks, decisions and actions.

6. Project of improving disaster risk preparedness by ESCAP

14. In order to address the issues of non-interoperability in geo-referenced information collected by different agencies and to strengthen the capacity of disaster management authorities, the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) embarked on a project entitled "Improving disaster risk preparedness in the AP region". The project aims to strengthen government capacities in the implementation of the Hyogo Framework for Action (HFA) through the use of standardized geo-referenced/geospatial information tools for the implementation of disaster risk preparedness, and timely early recovery efforts in the Asia-Pacific region, particularly least developed countries, land locked developing countries and Pacific island developing countries. The project has been actively

implemented by organizing an Expert Group Meetings on geo-reference disaster risk management information system in Asia-Pacific region, and by carrying out the follow-up activities including the organization of the workshops for high level policy makers, technical training programmes and advisory services; development and use of geo-referenced information portals/platforms for disaster risk management; and establishment of the community of practice (CoP) of spatial data infrastructure.

7. Activities of the industry

15. The GIS market in Asia-Pacific region is expected to grow at a Compound Annual Growth Rate (CAGR) of 14 percent for the period of 2010-2014, according to a research report published in 2011 by TechNavio, a market research company. This strong growth prediction of the geospatial industry in the region is proved by the Chinese geospatial industry, whose growth rate exceeded 300 percent during the period of 2006-2010 with ten geospatial industrial parks in the country which will be opened starting from 2012. The region now has two advocates, both based in India, which publish internationally well acknowledged and widely distributed magazines. One is Geospatial Media and Communications Pvt Ltd and the other Centre for Geo-Information Technologies. The former now regularly organizes the Geospatial World Forum which becomes one of the largest geospatial conferences in the world today, and leads the discussions on technological trends in the industry.

16. In light of such strong and growing geospatial industry, it would not be difficult to predict that many new technologies and leading companies will emerge from this region in the near future, and the region will largely impact the global geospatial industry, which is currently dominated by the Western world.

D. Regional issues and challenges

17. In its paper submitted to the First High Level Forum on the United Nations Global Geospatial Information Management in 2011, PCGIAP identified three issues pertaining to the region based on its experiences in developing the regional spatial data infrastructure and on the results of preliminary analysis of a questionnaire conducted in September 2011 for the member countries. These issues included: implementation of common geodetic framework; interagency data sharing; and the leadership of national geospatial information authorities. In addition to these issues, the latest analysis of the questionnaire with additional responses identified the need of knowledge transfer among the member countries.

1. Implementation of common geodetic framework

18. In light of the large tectonic activities in Asia-Pacific region, implementation of a well-maintained common regional geodetic reference framework is the most fundamental part of the regional spatial data infrastructure.

19. However, since there is no internationally acknowledged norm or agreement on the responsibilities of national governments on geodetic datum, the adoption of geocentric datum completely depends on an independent decision made by each national government. In this connection, there needs to be a mechanism that mandates each national government to adopt and maintain a geocentric datum in harmony with the standard regional and global frameworks.

20. Looking at this issue, PCGIAP has been conducting a project of developing the APREF, a regional geocentric datum. The project has provided much technical information and support in introducing a geocentric datum to those nations that have been still using a local datum. While this project seems to result in increasing the number of member countries that have adopted a geocentric datum, still many member countries have yet to do so, and therefore are expected to have difficulty in taking advantage of the latest geodetic technologies, including GNSS. Prompt implementation of a geocentric datum to these countries will be a challenge given that many economic activities including transportation, civil engineering, farming, financial transactions, military operations, and disaster management are now heavily relying on the GNSS technologies.

2. Interagency Data sharing

21. Data sharing between different organizations, not to mention different countries, often faces inconsistencies of

standards, specifications, and data policies, as well as the lack of people's willingness to share their data with others. In light of the existence of well established international standards and interoperability specifications, resolving inconsistencies in technical standards and specifications may appear straightforward. Yet, the analysis of the questionnaire conducted by PCGIAP in 2011 demonstrates that not every country in the region has adopted international standards on geospatial information as their national standards. This implies that data discovery and sharing may not be straightforward within each nation, not to mention between countries.

22. The importance of data sharing becomes a prominent issue at the time of disasters when governments need to quickly understand the types and the extent of the damage, and to make decisions for timely and appropriate responses. Since no arrangement works well at the time of disasters unless it is proved to work well under normal circumstances, a regional framework needs to be set up to enable the countries to easily share geospatial information with other countries without technical difficulties or complicated procedures. This may be of particular importance for the Asia-Pacific region that has been highly vulnerable to many natural disasters including floods, landslides, volcanic eruptions, earthquakes and tsunamis. Furthermore, vulnerabilities to disasters are increasing in some of the major cities in the region due to population growth, urbanization and climate change.

3. Leadership of national geospatial information authorities

23. The traditional functions and operational roles of national geospatial information authorities (NGIAs) have been subject to significant changes due to advanced information and communication technologies, and emergence of crowd-sourcing in geospatial information development and delivery. These new technologies brought new challenges to the geospatial community. Along with such development there is a need to shift their focus from the delivery of cartographic products to the policy and governance that will enable geospatial information to be leveraged, integrated and delivered appropriately under necessary regulations and in a timely manner. While some NGIAs in the region are now playing a leading role in their governments on the policy development as the national authority on geospatial information, the survey through questionnaire revealed that others are not in a position to lead the governments as the national authority. This makes PCGIAP difficult to develop regional policies on geospatial information and disseminate them to the member countries in the region. In this connection, the role of NGIAs needs to be leveraged with enhanced capacity and adequate mandate to lead their governments on policy development on geospatial information.

4. Knowledge Transfer

24. PCGIAP has organized workshops and training courses to promote exchange and sharing of information among member countries. However, demand for information exchange and sharing is growing and member countries are seeking more opportunities as well as technical support from PCGIAP. One way of meeting this demand is through the collaborative study under a consolidated policy. Such studies and projects are expected to encourage informal exchange of information, technological transfer, and mobility of each member countries professions. As particular topics for exchange and sharing of information, NGIA's role and responsibilities for disaster responses, disaster mitigation/preparation/management strategies for earthquake, tsunami, floods, forest fire, and global warming are suggested. Correspondingly, it is proposed that sustained efforts be required for facilitating workshops and training courses as well as dedicated meeting or forum on previous themes on a regular basis for follow up.

5. Cooperation between regional organizations

25. PCGIAP has been working closely with the member countries to take measures on the regional geospatial issues, while ESCAP has also been facilitating the use of geo-referenced information platforms for disaster risk management in the region. Under the framework of UN-GGIM, it is expected that these initiatives along with others will be collaborating closely to improve the geospatial information management in the region.

E. Conclusion

26. Since the establishment of PCGIAP in 1995, the cooperation, goodwill and dedication of many countries, organizations and people in the region have enabled the PCGIAP to make some important achievements in the past seventeen (17) years. These achievements enabled PCGIAP to be recognized as one of the important partners in the global

geospatial information community representing Asia and the Pacific. However, the situation in the global geospatial community has changed dramatically since its inception. Arising cross-border problems like climate change and natural disasters and rapidly developing new technologies present new challenges to the geospatial community of the Asia Pacific region.

27. In this connection, it is the right time for the UN to launch the initiative on Global Geospatial Information Management (GGIM). As a representative of the largest and most populous region in the world with possibly highest economic development potential, the PCGIAP together with other international/regional organizations such as ESCAP will be committed to playing a key role in meeting new challenges through the collaboration among related organizations at all levels, from the PCGIAP member countries to regional and global community to realize GGIM goals.

II. Report of the PC-IDEA

A. Summary

28. In this section the activities of the Permanent Committee for Geospatial Data Infrastructure of the Americas (PC-IDEA) during the period 2009-2013 are described. Based on the resolutions issued by the 9th United Nations Regional Cartographic Conference for the Americas (UNRCC-A), held in 2009, PC-IDEA established a Working Group on Planning (GTplan), which is composed by representatives of Brazil, Canada, Chile, Colombia, Cuba, Guatemala and Mexico, under the leadership of Chile and co-leadership of Canada. A work plan was established by GTplan covering seven themes, each one under the responsibility of a country representative: institutional capacity building; standards and technical specifications; best practices and guidelines for the development of Spatial Data Infrastructures (SDI); innovations in National Geospatial Information Authorities; knowledge gathering on topics relevant to SDI for the region (observatory on SDI); assessment of the status of SDI development in the Americas; and technological means for discussions related to SDI. A questionnaire applied to PC-IDEA member countries in 2011 contributed to address the activities to be carried out until 2013.

B. Introduction

29. The Permanent Committee for Geospatial Data Infrastructure of the Americas (PC-IDEA) was established on February 29, 2000, based on the Resolution #3 of the 6th United Nations Cartographic Conference for the Americas – UNRCC-A (1997), to maximize the economic, social and environmental benefits derived from the use of geospatial information. This is accomplished through knowledge and exchange of experiences and technologies between countries, based on common standards which would allow the establishment of the Geospatial Data Infrastructure of the Americas. Furthermore, PC-IDEA implements the regional mechanism associated to the United Nations Global Geospatial Information Management (UN-GGIM) initiative.

