United Nations

Ninth United Nations Regional Cartographic Conference for the Americas

New York, 10-14 August 2009

Report of the Conference

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Note

Symbols of United Nations documents are composed of capital letters combined with figures.

The proceedings of the previous United Nations Regional Cartographic Conferences for the Americas were issued under the following symbols and sales codes: E/CONF.67/3 and Corr.1 (Sales No. E.77.I.13) and E/CONF.67/3/Add.1 (Sales No. E/F/S.79.I.14) for the First Conference; E/CONF.71/3 (Sales No. E.81.I.4) and E/CONF.71/3/Add.1 (Sales No. E/F/S.82.I.14) for the Second Conference; E/CONF.77/3 (Sales No. E.85.I.14) and E/CONF.77/3/Add.1 (Sales No. E/F/S.88.I.19) for the Third Conference; E/CONF.81/3 (Sales No. E.89.I.8) and E/CONF.81/3/Add.1 (Sales No. E/F/S.92.I.2) for the Fourth Conference; E/CONF.86/3 (Sales No. E.94.I.4) for the Fifth Conference; E/CONF.90/3 (Sales No. E.98.I.5) for the Sixth Conference; E/CONF.93/3 (Sales No. E.01.I.13) for the Seventh Conference; and E/CONF.96/3 (Sales No. E.06.I.12) for the Eighth Conference.

Contents

I. Organization of the Conference

A. Introduction

1.   The Ninth United Nations Regional Cartographic Conference for the Americas was held in New York from 10 to 14 August 2009 in accordance with Economic and Social Council decision 2005/231 of 20 July 2005.

B. Opening of the Conference

2.   The outgoing President, Mr. Mario Reyes Ibarra (Mexico), opened the Conference.

3.   Mr. Sha Zukang, Under-Secretary-General for Economic and Social Affairs, representative of the Department of Economic and Social Affairs of the United Nations Secretariat, made an opening statement.

C. Attendance

4.   The Conference was attended by 81 representatives of 27 countries and 16 specialized agencies and international scientific organizations. The list of participants is contained in document E/CONF.99/INF/3.

D. Election of officers

5.   At its 1st plenary meeting, on 10 August 2009, the Conference elected the following officers by acclamation:

President:
> Luiz Paulo Fortes (Brazil)

Vice-Presidents:
> Ivan DeLoatch (United States of America)
> Cristian Aqueveque Iglesias (Chile)

Rapporteur:
> Cecille Blake (Jamaica)

E. Objectives of the Conference

6.   At the 1st plenary meeting, on 10 August 2009, the representative of the United Nations Statistics Division presented the objectives of the Conference as follows. The primary objective of the Conference was to provide a regional forum where governmental officials, planners, scientists and experts from the Americas and other regions could meet to report on the efforts being accomplished in the development and implementation of national and regional spatial data infrastructures in the Americas and other parts of the world, and to address the common needs, problems and experiences in the field of surveying and mapping, cartography, remote sensing, land and geographical information systems, including educational and training aspects, scientific and technological requirements,

implementation issues and benefits. Additional specific objectives were to report on the assessment of the status of the resolutions adopted at the Eighth United Nations Regional Cartographic Conference for the Americas; and on the recent developments and contributions of geographical information in support of sustainable development.

F.   Adoption of the rules of procedure

7.   At its 1st plenary meeting, on 10 August 2009, the Conference adopted its rules of procedure as contained in document E/CONF.99/2.

G.   Adoption of the agenda

8.   At its 1st plenary meeting, on 10 August 2009, the Conference adopted its provisional agenda as contained in document E/CONF.99/1. The agenda was as follows:

1.   Opening of the Conference.

2.   Election of the President and other officers of the Conference.

3.   Organizational matters:

  (a)   Consideration and adoption of the rules of procedure;

  (b)   Adoption of the agenda (including the Permanent Committee on Spatial Data Infrastructure for the Americas meeting on Wednesday, 13 August, in the afternoon);

  (c)   Establishment of committees and election of chairmen;

  (d)   Organization of Conference work;

  (e)   Credentials of representatives to the Conference.

4.   Objectives of the Conference.

5.   Conference reports:

  (a)   Reports on the implementation of resolutions adopted at the Eighth United Nations Regional Cartographic Conference for the Americas;

  (b)   Country reports.