30. Among the main objectives of PC-IDEA, the following ones can be listed:

- Establish and coordinate policies and technical standards for the development of geospatial data infrastructure for the Americas;
- Promote the establishment and development of National Spatial Data Infrastructure (NSDI) in each PC-IDEA member country;
- Promote the interoperability of information and systems among member countries, through the use of standards;
- Encourage the sharing of geospatial information among all member countries in the Americas, while respecting their autonomy and their national laws and policies;
- Stimulate cooperation, research, sharing of experience in areas of knowledge related to geospatial data;
- Advise in the drafting of guidelines and strategies to support PC-IDEA member countries in developing geospatial information, considering the individual needs of each country;

- Set priorities for information sharing, considering the regulatory framework of each member country;
- Promote SDI training activities and technology transfer.

31. The Committee currently consists of 24 countries of the Americas as follows: 3 countries from North America (representing 100% of that sub-region), 7 countries from Central America (100%), 11 countries from South America (92%) and 3 countries from the Caribbean (23%). As established in the 9th UNRCC-A (2009), the Chair and Secretariat for the period 2009 to 2013 are carried out by Brazil. The statute (http://www.cpidea.org/documentos/Statute_PCIDEA_maio2011_final_eng.pdf) establishes a Board of Directors, whose members ideally reflect the criteria of a sub-regional balance.

32. The PC-IDEA prepares its work plans in accordance with the resolutions adopted by UNRCC-A which take place every four years. In the last one which was held in New York in August 2009, seven resolutions were established related to the activities of the PC-IDEA, as follows:

- Work plan of the Permanent Committee for Geospatial Data Infrastructure of the Americas and establishment of working groups
- Mechanisms for the building of spatial data infrastructures
- New study on the status of mapping by country and region
- Forum for sharing special data infrastructure best practices
- Follow-up meeting on disaster risk management and spatial data infrastructure
- Funding issues
- Support of spatial data infrastructure in the developing countries of the Americas and in particular in the Caribbean region

33. To comply with these resolutions, the PC-IDEA established a Working Group for Planning (GTplan) in May 2010, which has worked together with the Board, in the preparation of the Committee's Program of Work for the period 2009-2013. It aimed to promote capacity building, institutional strengthening and other products and actions that are already available to member countries and it is expected that by the end of 2013 it will be finalized. In addition, the Committee seeks to communicate its activities through lectures presented at events and made available through its website (www.cp-idea.org).

34. The activities carried out since 2009 are reported in the following sections, including links to relevant documentation produced.

C. Administrative issues

1. Vice Presidency

35. With the retirement of Mr. Mario Reyes from the National Institute of Statistics and Geography in Mexico in 2009, Mr. Christian Aqueveque, representative from Chile and also member of the Committee of South America, was elected as the new vice-president of PC-IDEA during the Board of Directors in May 2010 in New York. In 2011, the representative from Chile to the PC-IDEA became Mr. Esteban Tohá, who after consulting the statutes, assumed the position of representative from South America and, later, the Vice-Presidency of the Committee.

2. New representative from Central America

36. After approval of the Committee, as established in the statutes, Mr. Oscar Leonel Figueroa Cabrera, was appointed to fill the position of Member of Central America, replacing Mr. Ronald Estuardo Arango Ordoñez, both from the National Geography Institute (NGI) from Guatemala. With the start of the new managing director of NGI-Guatemala, Mr. Edwin Guillermo Santos Mansilla, and after due consultation with the Committee, he was confirmed as the new representative of Central America in June 2012.

3. Representative from the Caribbean

37. In the 9th UNRCC-A, Cuba was elected to represent the Caribbean. However, as it has not shown continuing interest in the performance of this role, the position of this member is currently in a transitional stage and it is in the process of being replaced.

4. Fundraising efforts

38. In 2010 two requests for resources were submitted to fund the Committee's activities:

i. Project proposal under CYTED (Iberoamerican Program of Science and Technology for Development)

39. The Project proposal seeks to establish an Iberoamerican Network to enhance and maximize the use of Spatial Data Infrastructures (SDI) in territorial planning, with the overall objective of stimulating the creation of the scientific and technological research network associated with the PC-IDEA. Its purpose would be to develop methodologies and applications for geospatial data and services, making use of Spatial Data Infrastructures-SDI, for territorial planning, risks associated with territorial vulnerability and the use of sustainable natural resources, aiding the decision making process. Countries participating are: Brazil, Cuba, Colombia, Chile, Guatemala and Portugal. This project aims for the participation of all countries of the Committee and not only those which are directly involved with submission of the documentation. Aside from the objectives mentioned above, the proposal would facilitate the participation of members and other practitioners involved with the work of PC-IDEA for several meetings to implement it. The total budgeted amount was 33 thousand Euros per year for four years and the presentation of this proposal took place in April 2010. In December of that year, the Secretary of CYTED stated that it had not been approved and there would be a new call for 2011.

ii. World Bank

40. Presented at the World Bank in Brazil through the Institutional Development Fund Programme-IDF Project "Strengthening Spatial Data Infrastructures-SDI of the Americas" in order to maximize the economic, social and environmental use of geospatial information, seeking to promote building SDI in the countries which have not yet started this process, as well as strengthening the implementation and the sustainability of the SDI countries of the Americas. Justification to request funding for strengthening and empowering of the Americas is in the scope of the SDI. The proposal was submitted in October 2010 with a total budget of US \$ 672,645.000 for three years. Among the activities planned, there are two aspects of action of the project: meetings of working groups and conducting an event devoted to disaster and risk prevention and various courses and trainings for the Americas. In February 2011, a representative from the World Bank in Brazil confirmed that this project had not been approved.

5. New statute

41. The document was adopted in May 2011 and is available in Spanish and English in http://www.cp-idea.org/documentos/Estatuto_CPIDEA_maio2011_final_esp.PDF and http://www.cp-idea.org/documentos/Statute_PCIDEA_maio2011_final_eng.pdf. The Portuguese version is in the process of being translated and is expected to be available by the end of 2012.

D. Participation in meetings and presentations

42. In the past 3 years, PC-IDEA organized and participated in 19 relevant professional meetings, both within the region and globally. In connection with these events, representatives of PC-IDEA produced over 30 documents and substantive presentations on a variety of topics including the "Importance of policies and legal instruments for the building of spatial data infrastructures in the Americas", "Geospatial Information Activities in the Americas (SDI Development in the Americas)"; "Creation of institutional capacities, education and capacity

building”; “Norms and technical Specifications”; “Challenges in Geospatial Policy Formulation and Institutional Arrangements”; “PC-IDEA Perspectives on SDI Policy and Standards”; “A Common Glossary for PC-IDEA”; “Providing Data to SDI: the Role of the Public and the Private Sectors”; “An overview on the status of SDI relevant issues in PC-IDEA member countries”; “Monitoring Sustainable Development – Why Location Matters”; Detailed information is available on the PC-IDEA website.

E. Work plan 2009-2013

43. Prepared by the Working Planning Group (GTplan), under the leadership of Chile and co-leadership of Canada. The plan was developed based on seven themes to be developed by 2013, namely:

Theme 1: Institutional Strengthening, Education and Capacity building - presiding country: Colombia

Theme 2: Standards and Technical Specifications - presiding country: Mexico

Theme 3: Best practices and guidelines for the development of the SDI - presiding country: Canada

Theme 4: Innovation in the national cartography organisms presiding country: Brazil

Theme 5: Inventory of relevant issues on SDI for the region - presiding country: Cuba and Canada

Theme 6: Evaluation of the development statute of the IDE of the Americas - presiding country: Cuba and Canada

Theme 7: Implementation of technological means for discussion related to access to geospatial data and dissemination of this data - presiding country: Chile

44. Besides the activities described above, it was recommended by the 9th UNRCC-A to hold an event focusing on prevention of disasters and risks focusing on SDI which will take place on August 17, 2012 in Rio de Janeiro in the Latin American Geospatial Forum (<http://www.lagf.org>). This event is being organized in collaboration with the PC-IDEA Geospatial Media and Communication. The representatives from Colombia and Canada are responsible for planning and organizing the event.

45. To support planning activities, some members of GTplan felt the need to use a questionnaire covering the issues of training, standards and specifications, best practices and a guide to SDI, National Institutes of Innovations in Mapping and Status of the implementation of SDI for Committee members of the Americas.

46. This questionnaire consisted of 76 questions developed by the GTplan and applied to members of the PC-IDEA referring to the year 2011. Twenty of the twenty four members responded to the questionnaire (no answered: Cuba, Dominican Republic, Guyana and United States). Analyses were processed in 2012 and the result will be available in August 2012 during the 9th Plenary Meeting to be held in Rio de Janeiro.

47. The structure of the report includes a description of the methodology used to gather data and the subsequent data processing. To the extent possible, a comparison was made between the questionnaire results of 2008 and 2011, where there existed a point of comparison. Finally, the detailed conclusions are presented in three technical annexes:

Annex A: Academic programmes offered in countries of the Americas.

Annex B: Best practices and successful stories documented in member countries of PC-IDEA.

Annex C: Legal or juridical instrument which supports the SDI in each country, when necessary.

48. Along with this publication will follow a report, in digital format, complemented by the responses of individual countries that have authorized its publication.

49. Based on this questionnaire, the Work Plan for the period 2012-2013 was completed by Gtplan can be found at http://www.cp-idea.org/documentos/plano_trabalho/Plano_Trabalho_ENG.pdf. The implementation of this plan seeks to achieve the following goals in August 2012, on the occasion of the 10th UNRCCA.

- **Capacity Building**

- Implementation of an observatory to give access to the existing courses and to receive the existing demand

- Conclusion of the Capacity Building Plan for the Americas

- **Standards**

- Definition of the Core Standards of the Americas

- **Best Practices**

- Preparation of the PC-IDEA Cookbook, including a chapter on the social and economic impacts of SDI

- **Innovation**

- Realization of a study related to the institutional models of National Geospatial Information Authorities and of those responsible for National SDIs, identifying weaknesses and strengths

- **SDI Observatory and Technology**

- Development of a new website, with functionalities that implement the discussion forum mentioned in the 2009 UNRCC-A resolutions

50. Additionally, a simplified version of the questionnaire is planned to be resubmitted to PC-IDEA member countries in 2013 in order to monitor SDI advances and progress during the 2011-2013 time period.

F. Other Committee activities

- ✓ Transfer of the Committee website from Mexico (INEGI) to Brazil; uploading of all documents. In accordance with the workplan the Vice-President (Chile) assumed the technical and administrative responsibilities with respect to the site migration and management. The site will also be completely redesigned and newly launched on the occasion of the 9^a Plenary Meeting of PC-IDEA in Rio de Janeiro, Brazil, on 16 August 2012.
- ✓ Preparation of texts and interviews for news releases and specialized professional journals.
- ✓ Targeted dissemination of information on the work and activities of the Committee through marketing material and special e-mail messages.
- ✓ Dissemination of news items especially referring to relevant events of interest through via the *mailing list* of members and collaborators.
- ✓ Preparation of various reports to inform on the work of the Committee at relevant fora (UN/GGIM, for instance)

G. Cooperation with the Panamerican Institute of Geography and History (PAIGH)

1. Resolution PAIGH n° 8 (November 2010)

51. During the 42nd Meeting of the Executive Council of PAIGH (8-12 November 2010 in Lima/Peru), Resolution 8/2010 was adopted (see http://www.ipgh.org/Consejo-Directivo/42-RCD/Files_42-RCD/42-RCD_Resol-08.pdf), which recommends to the Member States of the institute to participate actively in the initiatives of the work programme of the PC-IDEA.

2. Resolution PAIGH n° 4 (November 2011)

52. During the 43rd Meeting of the Executive Council of PAIGH (16-18 November 2011 in Santo Domingo/Dominican Republic), Resolution 4/2011 was adopted (see http://www.ipgh.org/Consejo-Directivo/43-RCD/Files_43-RCD/43-RCD_Resol-04.pdf), which establishes PC-IDEA as part of the Cartography Commission of PAIGH. In order to incorporate the objectives of PC-IDEA in the work plan of the Cartography Commission for PAIGH in a harmonious and proactive manner, a temporary working group was created, consisting of the President and Vice President of the Commission, the Secretary General of PAIGH as well as the President of PC-IDEA, who were tasked to report back to the Executive Council at its 44th meeting.

III. Report on GGIM Regional Activities in Africa by Subcommittee on Geoinformation, Science and Technology (CODIST) of the United Nations Economic Commission for Africa

A. Introduction

53. This report covers activities carried out by the Africa region with regard to geospatial information management, through the Committee on Development Information, Science and Technology (CODIST) Subcommittee on Geoinformation. The CODIST Subcommittee on Geoinformation (CODIST-Geo) subsumes the activities of the UN Regional Cartographic Conference for Africa. It also performs the functions of “Permanent Committee on SDI” in other regions.

54. The report includes actions taken as a follow-up to resolutions in the Addis Ababa Declaration on Geospatial Information Management adopted by the Africa Preparatory Meeting on GGIM and other activities considered as being of interest to Member States and partners.

55. The activities were focussed on: (i) Policy issues, (ii) Technical issues, (iii) Capacity building, and (iv) International cooperation and liaison.

B. Policy Issues: Fostering National Policies and e-Strategies Development

56. CODIST-Geo continues to impulse policy development through assistance in the development and implementation of spatial data infrastructures as the appropriate mechanism for the production, management, dissemination and use of spatial data and information products at regional (ARSDI) and national (NSDI) level, and that in the context of the overall regional and national e-strategies and e-government.

57. Effort is continued to also encourage spatially enabled e-government services, through the development of exemplary online applications and streamlined electronic delivery of products and services so as to develop knowledge, skills and capacity to advise African governments on spatially enabling their services to citizens (G2C), businesses (G2B) and other government departments and agencies (G2G). During the period under review, the interventions have included:

1. GGIM in Africa

58. CODIST-Geo took the role to lead the African contribution to the Global Geospatial Information Management (GGIM) so as to ensure that GGIM adequately reflects African issues and shape its direction and dimension to reflect Africa interest. As a follow-up of the recommendations of the Africa Preparatory Meeting to GGIM held in August 2011, CODIST-Geo has elaborated a draft African Action Plan on Geospatial Information Management. The report is open for discussion and comments from member States and partners.

2. National Spatial Data Infrastructures (NSDI) development in the Continent

59. Ghana: Assistance to develop the national Policy Framework for Addressing Systems (PFAS) in Ghana. The activity also includes: Review of the national ICT4AD policy development, providing advisory and technical inputs on various thematic issues related to geo-enablement of the NICI processes.

60. Niger: Advisory services on the establishment of NSDI steering mechanism along with drafting an action plan for the “Plan Géomatique National”, the country proposed NSDI.

C. Technical issues: Geoinformation Resources for Development

61. The scope of this output is to increase the number of information and knowledge resources and services developed at the regional, subregional and national levels to improve availability and use of information for development.

1. Implementation of Programmes and Projects

62. Several regional geospatial databases are being developed, incrementally updated and accrued to support regional initiatives. These databases form the core of the African Regional Spatial Data Infrastructure.

63. *SALB database*: ECA has been developing the African component of the Second Level Administrative Boundaries (SALB) geodatabase. Administrative limits data was recorded in nine countries bringing the number of countries with maps fully validated to 17, and a further eight countries awaiting final validation by the National Geospatial Information Authorities.

64. *Transport Infrastructure Database (TIDB)*. This database was aligned to the transport model of the United Nations Spatial Data Infrastructure (UNSDI). Currently, the segments of the trans-African highway have been entered, together with proposed priority transport infrastructure projects of the various regional economic communities and specialized technical organizations. An online application has been developed to support analyses, planning, decision-making and monitoring of transport infrastructure elements (<http://geoinfo.uneca.org/afriquecentrale/>).

65. *Programme of Infrastructure Development in Africa (PIDA)*: The PIDA database includes existing and planned infrastructures such as road networks including trans- African Highway, and transport corridors; railways; major airports and harbours; and energy infrastructures such as power plants, gas and oil pipelines, oil refineries and processing plants. The database captures, more than 40 feature datasets having an interactive interface as a digital atlas: (<http://geoinfo.uneca.org/africaninfrastructure/>).

66. In developing the various databases and applications, it became obvious that the needed data is not always available, emphasizing the importance to include data collection, management, dissemination and access policies in development information strategies and plans. The work highlighted also the importance of fundamental dataset to enable economic and social indicators to be mapped and visualized up to sub national levels. Interoperability is also critical since data collected by different agencies and organizations cannot be compared if the same base map and reference are not used.

67. Further to this CODIST-Geo is working on drafting “Guidelines of Best Practice for the Acquisition, Storage, Maintenance and Dissemination of Fundamental Geo-Spatial Datasets” as part of the Mapping Africa for Africa initiative. These guidelines are intended to serve as a valuable tool for National Geospatial Information Authorities and others in providing the fundamental geospatial information.

2. Online Applications and Services

68. It aims at developing and promoting information and knowledge resources, applications and services that improve availability and use of spatially-enabled data for informed decision-making. These online applications

will foster streamlined electronic delivery of products and services to achieve more informed decisions, enabling data to be extracted, combined in new ways, and displayed as desired by the user.

69. *Metadata Clearinghouse Node.* A very important component of Spatial Data Infrastructure is the clearinghouse system that enables users to search metadata of available datasets. As part of the work in developing Spatial Data Infrastructures at national and regional level, ECA maintains a clearinghouse system. One of the objectives of maintaining the clearinghouse system is to provide a facility for member States to publish the metadata of their available data holdings, so that decision makers can discover and use accurate data sourced from their original producers. Metadata records are continuously included in the data bank. The five Metadata nodes (Ethiopian Natural Resources Metadata base, AWICH, MAFA, RECTAS, RCMRD) contain as per end of December 2008 more than 10,000 geospatial metadata records.

70. *Africa Gazetteer – The GeoNyms Application.* At the request of, and in collaboration with the United Nations Group of Experts on Geographical Names (UNGEGN), CODIST-Geo is developing a gazetteer application to be used by member States to manage their gazetteers of place names. The tool has been well-received by end-users community in Africa and abroad and is now established as the basis for standard methodology for member States to maintain up to date gazetteers of geographical names, especially the endonyms.

71. *Health and Emergency Management Systems.* ECA is setting up a monitoring, evaluation and response management system to direct response teams to critical and vulnerable areas in Africa. The system comprises GIS application, with authoritative geodatabases, to support preparedness, planning and operations for security and health emergencies. We expect that others countries will contribute to the effort of sourcing and collecting the data through the online interface (<http://geoino.uneca.org/ehealth/>).

72. *Southern Sudan Water Information Clearinghouse.* UNICEF has approached ECA, as the secretariat of UN-Water Africa, to assist the Government of Southern Sudan, to establish a water information system, based on a GIS. The project involves installing hardware and software and developing skills in Southern Sudan to operate the system. ECA agreed with UNICEF and GOSS to involve the Regional Centre for Mapping of Resources for Development in delivering the assistance. We hope that this model will be successful and to replicate it in future requests to ECA.