6.   Report of the Permanent Committee on Spatial Data Infrastructure for the Americas.

7.   Invited papers on recent developments in geographical information in respect of addressing national, regional and global issues, including:

  (a)   Strategy, policy, economic and institutional issues;

  (b)   Spatial data infrastructures;

  (c)   Geospatial data collection, management and dissemination;

  (d)   Best practices and applications.

8. Reports of the technical committees of the Conference.

9. Review of the achievements of the Conference.

10. Provisional agenda for the Tenth United Nations Regional Cartographic Conference for the Americas.

11. Adoption of the report of the Ninth United Nations Regional Cartographic Conference for the Americas.

H. Establishment of technical committees and election of chairmen

9. At its 1st plenary meeting, on 10 August 2009, the Conference established the following three technical committees and elected their chairmen:

Committee I: Strategy, policy, economic and institutional issues and spatial data infrastructure and their development in the Americas

Chairman: Jesús Olvera Ramírez (Mexico)

Committee II: Geospatial data collection, management and dissemination

Chairman: Fraser Taylor (Canada)

Committee III: Best practices and applications

Chairman: Tatiana Delgado Fernández (Cuba)

I. Organization of work

10. At its 1st plenary meeting, on 10 August 2009, the Conference approved its organization of work as contained in an informal paper, which was circulated to the participants.

J. Credentials

11. At the 5th plenary meeting, on 12 August 2009, the President of the Conference reported that, in accordance with rule 3 of the rules of procedure of the Conference, the credentials of representatives had been reviewed and found to be in order.

K. Documentation

12. A list of the documents submitted to the Conference is available from http://unstats.un.org/unsd/METHODS/CARTOG/unrcca.htm.

II. Plenary session

13.   At the 1st plenary meeting, on 10 August 2009, the Conference considered agenda item 5 (a) (Reports on the implementation of resolutions adopted at the Eighth United Nations Regional Cartographic Conference for the Americas). Jesús Olvera Ramírez, Executive Secretary of the Permanent Committee, presented a report, jointly prepared by the United Nations Statistics Division and the Permanent Committee, on the status of the implementation and the follow-up actions taken on each one of the 12 resolutions adopted at the Eighth Conference.

14.   At the same meeting, the Conference considered agenda item 5 (b) (Country reports). The suggestion from Germany at the 2005 meeting that country reports be presented was adopted and delegates were asked to present. Finland proposed that countries be given time to prepare to deliver oral presentations as they were not previously notified that this was a requirement. The Chairman accepted the proposal and indicated that time would be allocated during the Conference for his presentation. Other delegates were asked to present: delegates from Suriname, China (made two presentations), Japan, Canada, Jamaica, Germany, Cuba, Algeria, Finland, Kenya and the United States of America delivered their country reports.

15.   At its 2nd plenary meeting, on 10 August 2009, the Conference began its consideration of agenda item 7 (a) (Strategy, policy, economic and institutional issues). Eduardo Sojo Garza-Aldape, President of the National Institute of Statistics and Geography (INEGI) (Mexico), delivered the keynote speech entitled "Key elements of the Geographical Information System of Mexico" (E/CONF.99/IP.1). Highlighted were the key changes and achievements made by Mexico in strengthening the institutional elements to support GIS. These included the creation of the National Statistical and Geographical Information System to produce and disseminate information as per article 26 of the Mexican Constitution and provide greater synergy between statistics and geography, the provision of INEGI with autonomous regulatory and coordination powers to execute its responsibilities, the integration of Geography and Environment Directorates which facilitates access to data in a framework that supports agriculture, census, road planning, among others, and the creation of a shared planning framework consisting of a long-, medium- and short-term annual plan that provides for the strengthening of the statistical and geographic infrastructure.

16.   At the same meeting, Mario Reyes Ibarra, Director General of INEGI (Mexico), presented a report entitled "The SDI for territorial resources management" (E/CONF.99/IP.2). The report explained how to generate geographic information in a collaborative way that clearly and conclusively contribute to national development, providing the necessary elements for the decisions at all levels of users with the appropriate technical support. Examples were shown on how SDI of Mexico (IDEMex) is used to support disaster prediction and mitigation, analyse the impact of urbanization and population growth, manage services and measure the effectiveness of public policies. There is a new thrust to seek new markets for data created and to add value to businesses and contribute to national development.