3. Field projects: The African Geodetic Reference Frame

73. Knowing that the foundation of accurate geospatial information starts with a uniform coordinate reference system, ECA pursued its effort to develop through the African Reference Frame (AFREF) Project, a unified geodetic reference frame for Africa so that maps and other geoinformation products can be represented on the same datum. AFREF will be based on current satellite positioning technologies, and will form the geodetic infrastructure for multinational projects requiring precise geo-referencing (e.g. three-dimensional and time dependent positioning, geodynamics, precise navigation, and geo-information). Like other continental geodetic reference frames, it will be part of the global geodetic infrastructure. As such, it is being implemented and will be maintained in close cooperation with international partners with expertise and interest in geodetic reference frames, notably the International Association of Geodesy (IAG), the International Global Navigation Systems by Satellites (GNSS) Service (IGS), the United Nations Office for Outer Space Affairs (UNOOSA), among others. There are currently 43 stations operating as part of AFREF.

D. Capacity Building and Outreach Activities

74. Education, Internship and Fellowship programmes. As part of the CODIST-Geo endeavour to enhance national capacities for the utilization of geoinformation technologies, it engages fellows in various research studies on the core occupational fields of Geospatial Information Technology (GIT). CODIST-Geo has also

engaged itself in organizing several seminars and workshops to continuously raise awareness and share knowledge on the importance of using geospatial technology for resources management.

75. In the framework of the African Reference Frame (AFREF) Project being implemented by Africa, CODIST-Geo in collaboration with the Regional Centre for Training in Aerospace Surveys (RECTAS) based in Nigeria, is undertaking a field survey of all Global Navigation Satellite Systems (GNSS) reference stations based in Nigeria and neighbouring countries such as Benin and Niger. A special ICT4D scholarship, which aims at empowering young African female scientists in Geodesy, was awarded to a female scientist who completed her Master of Science in Geographic Information Science and Technology at RECTAS. The fellow will be further engaged on the inventory of on-going GNSS Projects across the continent.

76. CODIST-Geo participated in several geo-related events, taking these opportunities to interact with broad range of decision makers, users and service providers from various countries. The participation at such meetings is important, as CODIST-Geo takes advantage of these opportunities to deliver keynotes and express the continent's vision and strategy for geospatial science and technology development in Africa. The conferences also offered opportunities to keep abreast with current trends of geospatial services and products.

E. Partnership and International Collaboration

77. CODIST-Geo continues to collaborate and coordinate its activities with other agencies in the UN system, international and regional associations and programmes, and other development partners, as an important vehicle for mobilizing financial resources and technical know-how in support of Africa's developments in the field of geoinformation.

78. This is a long-term effort to build partnership with regional and international organizations through provisions of technical inputs and advisory service to several regional initiatives and participation to various forums on geoinformation at national and regional levels.

79. *The GMES Programme:* In December 2007, European and African main stakeholders have launched the GMES and Africa Process during a dedicated event in Lisbon, Portugal. As member of the Coordination Team along with ad hoc constituencies from the EC, AUC and the Member States, ECA is contributing to the design of the programme and will continue to be fully involved in the initial stage to ensure that all conditions for application of space observation are really for the benefit of the continent.

80. *The Africa.GEO.Sat.1 Initiative:* The Intergovernmental Group on Earth Observations (GEO) is leading a worldwide effort to build a Global Earth Observation System of Systems (GEOSS) over the next 10 years. As part of its activities, the GEO Secretariat launched the Africa.GEO.Sat.1 Satellite System, a concept of a permanent African Space Observatory, based on an innovative mid-high resolution geostationary satellite positioned over Africa. Africa.GEO.Sat.1 is expected to be integrated into the existing and planned infrastructures environment for Africa: EO African and international missions (ARM, Alsat, Nigeriasat, CBERS, Envisat, Jason, etc.), ground receiving stations (CBERS, SPOT, etc.), continental distribution networks (optical fibre, GEONETCast, etc.) in a system of systems approach. CODIST-Geo is welcoming the concept of Africa.GEO.Sat.1, noting the potential of the system to add value in applications for Africa and therefore is encouraging full support from Member States.

81. *The SKA Project:* South Africa and its partner countries were awarded the privilege to host the majority of the Square Kilometre Array Telescope (SKA) which will be driving technological development. The SKA will be the most technologically advanced radio telescope ever built. This cutting edge technology can be used in many fields outside radio astronomy, specifically in Geodesy to measure very accurately plate tectonic motion. Of interest will be the spin-off for geospatial information management in the provision of very high-speed data communications.

82. *Collaboration with Google:* Google have recently made available downloadable African data for *non-profit* use. This data is collected through MapMaker. Google is now identifying some pilot studies involving UN agencies on the ground, who will evaluate the use and quality of the data. Among other UN agencies and peace keeping mission operating in Africa, ECA has been selected as a pilot to evaluate the data. The main objective of this activity is to evaluate the quality of the data and report any data gaps, which involves several tasks including identifying digitizing errors, missing data, topological errors, missing attributes, etc.

83. The data which is downloaded from the Google Website consists of several datasets that include administrative units at different levels, cities and villages, railway lines, transport terminals, etc. Data evaluation started at ECA using the railway lines dataset. Data gaps are analyzed based on the existing geospatial databases developed by ECA for the Programme of Infrastructure Development in Africa (PIDA). The initial results of the evaluation process showed that: The Google data found to be more precise in terms of positional accuracy compared to PIDA/ECA data; some existing railway features found to be missing on the Google data; some topological errors were identified on Google data; and ECA/PIDA datasets happened to be richer in attribute data.

F. Lessons Learnt

84. In the policy sector. Despite the efforts of CODIST-Geo and other partners, progress in developing SDIs in Africa is still very slow, due mainly to poor awareness and understanding of the link between the content and components of the SDI on the one hand, and the day-to-day decisions and activities of society on the other. Lack of resources is also hampering the assistance to develop and implement the policies. CODIST-Geo will continue to provide assistance to member states in the development of spatially-enabled government services (SEGS), acknowledged as the natural headway from SDIs.

85. In the technical sector. When developing the various databases and applications, we found that the required data is not always available, emphasizing the importance to include data collection, management, dissemination and access policies in development information strategies and plans. The work also highlighted the importance of fundamental dataset to enable economic and social indicators to be mapped and visualized up to sub-national levels. Interoperability is also critical since data collected by different agencies and organizations cannot be compared if the same base map and reference are not used. CODIST-Geo will continue to establish partnership with key geoinformation players for joint implementation of activities and will also encourage the use of open sources software and applications.

86. Capacity building and Outreach. Africa has now reached a significant mass of trained geospatial professionals and technicians. However, we are faced with the recognition and retention of geospatial technology professionals in the area where they have been trained for. The time has come to now build a critical mass of highly qualified African geospatial scientists that will lead to sustainable technology adoption, ingestion and use in the continent. CODIST-Geo will continue to champion sound research and technology transfer programmes through long and short term courses, workshops, seminars, conferences, e-learning, development of training tools and materials; and the continued support to existing centres of excellence, organisations and initiatives.

G. Future Activities

87. Since CODIST-Geo is also providing regional focus and leadership for geoinformation techniques and methodologies; it conducts studies as needed on emerging concepts and disseminates the knowledge to member States.

88. Inventory of geospatial data in Africa. As part of its commitment for creating and managing knowledge in the continent, CODIST-Geo will publish the status of core geospatial datasets in Africa through a

comprehensive compilation and inventory of presently available fundamental datasets in each Member State. The action should lead to a background study on policies, strategies, and operational plans of action to fill the data gaps in Africa.

89. Crowd-sourcing. It is a well-known fact that Africa is not adequately mapped, which is why we have the Mapping Africa for Africa (MAfA) initiative. Google Corporation has developed a tool and methodology for involving the community at large in mapping their respective neighbourhoods. This is based on the principle that members of the community are expected to know their neighbourhoods more than any expert from outside. CODIST-Geo is working with Google to apply the tool to map transport infrastructure in Africa. Furthermore, it has been proposed to expand the methodology and develop a general programme on community mapping. The plan is to get the National Geospatial Information Authorities to adopt volunteer geographic information as a way to increase the mapping coverage of their countries. As a result, CODIST-Geo is proposing to work with Google and possibly other interested technology solution providers to organize a workshop for representatives of National Geospatial Information Authorities. The objective of the workshop will be to introduce the concept to National Geospatial Information Authorities and develop a methodology for them to incorporate the results of such community mapping into their national mapping programmes. This could involve training designated focal points on the moderation of edits by the community so that they can review proposed changes to their maps and either moderate them or alert designated moderators of errors or outright misrepresentations.

90. Cloud Computing. The world is getting connected and clouded with more and more integrated systems in the web with distributed data and services. Therefore, we need to support geospatial content in cloud: geoinformation resources should be made accessible anywhere, anytime, by anyone. This is a new field of technology appropriateness where CODIST-Geo would like to develop knowledge, skills and capacity in order to properly advise member States.

91. Open Source Geospatial Software. It was observed that the current trend was to migrate from commercial to Free and Open Source Software (FOSS). CODIST-Geo would like to explore the possibility of migrating some of its online Web Features Services to open source. Discussions are going with Open Geospatial Consortium to organize a session on Open Source during the regional geo-related events to sensitize member States. CODIST-Geo has the view to develop guidelines and ideas that will steer the future development in this area.

92. Forthcoming Geo-related Events: CODIST-Geo is engaged in several events that will take place in the coming months in Africa.

- *AARSE 2012 Conference* : The African Association of Remote Sensing of the Environment (AARSE) conducts biennial (once every two years) international conferences across Africa that have grown over the years in stature and size, increasingly attracting hundreds of participants from Africa and abroad and become the most premier event in Remote Sensing in Africa. The next conference will take place in Morocco from 29 October to 02 November 2012. CODIST-Geo will be a key partner of the conference with sponsorship grants and organization of technical side workshops.
- *Africa Geospatial Forum 2012*. The Africa Geospatial Forum (previously known as Map Africa Conference) provides yearly opportunity to discuss and dialogue between high level policy-makers and stakeholders associated with geospatial science and technology in Africa. The conference that has established a niche audience of high end business community will be held in Accra, Ghana from 2-5 October 2012. As part of the main conference programme, CODIST-Geo is organizing a Regional Media Workshop to mainstream the awareness on the role of geoinformation in the continent socio-economic development into the communication specialists' activities.
- *EUMETSAT 10th Users Forums in Africa*. This forum is organized by the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT). The 10th session of the series will be held in Addis Ababa, Ethiopia at the United Nations Economic Commission for Africa Headquarters, from 1-5 October 2012. CODIST-Geo will take active role in the forum in organizing a technical workshop on Earth Observation Policies Development in Africa.

IV. Report on Geospatial Information Management in Europe by EuroGeographics on Behalf of the National Mapping, Cadastre and Land Registry Authorities of Europe

A. Introduction

93. This report provides an overview of the main activities, key players, important issues and future plans in geospatial information management in Europe on behalf of the national mapping, cadastre and land registry authorities (NMCAs) of that region.

The national mapping cadastre and land registration authorities in Europe meet regularly under the auspices of [EuroGeographics](#). This report is prepared by EuroGeographics on behalf of the European NMCAs.

B. Background

94. Political Europe consists of the 27 member states of the European Union. It is generally accepted that there are [50 countries in geographical Europe](#). Included are a number of countries classified as [Commonwealth of Independent States](#) ².

95. Each country in Europe has a national authority responsible for mapping land registration and cadastre.

96. EuroGeographics is the membership association and voice of the European national mapping, cadastre and land registry authorities. It comprises 56 member authorities in 45 countries ³.

97. The Cadastres continue to support economic recovery with a range of increasingly on-line services.

C. Relevant European Legislation

1. The Digital Agenda for Europe

98. The Digital Agenda for Europe is a ‘flagship programme’ of Europe 2020, itself an initiative to stimulate the European economy. [The programme has 7 pillars](#), three are recognized as being directly relevant to geo-information - Pillar 1: Digital Single Market; Pillar 2: Interoperability, openness and standards and Pillar VII: ICT for societal benefits.

2. INSPIRE Directive

99. 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. It establishes an infrastructure for spatial information in Europe to support Community environmental policies, and policies or activities which may have an impact on the environment.

100. INSPIRE is based on the infrastructures for spatial information established and operated by the 27 Member States of the European Union. The Directive addresses 34 spatial data themes needed for environmental applications, with key components specified through technical implementing rules.

101. To ensure that the spatial data infrastructures of the Member States are compatible and usable in a Community and trans-boundary 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

² Armenia, Azerbaijan, Belarus, Moldova, Russian Federation, Ukraine.

³ Non-member countries = Andorra, Azerbaijan, Belarus, Kazakhstan, Monaco, San Marino, The Vatican.

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.

- o 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) 14.03.2007
- o INSPIRE Metadata Regulation 03.12.2008
- o Commission Decision regarding INSPIRE monitoring and reporting 05.06.2009
- o Commission Regulation (EC) No 976/2009 of 19 October 2009 implementing Directive 2007/2/EC of the European Parliament and of the Council as regards the Network Services 19.10.2009
- o Corrigendum to INSPIRE Metadata Regulation 15.12.2009
- o Regulation on INSPIRE Data and Service Sharing 29.03.2010
- o Commission Regulation amending Regulation (EC) No 976/2009 as regards download services and transformation service 10.12.2010
- o COMMISSION REGULATION implementing Directive 2007/2/EC of the European Parliament and of the Council as regards interoperability of spatial data sets and services 10.12.2010
- o COMMISSION REGULATION amending Regulation 1089/2010 as regards interoperability of spatial data sets and services 05.02.2011

102. The drive for the development of national spatial data infrastructures is implementing the INSPIRE Directive ⁴, within the 27 member states and beyond. The representative body of the European national mapping cadastre and land registration authorities ⁵ is, on their behalf, developing a technical infrastructure which delivers this national reference data as the European Location Framework.

3. The GMES Regulation

103. Regulation (EU) No 911/2010 of the European Parliament and of the Council on the European Earth monitoring programme (GMES) and its initial operations (2011 to 2013) was published in the Official Journal on 20.10.2010. Article 5.2 of the regulation is particularly relevant:

'The provision of GMES services shall be decentralised, where appropriate, to integrate at European level existing space, in-situ and reference data ⁶ inventories and capacities in Member States, thus avoiding duplication. Procurement of new data that duplicate existing sources shall be avoided unless the use of existing or upgradable data sets is not technically feasible or cost-effective.'

104. GMES is an EU-led initiative to develop Europe's own operational Earth observation capacity in order to collect information about the planet's physical, chemical and biological systems and, more generally, to monitor the natural environment. It draws on both space-based (i.e. satellite) and non-space-based facilities, including airborne, seaborne and ground-based ("in situ") installations. Data collected via satellites and in situ infrastructure are processed to provide information services allowing better management of the environment and enhancing security for citizens.

4. The Re-use of Public Sector Information

105. On 12.12.2011 the European Commission published a proposal for a Directive of the European Parliament and of the Council amending Directive 2003/98/EC on re-use of public sector information. The EU 27 NMCAs are subject to the directive.

106. The Proposal includes four main proposed changes which are of interest to European NMCAs:

- A general rule that all documents, as defined in the Directive, can be re-used for any purpose

⁴ <http://inspire.jrc.ec.europa.eu/>

⁵ <http://www.eurogeographics.org>

⁶ In-Situ and reference data coming predominantly from the European NMCAs

- A general principle that public bodies should not charge more than marginal costs except where specifically justified
- A requirement to provide data in machine-readable formats
- The introduction of a regulatory authority

107. The amending proposal aims to move the existing Directive forward into the era of the Digital Agenda. The European NMCAs, as providers of quality digital content, have welcomed this direction. However to deliver workable outcomes, and to make best use of the opportunities this direction presents, they have highlighted the need for amendments to the text in four key areas:

- i. The general principle could have unintended consequences for the sustainable supply of information and its ongoing maintenance;
- ii. The rules on charging should continue to allow all information holders to continue to make their information available for reuse while managing negative impact on public finances;
- iii. The requirement for data to be provided in machine-readable formats should not inadvertently restrict customer choice;
- iv. The proposal for an independent authority should respect Member States' data policies and national access regimes, and make use of existing resources.

D. Relevant European Initiatives

1. European Spatial Data Infrastructure Network – ESDIN (led by EuroGeographics)

108. This 30 month project, involving 16 NMCAs with industry and academic partners, successfully completed in February 2011. 80% funding was provided by the European Commission's eContent*plus* programme. It was the first technical implementation, at European scale, of the INSPIRE principle of delivering a European Spatial Data Infrastructure using a distributed database and infrastructure and service chaining. The demonstration service is available at www.locationframework.eu

109. Further information is available www.esdin.eu

110. Following delivery of the project the NMCAs agreed to continue working with industry and academic partners to develop the European Location Framework. (E.L.F)

2. The European Location Framework - E.L.F. (led by EuroGeographics)

111. The European Location Framework is a technical infrastructure which delivers authoritative, interoperable, cross-border geospatial reference data for analysing and understanding information connected to places and features. The European Location Framework builds a geospatial reference data infrastructure and provides interoperable reference data and services from national information assets enabling users to build their work on it. Once developed and adopted they will be the basis for the official framework providing location information needed to geographically reference objects from other domains allowing pan-European interoperability.

112. A White paper providing more information is available:
<http://www.eurogeographics.org/sites/default/files/E.L.F%20white%20paper%20v.1.0.pdf>

3. Implementation of the European Location Framework – ELF1 (led by EuroGeographics)

113. The first implementation phase of the European Location Framework, the ELF1 project, is awaiting confirmation of (50%) funding from the European Commission's ICT-PSP programme.

114. Successful delivery will foster wider use of NMCAs geo-information and enable the creation of innovative value-added services. The versatile cloud and cascade supporting architecture will provide a platform of INSPIRE compliant geo-information, harmonised at a cross-border and pan-European level.

115. Service-based Geo-tools will process national reference data to harmonized E.L.F specifications providing consistent and coherent European reference geo-information, regardless of the country of origin.

116. The E.L.F services will offer a “Data as a Service” model for reference geo-information thus supporting ‘Software-as-a-Service’ (SaaS) cloud GIS platforms favoured by many innovative SMEs.

117. The E.L.F Platform will be available and maintained for application development both during the project and beyond. Agreements for the required technical and legal interoperability to support re-use of the Platform will be implemented in the project.

118. As well as the development of a ‘GeoProducFinder’ for users and external services to discover, view and access E.L.F data, it will also connect the E.L.F platform to existing services e.g. the European Commission’s INSPIRE GeoPortal, the Commission’s internal portal operated by Eurostat and ESRI’s ArcGIS Online service.

119. To provide a full multi-lingual capability, the E.L.F Platform will make use of the INSPIRE feature concept dictionary and extend the existing ‘EuroGeoNames’ service to the GeoLocator service.