17.   Also at the same meeting, Menno-Jan Kraak, Vice-President of the International Cartographic Association (ICA), reported on the "ICA research agenda" (E/CONF.99/IP.4), including its role and objectives. The research agenda is

needed to restructure ICA work, inclusive of the 10 areas of focus and the related sub-topics. The work is organized and implemented through 22 commissions and 8 working groups. The research agenda is a changing document and therefore there is now the need to add new initiatives such as neo-geography, mashups, and so forth, and to work with other related stakeholders such as the International Federation of Surveyors to advance its work.

18. At the same meeting, Timothy Trainor, Chief of the Geographic Division, United States Census Bureau, and Vice-President of ICA, made a presentation on "Geospatial infrastructure in support of census" (see E/CONF.99/IP.5). The presentation began with a 90-second film that showcased the enormity and importance of the work done by the Bureau to prepare for the 2010 census. The goal is to count everyone once in the right location. How the census is executed was explained, including its geographical extent (700 million census blocks), the organizational and human resource requirements, the technologies used and the production rates. GIS, GPS and wireless technologies are incorporated in the new automated approach for address canvassing: handheld-computer devices (personal digital assistant (PDA)) running ArcPad are used instead of paper maps. An important aspect is the sharing of the census address list with stakeholders through a variety of programmes. Special GIS and other related tools are developed and also shared with partners to encourage the use of standards and to maintain the quality of data created. The importance of properly and efficiently managing the census was emphasized as it is the largest peacetime mobilization exercise in the United States.

19. Also at the same meeting, Fraser Taylor, President of the International Steering Committee for Global Mapping (ISCGM), presented the paper entitled "Global mapping: a tool for natural disaster mitigation" (E/CONF.99/IP.7). The report shared the origins, vision and purpose of the Global Map (GM) project, highlighting the endorsements and recognition received from countries, organizations and international initiatives. The challenges and achievements of Global Map in areas of capacity-building and the creation of topographic and land use/cover maps by member countries were also highlighted. As of May 2009, 164 countries were participating in the project. The report stressed the importance of participation among private, public and academia to address issues of common interest, including interoperability and SDI awareness at the highest level. It was noted that Global Map was not designed for disaster management; however, its maps are made available on the United Nations and other websites to support disaster recovery initiatives such as Katrina. The audience supported the call to address human and institutional problems hindering the development of SDIs.

20. At its 3rd plenary meeting, on 11 August 2009, the Conference began its consideration of agenda item 7 (b) (Spatial data infrastructure (global/regional)). Bas Kok, President of the Global Spatial Data Infrastructure (GSDI) Association, presented the paper entitled "The GSDI Association activities related to SDI convergences" (E/CONF.99/IP.9). The report highlighted the GSDI strategic plan on SDI convergences, the fostering of strategic alliances and building capacity, as these were needed to advance the development and implementation of SDIs. Successful SDI experiences across the world, Europe — Infrastructure for Spatial Information in Europe (INSPIRE), Canada, India and Australia were noted and that national mapping agencies were playing the lead role in SDI development which in turn has become essential to e-government programmes. The GSDI Association will intensify cooperation and creation of strategic alliances with the GEO GEOSS community,

national mapping agencies and others to share the successes of SDI and stimulate capacity-building. The delegate invited its partners in the Americas to actively participate in discussions to share experiences and knowledge on successful SDI implementation.

21.   At the same meeting, Greg Scott, President of the Permanent Committee on GIS Infrastructure for Asia and the Pacific (PC-GIAP), presented a paper entitled "Geo-information for mitigating large-scale disasters in the Asia-Pacific region" (E/CONF.99/IP.10). The framework for the presentation was laid by providing examples of past disasters in the region and stressing that population pressure, rural urban drift and unplanned development were contributory factors. Science, needs and awareness are not always matching and thus the need to bring these together. Therefore, the use of geospatial information, the determination of exposure and vulnerability to hazards and the creation of models are important to support the risk assessment and management. The delegate described Australia's efforts and progress in disaster risk reduction through its agency AusAID and the lead role being played in the region to support emergency response and reduction.

22.   Also at the same meeting, Stuart Gill, representative of the World Bank, presented the paper entitled "The Central American Probabilistic Risk Assessment (CAPRA): a regional SDI for disaster risk reduction" (E/CONF.99/IP.11), highlighting the initiative to enhance disaster risk understanding in the region, led by the United Nations Geographic Information Working Group, the World Bank, the Inter-American Development Bank and the Central American Risk Group. CAPRA is an ongoing initiative that aims to develop and enhance a set of GIS-based tools in order to understand, communicate and support decisions related to disaster risk at the local, national and regional levels in Central America. CAPRA applies the principles of probabilistic analysis to evaluate the magnitude and likelihood of occurrence of these hazards at each point of the national territory. It creates and manages GeoNodes (a data clearing house with tools for management and the distribution of hazard and risk data), produces reports, develops software used to evaluate risk and user applications, and provides training. The essential difference of the CAPRA approach is the departure from the use of web portals to the creation of the GeoNode built on web 2.0 and the use of open source software (POSTGIS, GeoNetwork, GeoWebCache), enabling the integration of the social and technical aspects, and giving users the incentives to participate and contribute rather than consume. The presentation stressed the necessity to evolve from a static notion of SDI as a repository of data, to a more dynamic one of repository of data and tools.

23.   At the same meeting, Mauro Salvemini, President of the European Umbrella Organization for Geographic Information (EUROGI), presented the paper entitled "The infrastructure for spatial information in the European Community vs. regional SDI: the shortest way for reaching economic and social development" (E/CONF.99/IP.12). EUROGI is 15 years old and has membership of 23 countries and 6,500 organizations. The group focuses on SDI policy and awareness and supports the principles of access, maintenance, citizen participation and capacity-building to sustain SDI. Reference was made to the INSPIRE directive that lays down general rules to establish an infrastructure for spatial information in Europe for the purposes of Community environmental policies and activities which may have an impact on the environment. The presentation also mentioned a number of projects being implemented by the European Community to strengthen SDI, such as eSDI-Net+ that promotes cross-border dialogue and exchange of best practices on

SDIs throughout Europe, and European Address Infrastructure (EURADIN), a network that promotes the European address harmonization. The European experiences show that SDI generates financial, socio-economic and technical benefits, and this propels the need to foster the evolution of SDI for e-government.

24. Also at the same meeting, Rafael March, delegate from the Brazilian Institute of Geography and Statistics (IBGE) (Brazil), presented the paper entitled "Activities of IBGE to build the Brazilian SDI" (E/CONF.99/IP.13), highlighting the Brazilian SDI development experience. The Presidential Decree 6666 of November 2008 has established the legal framework for the Brazilian SDI. Brazil's SDI vision is modelled on the INSPIRE directive. Brazilian SDI (INDE) is built on a service-oriented architecture, which is open, scalable and configured to find, explore and provide access to metadata and geospatial data. The Brazilian Institute of Geography and Statistics has responsibility for the creation, operation and management of the INDE. The National Commission of Cartography (CONCAR) has a wide cross-section of members that produce and maintain spatial data and therefore sets the rules and standards, and coordinates the work of INDE. It was stressed that the work of INDE is based on an action plan and a three-cycle implementation strategy that spans from 2009 to 2020. The action plan addresses people, data, institutional, technology, standards and specifications for SDI.

25. At the same meeting, Cristian A. Iglesias, representative of Chile presented the paper entitled "SDI in Chile, National System for Territorial Information Coordination: state of the art and projections" (E/CONF.99/IP.14), outlining the Chilean SDI experience. The Supreme Decree No. 28 in 2006 established the National System for Territorial Information Coordination (SNIT) with responsibility to provide equal access and transparency in information generated by the state, modernize state management using e-government and enable the efficient use and savings of resources. SNIT provides policy and technical coordination, working with all relevant bodies to satisfy demand and supply and exchange of information among sectors. A variety of tools have been developed to support SNIT activities: a national catalogue for metadata, geo-portal for maps, geo-nodes that publishes maps and MyGeography that provides public access and supports geographic education in schools (these tools are accessible at www.snit.cl). The delegate from Brazil inquired whether the information provided was sold. The Ministry of Finance in Chile has directed that SNIT must be self-financing and therefore the need to charge for the information provided.

26. Also at the same plenary meeting, Tatiana Delgado Fernández, representative of Cuba, presented the paper entitled "The Cuban Republic SDI, advances and perspectives" (E/CONF.99/IP.15). The paper explained that SDI was the integration of social and technical networks which were based on coordination. In 2005, the Council of Ministers under 5535 Decree established the legal framework for SDI. A five-year strategy and annual plans have been prepared. The SDI organizational structure consists of Ministers at the sector level, Commissioners at the provincial level and working groups that direct policy, standards and other technical matters. Metadata catalogue and map services have been launched. The data has been leveraged to develop applications to respond to national priorities such as fleet management. Coordination at the local level with a political champion is essential, as is also training and creating applications that serve the social agenda for stakeholders.