4. Geographical Names (led by EuroGeographics)

120. EuroGeoNames started as an eContentplus project in 2006. Following successful completion of the project in 2009 EuroGeographics’ Management Board approved a case for investing in the further development of the EuroGeoNames service. The ESDIN project provided some resource and expertise to the service and concluded that a new technical architecture was required to improve member’s connectivity and service delivery to users.

121. Currently the service delivers geographical names from 14 EuroGeographics members, with four others nearly ready to connect. The short term target is to extend this to EU27.

122. Continuation of the service is supported and valued by the NMCAs, the United Nations Group of Experts on Geographical Names and a number of stakeholders, notably Eurostat. In any event EU member states must deliver a geographical names service to comply with INSPIRE.

123. On 9th March 2012 the Board of EuroGeographics approved a further significant financial investment in a new technical infrastructure to support a variety of connection options and deliver improved customer service. This new infrastructure is being developed and deployed on behalf of the NMCAs by the Finish Geodetic Institute. <http://www.fgi.fi/>

124. Further information is available <http://www.eurogeographics.org/eurogeonames>

5. Definitive Boundary Information (led by EuroGeographics)

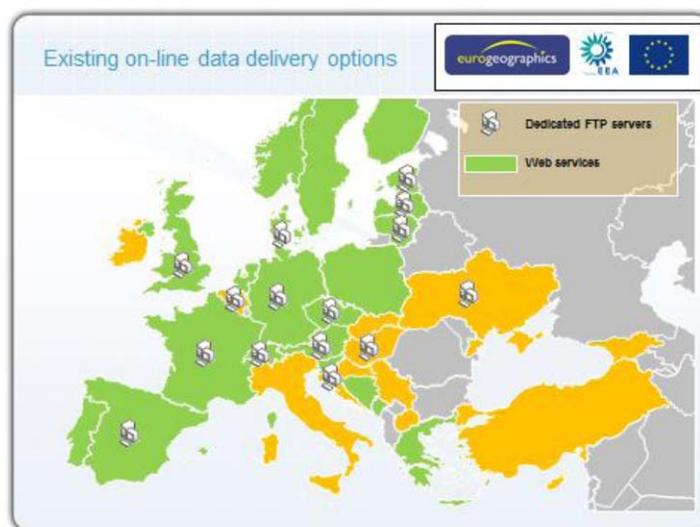
125. The State Boundaries of Europe (SBE) has the objective to provide precise treaty level data. Currently data from Switzerland and data from Belgium and Finland are integrated in the database managed by swisstopo. Hungary, Italy, Latvia and Poland are currently processing their data to achieve conformity with the data model before integration with data from France and Austria foreseen to be received for processing very soon. Further information is available <http://www.eurogeographics.org/sbe>

6. Global Monitoring for Environment - Emergency Management Service (led jointly by the European Environmental Agency and EuroGeographics)

126. The NMCAs are supporting the European Commission’s disaster and emergency management service (GIO EMS) with access to their national reference data through an agreement signed in 2011 between EuroGeographics and the European Environmental Agency.

127. The service infrastructure is based upon the pre-existing agreements between the NMCAs and the National Civil Protection Authorities or under other government agreements.

128. A 2012 survey of NMCAs reference data service capability showed good accessibility to national data sets via on-line services.



Availability on NMCAs on-line delivery services

7. **Regional Geodesy** (led by Euref)

129. Euref held its 2012 Symposium 6-8 June, during which reports of the national activities of the NMCAs and associated relevant organisations and institutions was delivered.

130. Further information is available <http://www.euref.eu/>

8. **Regional geo-Statistical situation** (led by Eurostat)

131. At the European level the European Commission body Eurostat coordinates statistical and related geo-information requirements. Good use is made by them of the EuroGeographics products which aggregate and harmonise national data sources.

132. More Information <http://www.eurogeographics.org/products-and-services>

133. Regular liaison meetings, which are well attended by both national mapping and national statistical bodies, are held under the auspices of GISCO

http://epp.eurostat.ec.europa.eu/portal/page/portal/gisco_Geographical_information_maps/introduction

134. This year's meeting was held on 3rd March.

9. **Quality Management of Geo-Spatial Information** (led by the EuroGeographics)

135. The plenary meeting of the NMCA's Quality Knowledge Exchange Network was held in Reykjavik, Iceland 30th May - 1st June 2012.

136. The meeting covered a number of topics including: a user centred view on quality; a discussion on how NMCAs can maintain users trust in the quality of reference data. The meeting reviewed product accreditation approaches and exchanged experiences with practical implementation. A new reporting tool for quality of cadastral datasets extending metadata editor, proposed by Poland, was assessed and presentations were provided on 'Socium' <http://www.socium.co.uk> a cloud hosted service for data Quality assessment.

137. More Information <http://www.eurogeographics.org/content/qken-quality>

10. Cadastre and Land Registry Developments (led by EuroGeographics)

138. The NMCAs meet regularly in the Cadastre and Land Registration Knowledge Exchange Network and in joint workshops of EuroGeographics and the Permanent Committee for Cadastre in the European Union. These meetings facilitate the exchange of best practice to help members achieve their [Vision for Cadastre and Land Registration in Europe 2012](#)

139. More Information <http://www.eurogeographics.org/content/cadken-cadastre-and-land-registry>

11. Reference Data availability (led by EuroGeographics)

140. A report was prepared in support of the GMES Initial Operating programme on the availability of national reference data by country, type and scale. Information on the updating regimes was also included. A, three part, presentation of the results is available

http://ec.europa.eu/enterprise/newsroom/cf/itemdetail.cfm?item_id=5362&lang=en&tpa_id=141&displayType=calendar

12. INSPIRE Implementation (led by EuroGeographics)

141. Whilst compliance with the INSPIRE directive is the responsibility of EU Member States, the NMCAs have recognised the benefit of sharing information on implementation issues and established a knowledge exchange network for it.

142. More Information <http://www.eurogeographics.org/content/inspire-ken-0>

E. Links with other organisations

143. The President of EuroGeographics has convened several meetings with their counterparts with the objective of developing a closer working relationship with other associations operating in the geo-information field in Europe. The next will be held on 10th July 2012.

144. Bilateral MOUs have been established between EuroGeographics and: CLGE ⁷, Eulis ⁸, Euref ⁹, Eurogi ¹⁰, EuroSDR ¹¹ FIG ¹² OGC ¹³, PCC ¹⁴, PSMA Australia Ltd ¹⁵ and UNECE WPLA ¹⁶.

145. EuroGeographics on behalf to the NMCAs is a member of OGC, holds Category A Liaison status with the body responsible for the ISO geographic information series of standards. [ISO TC211](#) and has liaison status with CEN TC287 and ISO [CEN/TC 287](#)[CEN/TC 287 documents](#).

146. To complement the existing formal relationship between the NMCAs of Europe and the United Nations and to facilitate effective representation of Europe within the UN GGIM programme EuroGeographics has submitted an application for 'Observer' status to the NGO Branch of the Department of Economic and Social Affairs.

⁷ <http://www.clge.eu/>

⁸ <http://eulis.eu/>

⁹ <http://www.euref.eu/>

¹⁰ <http://www.eurogi.org/>

¹¹ http://bono.hostireland.com/~eurocdr/start/index.php?option=com_frontpage&Itemid=1

¹² <http://www.fig.net/>

¹³ <http://www.opengeospatial.org/>

¹⁴ <http://www.eurocadastre.org/>

¹⁵ <http://www.pdma.com.au/index.html>

¹⁶ <http://www.unece.org/housing-and-land-management/about-us/working-party-on-land-administration.html>

147. EuroGeographics also has a strong working relationship with GSDI. The Secretary General and Executive Director is the President Elect and the Europe Region is represented by a member of the National Land Survey of Finland.

F. Geospatial Information Research

148. The NMCAs continue to contribute to an ongoing programme of spatial data infrastructure related research through their active involvement of EuroSDR.

149. Further information http://bono.hostireland.com/~euroedr/start/index.php?option=com_frontpage&Itemid=1

G. National Initiatives

150. Europe's NMCAs continue to carry out national mapping, cadastral and land registration programmes to meet the needs of their governments, commercial actors and civil society.

151. In some countries there is the need to complete work on the creation of national coverage in various map scales or towards achievement of 100% of all land registered and recorded in land registers or cadastral databases.

152. Many of the successes of the NMCAs are recorded in the 2011 EuroGeographics Annual Review available at https://www.eurogeographics.org/sites/default/files/EuroGeographics_Annual_Report_2011_final.pdf

153. Access to the national spatial data infrastructures and a variety of NMCAs products and services is provided through www.eurogeoinfo.eu

H. Heads of the NMCAs

154. The recent months have seen many changes at the top of Europe's NMCAs. These are summarised below. Further information on new heads can be found on the EuroGeographics web site.

Member Agency	Country	New Head	Former Head	Info on EuroGeographics web site
State Geodetic Administration of the Republic of Croatia	Croatia	Mr. Danko Markovinovic	Mr. Zeljko Bacic	http://www.eurogeographics.org/news/new-director-general-croatia
National Survey and Cadastre	Denmark	Mr. Henrik Studsgaard	Ms. Susanne Juhl	http://www.eurogeographics.org/news/new-director-general-kms
National Institute of Geography and Forestry	France	Mr. Pascal Berteaud	Mr. Patrice Parisé	http://www.eurogeographics.org/news/new-director-general-ign-france
Agency for Real Estate Cadastre Malta	FYR Macedonia	Mr. Slavce Trpeski	Mr. Ljupco Georgievski	http://www.eurogeographics.org/news/new-director-general-arec
Environment and Planning Authority	Malta	Vacant at 31.06.2012	Mr. Rai Piscopo	
Head Office of Geodesy and Cartography	Poland	Mr. Kazimierz Bujakowski	Mrs. Jolanta Orlinska	http://www.eurogeographics.org/news/new-surveyor-general-poland
Portuguese	Portugal	Mr. Paulo	Mr. Carlo	http://www.eurogeographics.org/news/new-surveyor-general-portugal

Geographical Institute General Directorate for the Cadastral National Geographic Institute National Agency for Cadastral and Land Registration	Spain Spain Romania	Vasconcelos Correia Mrs. Rosana Navarro Heras Mr. Amador Elena Córdoba Mr. Marius Arthur Ursu	Mourato Nunes Mr. Jesus Miranda Hita Mr. Alberto Serenio Alvarez Mr. Mihai Busuioc	w-director-general-portugal http://www.eurogeographics.org/news/new-directors-general-spain http://www.eurogeographics.org/news/new-director-general-ign-spain http://www.eurogeographics.org/news/new-director-general-romania
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I. Major Achievements

155. In the recent past these have been:

- Effective contribution to European legislative development through open and transparent constructive communication with the European Commission and Parliament;
- Delivering enhanced pan-European datasets with extended coverage to provide harmonised, consistent, reliable, re-usable and readily-available cross-border reference data to support public administration at national and European level;
- Simplifying access to, and use of, national spatial data to drive applications that realise tangible economic, environmental and social benefits;
- Delivering online services for quicker, more efficient and reliable land registration and to enable citizens to easily participate in national initiatives;
- Successfully completing a spatial data infrastructure project described by independent technical assessors as *'The ESDIN project has very ambitious objectives that are still highly relevant for the implementation of a spatial data infrastructure in Europe. It is most likely that its results will significantly assist the transposition of INSPIRE in the EU Member States.'*;
- Laying the foundations for the E.L.F, a technical infrastructure delivering authoritative, interoperable, cross-border geospatial reference data for analysing and understanding information connected to places and features;
- Delivering reliable mapping data for the European GMES Emergency Management Service for crisis response to save lives in the aftermath of disasters and accidents.

J. Conclusions

156. All of the European NMCAs continue to successfully deliver their national mandate and are cooperating, through their representative body EuroGeographics, to improve the interoperability of their national data and to meet the requirements for pan-European data.

157. The NMCAs of the EU 27 countries continue their work to deliver national services and other aspects of INSPIRE compliance in line with the timetable laid down in the directive.

V. Report of the Joint Board of Geospatial Information Societies (JBGIS)

A. Overview

158. This document provides a Report from the Joint Board of Geospatial Information Societies (JB GIS) to the Second Session of the UN Committee of Experts on Global Geospatial Information Management 13-15 August 2012, New York.

B. Joint Board of Geospatial Information Societies

159. The Joint Board of Geospatial Information Societies is a coalition of leading international geospatial societies that speaks on behalf of the geospatial profession at the international level, especially to the United Nations and other global stakeholders. It coordinates activities within the geospatial society and organizations, internationally.

160. Membership of JB GIS:

- Global Spatial Data Infrastructure (GSDI) Association
- IEEE Geoscience and Remote Sensing Society (IEEE-GRSS)
- International Association of Geodesy (IAG)
- International Cartographic Association (ICA)
- International Federation of Surveyors (FIG)
- International Geographical Union (IGU)
- International Hydrographic Organization (IHO)
- International Map Trade Association (IMTA)
- International Society of Photogrammetry and Remote Sensing (ISPRS)
- International Steering Committee for Global Mapping (ISCGM)

161. The JB GIS meets formally once each year and informally when schedules permit. The JBGIS chair rotates between member societies.

C. Report content

162. This report addresses the issues identified by the UN Committee of Experts on GGIM Working Group on Inventory of Issues. It provides information about the support and input that the JB GIS, collaboratively through its member organizations, can offer to address the issues identified.

163. The report addresses the issues under the categories developed by the Working Group. The comments provided reflect the input from JB GIS member organisations and the JB GIS collectively.

164. In each section of the report an example of the initiatives of one of the JB GIS member organisations are provided to illustrate the type support that JB GIS member organisations can provide to the furthering of the goals of UN GGIM.

1. Developing national, regional and global strategic framework for geospatial information

165. Member organisations of the JB GIS provide input into the development of strategic frameworks. Member organisations operate at an international level, but they also provide institutional support at regional and national levels.

166. For example:

- i. The International Hydrographic Organization IHO has encouraged the establishment of Regional Hydrographic Commissions (RHCs), comprising IHO Member States and other States within each of 15 regions covering the world. The RHCs ensure coordination and cooperation in the provision, exchange, promulgation and availability of information within each region and between regions.
- ii. The Global Spatial Data Infrastructure (GSDI) Association promotes international cooperation and collaboration in support of local, national and international spatial data infrastructure developments to allow nations to better address social, economic, and environmental issues of pressing importance.
- iii. The International Cartographic Association (ICA) has developed a series called the "Regional Symposia for Cartography". They have been organised for Central and Eastern Europe (held in Austria), Australasia and Oceania (held in New Zealand) and the Americas (held in the USA).
- iv. The International Federation of Surveyors (FIG) holds international conferences, biennial Regional Conferences and Working Weeks. The organisation has developed an African Task Force
- v. International Steering Committee for Global Mapping examines measures that concerned national, regional and international organizations can take to foster the development of Global Mapping in order to facilitate the implementation of global agreements and conventions for environmental protection as well as the mitigation of natural disasters and to encourage economic growth within the context of sustainable development.

167. We ask for two issues to be addressed under this topic:

- i. Consideration and development of a roadmap towards spatial enablement, particularly through the use of National SDIs or any jurisdictional SDI platform, to provide clear roles and responsibilities, as well as effective mechanisms for performance monitoring and/or reporting and risk management.
- ii. Consideration of the effects of continued public sector budget cuts on the efficacy and sustainability of national geospatial information authorities (NGIAs) in many countries. It is clear that NGIAs in countries experiencing government budget cuts will increasingly have to adopt one of three types of strategies:
 - (a) identify what activities will have to be revised as "across-the-board" budget cuts weaken all activities; and/or
 - (b) identify top priority activities and responsibilities to be maintained and the traditional activities/responsibilities to be dropped due to reduced funding; and/or
 - (c) identify activities/responsibilities to be shared with, or moved to, other organizations.

2. Establishing institutional arrangements, legal and common frameworks

168. JB GIS member organisations can assist in the area of institutional arrangements, legal and common frameworks. Work of selected Commissions and Working Groups are able to address topics that are specified through the outcomes of UN GGIM deliberations and recommendations.

169. Example:

- i. The FIG Standards Network has, as one of its goals, to Building and maintaining relations with the secretariats of standardisation bodies. It also maintains a Guide on Standardisation (<http://www.fig.net/pub/figpub/pub28a/figpub28a.htm>).

ii. Through its Education Commission, the ISPRS has a number of goals that include the provision of educational resources, internationally by the:

- Promotion of education and training at fundamental, advanced and professional levels
- Promotion of technology transfer, considering account regional needs and resources
- Providing computer-assisted teaching, training and distance learning
- Developing innovative techniques for information dissemination on the Internet
- Promoting youth forum and innovative outreach activities

170. The JB GIS, requests that two issues to be addressed under this topic:

i. Consideration and further discussion of governance structures, specifically that which enables effective collaboration and political engagement to foster a transparent and open environment with defined roles and responsibilities.

ii. Consideration to develop clear definitions of the terms "consistency" and "maturity".

3. Building capability and capacity, especially in developing countries

171. An important contribution that JB GIS makes through its international community is outreach and technology transfer. Through member organisations' Commissions and Working Groups the full range of scientific, technical and social research associated to Geospatial Information specification, collection, analysis and representation. They undertake the transfer of knowledge about Geospatial Information by publishing books and special editions of journals and running workshops. Colleagues from the JB GIS community conduct these workshops on a volunteer basis, generally with the support of the national member organisation of the JB GIS member organisation or the national mapping or charting body.

172. For example:

i. IEEE Geoscience and Remote Sensing Society holds an annual International Geoscience and Remote Sensing Symposium (IGARSS). At its 2012 Symposium it introduced a Remote Sensing Summer School (RSSS12). It is being held for Master's and Ph.D. students and it provides geoscience and remote sensing topics.

ii. The IHO has a well-established Capacity building Programme that provides training and support to States seeking to initiate or develop hydrographic capabilities. This programme is implemented in cooperation with other IGO and NGO organisations such as the International Maritime Organization (IMO), the Intergovernmental Oceanographic Commission (IOC), the World Meteorological Organization (WMO) and the International Association of aids to Navigation and Lighthouse Authorities (IALA), which provide complementary capacity building programmes.

iii. The International Federation of Surveyors provides capacity building through Institutional support for educational and professional and institutional development at national levels. The organisation provides institutional support to help members build educational programs and their institutional basis.

4. Assuring the quality of geospatial information

173. All member organisations of the JB GIS are able to undertake activities to support initiatives that will contribute to the assurance of the quality of Geospatial information. Commissions and Working Groups could conduct this work -individually or cooperatively.