27.   At the same meeting, Julio Mezcua-Rodriguez, representative of the National Geographical Institute of Spain, presented the paper entitled "The spatial data infrastructure of Spain as an example of success in Europe" (E/CONF.99/IP.16), which focused on the legal, financial, geo-data policies and data creation projects developed and implemented to support the creation of the Spanish SDI, which was created on the basis of cooperation among the producers of geospatial information. It is led by the National Geographic High Council and Advisory Body with the participation of stakeholders at the national, regional and local levels. Financing for SDI is done on a shared cost approach with 66 per cent contribution from the national Government and 34 per cent from regional governments. Importance has been given to the harmonization and maintenance of aerial photography, high resolution digital orthophotography, land cover and land use, topographic databases and city maps. Data is made available in seven languages via several nodes.

28.   At its 4th plenary meeting, on 11 August 2009, the Conference began its consideration of agenda item 7 (c) (Geospatial data collection, management and dissemination). Jean Parcher, representative of the United States Geological Survey (USGS), presented the paper entitled "The environmental information system of the USA-Mexico border" (E/CONF.99/IP.18), which outlined the work being done by USGS, INEGI (Mexico) and the International Boundary and Water Commission to harmonize and create a seamless geospatial database for binational environmental monitoring, urban growth analysis and other scientific applications. The databases created are used to investigate the link between human and environmental issues. A health and environment website is available for users to have access and download data in various formats. This work was achieved through strong partnerships and mutual capacity-building. Other examples of collaboration were in the areas of land-use changes for river basins, the integration of census data between the United States and Mexico, the harmonization of geological maps, and the examination of the relation between fish health and the environment. The representative from Germany asked how the harmonization across data sets was managed, for example the preparation of digital elevation models. The response was: the work is carried out by an inter-agency group of experts with the skills to address that issue.

29.   At the same meeting, Prashant Shukle, representative of the Earth Sciences Sector, Natural Resources Canada (Canada), presented the paper entitled "GeoConnections program: public health and public safety/security community-based focus" (E/CONF.99/IP.19). The paper gave a background on GeoConnections, its formation, evolution, objectives and four key areas of work. The report focused on the work done in public heath and public safety. The success achieved has been due to: its governance model, which includes partnerships at all levels of government and the private sector; the principle that all Canada owns GeoConnections; and the use of international standards that ensures interoperability. The core infrastructure project is the expansion of the geo-database through community participation and the provision of access to data at no-cost and unrestricted use via the portal. Tools to analyse and share information were created in the areas of public heath surveillance and health emergency response and also public safety to address community issues.

30.   Also at the same meeting, Steve Ebener, World Health Organization (WHO), presented, on behalf of Lorant Czaran from the United Nations Office for Outer Space Affairs, the paper entitled "The UN-SPIDER: a UN platform to support disaster risk management and emergency response" (E/CONF.99/IP.20). The

presentation provided an overview on the main duties of the United Nations Office for Outer Space — which is responsible for promoting international cooperation in the peaceful uses of outer space, to support the achievement of development goals for the benefit of humankind — and focused on the United Nations Platform for Space-based Information for Disaster Management and Emergency Response (UN-SPIDER) initiative. The United Nations General Assembly established UN-SPIDER as a programme within the United Nations to provide universal access to all types of space-based information and services relevant to disaster management. UN-SPIDER works with all Member States to ensure the access and use of space-based solutions for disaster risk management and emergency response, through the network of national focal points. UN-SPIDER provides technical advisory support, access to disaster data via a knowledge portal, fosters cooperation within United Nations system agencies to reduce the impact of natural disasters and facilitates capacity-building and forums for meeting and discussing relevant issues and best practices on disaster risk management. The delegate from Suriname asked why a regional SPIDER Office was not in the Americas. The speaker noted that it might be because of funding issues. The representative of the Caribbean Community (CARICOM) promised to follow up on the matter.

31. At the same meeting, Cecille Blake, from the Office of the Prime Minister (Jamaica), presented the paper entitled "Making geospatial data, products and services available and accessible in Jamaica" (E/CONF.99/IP.21). The presentation provided an overview of the national vision on geographic information, which aims to coordinate the development and implementation of a national networked GIS inclusive of, comprehensive and accurate spatial data, for land and land-related agencies and to develop and provide advice on policy, institutional requirements, legislation and regulations. It highlighted the building process of the national spatial data infrastructure of Jamaica, the initiatives and programmes implemented and important challenges. The main objectives are to provide a common geographic base and a legal framework to all the stakeholders active in the geographic information field, build capacities, develop standards and ultimately make geospatial data available and accessible. The presentation provided an illustrative example of the greenhouse site selection. An emphasis was put on the success factors for building a national spatial data infrastructure, including enabling policy and legislation, institutional collaboration, and public awareness. Some future plans were laid out and include the focus on web applications development and use for agriculture, business, and economic development, and the leverage of resources of the private sector to expand the geo-informatics sector.

32. Also at the same meeting, Carmelle Terborgh, from the Environmental Systems Research Institute (ESRI) (United States), presented the paper entitled "Advanced GIS applications in health disaster management" (E/CONF.99/IP.22). The presentation stressed the fact that geographic information systems (GIS) provided a unique opportunity to integrate the various data types that impact a given population during a health crisis. The presenter also shared how GIS tools could be used to show the strong relationship between the economy, trade and tourism, between human health and agriculture and to support food security. Effective disaster management requires the integration and analysis of demographic, environmental, and infrastructure data, as well as the specific data about a given disease. There are slow and rapid onsets of "health disasters", and both can be visualized and analysed using GIS which makes geographic relationships, patterns,

and trends apparent. The presentation illustrated some advanced GIS technologies that were applied to each instance of cyclical health disasters. The benefits of using GIS mobile application, ArcGIS online and the free tool ArcGIS Explorer to support a multiplicity of applications, from telemedicine, bioterrorism to emergency management and response.

33. At the same meeting, Jon Pollack, from GeoDecisions (United States), presented the paper entitled "Leveraging geospatial technologies for analysis, decision support, and information dissemination for natural disasters and hazards" (E/CONF.99/IP.23). The presentation asserted that geospatial technologies allow decision support beyond "dots on a map", integrating data from different sources, different modes and different formats, as well as integrating shipment data with sensitive areas, high-risk areas, populations, urban areas and infrastructure. The presentation focused on the management by exception approach that allows the important information to be brought to attention, and provides multi-use return, including security, incident management and environmental monitoring. The advancement of these technologies was acknowledged, but the issues of their usefulness for countries lacking the basic technological infrastructure as well as their cost were raised.

34. At its 5th meeting, on 12 August 2009, the Conference began its consideration of agenda item 7 (d) (Best practices and applications). Roberto Quass Weppen, from the General Directorate of the National Centre for Disaster Prevention (Mexico), presented the paper entitled "The use of geospatial information in risk prevention" (E/CONF.99/IP.24). The presentation asserted the comprehensive approach to risk assessment, taking into account the following components: potential damage, exposure and vulnerability, and the application of this probabilistic risk modelling to the case of Mexico. Emphasis was put on the process of the integration of geospatial information and the use of geospatial technologies for the risk assessment. Some examples and applications of the use of this approach were provided, such as the system developed for Tabasco and Chiapas, the Seismic Warning Systems in Guerrero and Oaxaca, the portal and the creation of a National Risk Atlas of Mexico. Work is being done to introduce the use of financial tools to transfer risk and reduce the impact of disasters. The presentation stated that the systematic development and use of geospatial information systems in Mexico have been key to reducing the impact and above all, the loss of life caused by natural and man-made disasters.

35. At the same meeting, Harold Wall, representative of CARICOM, made a presentation on "Building a geospatial infrastructure in small islands/countries: some experiences and specific issues in the Caribbean region" (see E/CONF.99/IP.25). The presentation asserted that the challenge of designing, building, implementing and maintaining a spatial data infrastructure draws on many different disciplines and requires examination of a large number of factors and issues. Owing to the specificity of the Caribbean region, with small islands and countries experiencing many challenges — institutional, political, cultural and financial that impact the development of national spatial data infrastructures. The presentation focused on reasons that would support the creation of a regional spatial data infrastructure, such as climate change and frequent disasters, including floods and hurricanes. It was noted, however, that despite considerable interest and activities, the development of an effective and comprehensive RSDI is hampered in most cases by a lack of support from some stakeholders, which results in this

initiative remaining just an innovative concept. A starting point for a regional SDI was identified through the IDB/UNFPA project that created a common framework for population census data for the region.