174. Examples:

- i. International Association of Geodesy established the Global Geodetic Observing System, to unify all the geometric and gravity services of the IAG so as to support the ambitious goals and the critical demands of modern geodesy.
- ii. The International Hydrographic Organization (IHO) exists to ensure the availability and consistency of hydrographic and nautical charting information across the globe. It does this through the setting of internationally recognised standards, and through cooperation and the exchange of relevant data and information between its 81 Member States. This information is then available in standardised form not only in support of safety of navigation and protection of the marine environment, but also more widely available to support economic development and the sustainable use and exploitation of resources in a sustainable way in the maritime domain. As the peak body for hydrographic standards and services, the IHO seeks to ensure that its work embraces and encourages new technologies. This is especially true for digital data, Electronic chart display and Information Systems (ECDIS) and the emerging concept of e-Navigation, currently under development by the IMO.
- iii. The ICA has a Standards Commission explores research on the impact and use in SDIs of cartography, standards, spatial semantics, ontologies, volunteered geographical information (VGI), virtual globes and other technological developments. Also, its Commission on Data Quality publishes geospatial data quality related reports, books, and special issues of scientific journals.
- iv. A joint ICA/IGU Working Group on toponymy has been formed to foster geographic/cartographic research in the field of place names and to disseminate the scientific knowledge on processing and use of place names within geography and cartography. The Working Group supports the efforts of international standardization of geographical names, such as that undertaken by UNGEGN and ICOS.

5. Promoting data sharing, accessibility and dissemination

175. Member organisations of JB GIS actively implement programmes that allow the sharing of and access to Geospatial information. These undertakings are well established and have been successfully conducted over many years.

176. Examples:

- i. JB GIS member organisation, the International Steering Committee for Global Mapping, through its Global Map provides a group of global geographic data sets of known and verified quality, with consistent specifications that that is open to the public. Global Map is considered a common asset of mankind, and will be distributed worldwide at marginal cost.
- ii. The IHO encourages and facilitates the widest possible use of hydrographic information. The world's national hydrographic offices (HO's) collectively maintain the world's most comprehensive collection of hydrographic information. Noting that hydrographic information underpins almost every human activity that takes place on, in or under the sea, the IHO has policies in place to encourage HO's to ensure that their information is increasingly made available through national, regional and global spatial data infrastructures. In this context, the work of the UN GGIM is a most important mechanism to ensure that this ambition is fulfilled.

6. Embracing trends in Information Technology

177. Member organisations of the JB GIS actively participate in the development and the introduction of new technologies. The implementation of new technologies in the wide-ranging research and application areas covered by JB GIS members provides the opportunity for monitoring 'best practice', further developing technology for specific geospatial

applications and transferring the knowledge gained throughout the international geospatial community. These activities support the goals of the UN GGIM.

178. Examples:

- i. The scientific and technical work of the ISPRS is accomplished by its Technical Commissions. The culmination of the Technical Commission's operation is the selection of papers to be presented at the Congress held at the conclusion of the four-year period.
- ii. The ICA developed a Research Agenda that specifies the areas of research activities that it addresses, namely: Geographic Information; Metadata and SDIs; Geospatial Analysis and Modelling; Usability; Geovisualization, Visual Analytics; Map production; Cartographic Theory; History of Cartography and GI Science; Education; and Society.

7. Promoting Geospatial Advocacy and Awareness

179. JB GIS member organisations are committed advocates of the importance and value of Geospatial information. Their various programmes actively promote the benefits of access to quality Geospatial information and how it can be applied to support humankind. Professional associations can contribute knowledge, training and 'best practice' examples to assist in this.

180. Examples:

- i. The ISPRS led the development of the booklet - Geoinformation for Disaster and Risk Management - Examples and Best Practices (2010). This was a joint JBGIS/UNOOSA publication. This publication provided knowledge to decision-makers about on what can be done with appropriate geospatial information, applied via best practice applications.
- ii. The GSDI Association has developed the Geographic Information Knowledge Network (GIK Network (<http://giknetwork.org>) platform to serve the global geographic information community at large. All members of UN GGIM can use the platform.
- iii. The ISPRS promotes international cooperation for the advancement of photogrammetry, remote sensing and spatial information systems under three headings:
 - Organisations of the United Nations
 - UN related organisations
 - Other International Societies in related sciences and technologies
- iv. The ICA promotes the generation of extensive publications, generally through its Commissions and Working Groups. This activity provides a focus for Commissions and Working Groups and allows for knowledge about advances in contemporary thinking and research to be disseminated. The publications include books, journals and the ICA Newsletter.
- v. The FIG has a publication series with four groups of policy statements, guides, reports, and FIG regulations.

8. Partnering with civil society and the private sector

181. JB GIS members undertake programmes that partner with society and the private sector. These existing

partnerships can support UN GGIM efforts in this area.

182. Examples:

- i. The International Map Trade Association promotes the interests of all companies involved in the mapping industry, from retailers of atlases and manufacturers of globes, to developers of geographic information systems. Its publication, the IMTA Report, contains a broad range of articles and features on new developments and trends in the industry.
- ii. The International Geographical Union is addressing global climatic change and its human geographical dimensions. The IGU President has stated that he hopes the initiative to have the United Nations decree an International Year of Global Understanding (IYGU) in 2014.
- iii. The IHO, has encouraged and increasingly been assisted by the active participation of industry and other stakeholders either as Observers or expert contributors in its working groups and committees responsible for standards, guidelines and the delivery of the capacity building programme.

D. Future Document

183. The future document is a very important document for the future activities of the UN GGIM. With this in mind, the JB GIS would like to suggest the following points considered for inclusion in this document:

- Alignment with e-government activities
- Role of the research community
- Online trust
- Spatially Enabling Society
- Integration of authoritative and volunteered geographic information
- Human resource considerations -(Here - do NGIAs have staff with the right qualifications and background to meet their needs over the next 10 years?)

184. Specifically, we would also put forward that the point "There will be no more than ten global providers of geospatial information services in the world" (pg. 8) seems dissonant with the context of this document.

185. Issues identified by Paul Cheung:

Within the themes identified above, the JB GIS, through its member organisations - collectively and individually -JB GIS member organisations can address the four issues identified in Paul Cheung's message of June 6, 2012, viz:

- Agreement to and implementation of core global reference datasets by specific themes.
- A global geospatial information framework and operating platform.
- Increase the global geospatial information base.
- Establishing best practices in institutional arrangements and frameworks.

E. Collective will

186. The JB GIS, through its member organisations have the collective will to support the UN GGIM initiatives.

187. Examples:

- i. The ISPRS are taking the lead role to develop the VALID Project - The Value of Geo-Information for

Disaster and Risk Management (VALID) - Benefit Analysis and Stakeholder Assessment. It is a follow-on Publication to 'Geoinformation for Disaster and Risk Management-Examples and Best Practices', jointly published by JBGIS/UNOOSA in 2010. The intention is to produce a publication to give evidence of the economic, humanitarian, operational and organizational benefit which can be realized by applying geoinformation to disaster management, based on analyses of representative cases, and expert stakeholder assessment as well. The expected outcome is a differentiated, scientifically founded answer to the crucial question: "What is the difference you can make with geoinformation?"

ii. The Kuala Lumpur Declaration on Spatially Enabled Government and Society is another example of the JB GIS collective contribution and achievement after the Seoul meeting. It clearly reiterates the significance of UN GGIM's vision. The event and the declaration are supported by FIG, GSDI, ICA and ISPRS.

iii. At the Hangzhou Forum ISPRS and ICA were represented.

F. Commitment

188. The JB GIS reiterates that, through its member associations, it offers to contribute actively to the work of the UN GGIM and to take action as necessary as a result of the Committee's deliberations.

VI. Addis Ababa Declaration on Geospatial Information Management

The Participants at the African Preparatory Meeting on Global Geospatial Information Management (GGIM);

Taking into account initiatives in the UN, international professional bodies and structures and at the regional and national levels in Africa;

Hereby issue the Addis Ababa Declaration on Geospatial Information Management;

Acknowledging that, the UN initiative on Global Geospatial Information Management (GGIM) and the establishment of the United Nations Committee of Experts on GGIM aims at playing a leading role in setting the agenda for the development of global geospatial information and to promote its use to address key global challenges;

Taking into account the various recommendations and resolutions on Space issues of the African Union Ministerial Conference on Science and Technology (AMCOST), the African Union Ministerial Conference on ICT and the African Union Consolidated Plan of Action on Science and Technology in Africa (CPA);

Acknowledging, the Role of the Economic Commission for Africa as the coordinating body for Africa's Regional Spatial Data Infrastructure through CODIST-Geo;

Noting that national spatial data infrastructures (NSDI) are underpinned by effective partnerships and co-operation amongst a wide variety of multi-disciplinary stakeholders in the public and private sectors and the end user communities;

Recognizing the commendable efforts that have been made towards the integration of geospatial information in the National Information and Communication Infrastructures (NICI) policy;

Noting, decades of efforts in building Spatial Data Infrastructure in Africa;

Recognising, the Mapping Africa for Africa Initiative and efforts towards the development of Fundamental Geospatial Datasets;

Recognising, the African Reference Framework (AFREF) programme to support the development of a common spatial

reference system;

Recognising, the role of National Geospatial Information Authorities (NGIAs) on geospatial information development;

Recognising Africa's existing national Space Programmes (Algeria, Egypt, Nigeria, South Africa) and the ongoing efforts on Regional Space programmes (ARMS and AfricaGeoSat-1) ;

Acknowledging the role of Public Private Partnership in geospatial information production, dissemination and use;

Recommend to the member States, the Economic Commission for Africa and the African Union Commission to finalize and implement the African Action Plan on Geospatial Information Management.