36. Also at the same meeting, Antonio Hernández Navarro, from INEGI (Mexico), presented the paper entitled "Geospatial collaboration centres as support on cartography generation for early response" (E/CONF.99/IP.27). The presentation provided an overview on the geospatial collaboration centre in terms of objectives, components and implementation considerations. The presentation focused on the collaborative work of the Geospatial Centre for Generation of Data and Information (CCG), which takes geographic knowledge and creates solutions. The CCG creates partnerships between Federal and Provincial government agencies to harmonize and make data available and reduce duplication and waste of resources. It provided some illustrative applications in the region, highlighting the fact that geospatial information is made available online and is used to support disaster management and response. In response to a question on managing capacity-building, it was noted that emphasis is placed on knowledge transfer within working groups which includes training in new and analytical tools.

37. At the same meeting, Ivan DeLoatch, Executive Director of the Federal Geographic Data Committee (United States), presented the paper entitled "How the NSDI reaches significant savings for data collection and use, reduces duplication of efforts among agencies, improves data quality and makes geographic data more accessible to the public" (E/CONF.99/IP.28). The presentation provided an overview on the United States national SDI, the work of the Federal Geographic Data Committee, the National Geospatial Advisory Group established in 2008, and stressed its business management approach. The keys to national SDI success are based on a clearly articulated national SDI and the value proposition, leadership and governance, having a business case that is endorsed by all, sustainable operations and funding models and strong marketing and communications strategies. The presentation provided some concrete examples and applications that showed how geospatial information and technology helps to save money, reduce duplications, solve problems and improve decision-making. The presentation also highlighted the lessons learned from the years of making millions of dollars of investment in national SDI.

38. Also at the same meeting, Steve Ebener, representative of WHO, presented the paper entitled "Vulnerability and risk analysis and mapping (VRAM) platform for health risk reduction" (E/CONF.99/IP.29). The primary objective of VRAM is to support Member States and partners to strengthen their capacity to assess, visualize and analyse health risks and incorporate the results of this analysis in disaster risk reduction, emergency preparedness and response plans in line with the WHO six-year strategy for risk reduction and emergency preparedness. At the same time, the application of the VRAM process allows for the compilation and homogenization of baseline data, information and maps to help health authorities and partners to take informed decisions in times of crises. The presentation introduced the VRAM initiative and illustrated the important role that national mapping agencies have to play in the context of its activities.

39. At the same meeting, Kyoung-Soo Eom, Chief of the United Nations Cartographic Section, presented the paper entitled "United Nations Cartographic Section main tasks and recent applications" (E/CONF.99/IP.30), highlighting the

principal duties the Cartographic Section has to carry out by providing accurate and timely geospatial information in support of decision-making and the operational needs of the United Nations Security Council, United Nations management, departments and offices of the United Nations Secretariat, in particular the Departments of Peacekeeping Operations, Political Affairs and Field Support. Also included are the coordination and support of the GIS operations in the United Nations field missions and the technical assistance on International Boundary issues. In 2007, the Cartographic Section established the GIS Centre in Brindisi, Italy, for capacity-building and better support of the United Nations field missions. The Cartographic Section builds and maintains United Nations Geo-database, the United Nations International Boundary database, the United Nations Image Library and United Nations Earth (Google Earth enterprise system). Other specific GIS applications include two Internet and United Nations Intranet applications: Map Portal and UN Gazetteer.

40.   At its 6th plenary meeting, on 13 August 2009, the Conference began its consideration of item 6 (Report of the Permanent Committee on Spatial Data Infrastructure for the Americas). Jesús Olvera Ramírez, Executive Secretary of the Permanent Committee, presented a report on the Committee's major activities during the period 2005-2009, including an overview on the membership and the new elected Bureau of the Committee. The report stressed the fact that, despite the efforts made by the developing countries in the Americas region to develop their spatial data infrastructure, three main problems needed to be tackled: financial mechanisms; exchange of best practices and recognition of SDI by decision makers; better coordination between organizations active in the geographic information field in the region. There are new initiatives each year, however, the benefits are not growing proportionally across the region, there is a need for synergy. It is also necessary to have a document on policy as regards to data, similarly to what the European Union has done with INSPIRE; this document could give guidance to national initiatives and would constitute a strong step forward. The report recommended that PC-IDEA continue to seek alternative sources of financing in order to achieve its objectives, put in place working committees and hold periodic meetings, use geo-portals and other web-based applications to strengthen the dialogue and sharing of good practices, and reach out to decision makers to raise their awareness on building national and regional SDIs.

III. Work of Technical Committee I: Strategy, Policy, Economic and Institutional Issues, and Spatial Data Infrastructures and their Development in the Americas

41. At its 7th plenary meeting, on 14 August 2009, the Conference began its consideration of item 8 (Reports of the technical committees of the Conference). Raphael March (Brazil) presented an oral report on the work of Technical Committee I (Strategy, Policy, Economic and Institutional Issues, and Spatial Data Infrastructure and their Development in the Americas).

42. Technical Committee I discussed issues related to policies, economical and institutional topics as well as the options for developing the critical points of the SDI at the national and regional levels. The general understanding of the Committee was that it would be necessary to reinforce some of the resolutions of the Eighth Conference. One of the main concerns was related with funding for some of the activities related to capacity-building. The other main concerns of Committee III are the following:

    (a)   In reference to the strategy and policy issues, the group agreed that it is necessary to understand and disseminate the legal frameworks that are functioning at national and regional levels. Such frameworks could help to avoid duplication of work in the Latin American and the Caribbean regions;

    (b)   Each country should build their own map roads, establishing the main national priorities for working on practical outcomes based on standardized data, where the main actors in these activities collaborate by sharing information and making available relevant and timely information to policymakers at all levels of government;

    (c)   The Committee also discussed the necessity for the Directive Board of PC-IDEA to seek funding to establish a viable system to communicate among itself as well as its member countries, otherwise it will be difficult to advance the tasks of the PC-IDEA as scheduled in its programme.

43. Based on these discussions, Technical Committee I drafted three recommendations to the PC-IDEA on the development of a workplan and establishment of four working groups; development of guidelines on policies and data, and the dissemination of national legal frames and national technical standards on its website.

IV. Work of Technical Committee II: Geospatial Data Collection, Management and Dissemination

44.   At the same meeting, Jean Parcher (United States) presented an oral report on the work of Technical Committee II (Geospatial Data Collection, Management and Dissemination). The Committee discussed a number of issues relating to geospatial data collection, management and dissemination and argued that these were closely related topics which needed to be considered as a whole rather than as individual parts. They also recognized that conditions relating to each element were changing rapidly in response to changes in technology and society and that older approaches need to be rethought in the light of these changing circumstances. These issues are of special importance to disaster prevention, mitigation and management, the major theme of the Ninth United Nations Regional Cartographic Conference of the Americas.

45.   The main concerns of Committee II focused on the following areas:

(a)   In reference to data collection, data management, and data dissemination recommend that national mapping agencies revise their business models to include public/private and public/public partnerships. These models need to take into consideration resources for data collection, data security, cost recovery, data integration and data interoperability at multi-levels of government;

(b)   With the rapid advance of location-based technologies and new business models, there is a need for the United Nations to fund a current study of the status of mapping by country and region throughout the world. This study should take into consideration official national mapping agencies, other institutions, and the private sector. This should include both the status of technological and legal issues pertaining to geospatial data;

(c)   Provide a forum for national mapping agencies to discuss optimal solutions and/or business cases for reducing the barriers to access to data: such as security, cost recovery, copyright and different technological access to the data. This should also include timely access to data for disaster prevention, mitigation and management;

(d)   Provide a forum for national mapping agencies to explore the role of government in data collection, management and dissemination in the light of changing technologies and societal applications, which provides the national mapping agencies with sufficient resources to play a key role in geospatial technology and mapping within their country. Where appropriate this should include the collection and dissemination of cadastral information.

46.   Considering the main points outlined above, Committee II submitted to the Conference for discussion five draft resolutions on the creation of a working group to discuss innovations for national mapping agency business models; a new study of the status of mapping by country and region throughout the world; on providing forums to discuss optimal solutions to improve access to data, as well as the role of government in data collection, management and dissemination; and the increase of involvement of developing countries, including the Caribbean countries.

V. Work of Technical Committee III: Best Practices and Applications

47.   Also at the same meeting, Tatiana Delgado (Cuba) presented an oral report on the work of Technical Committee III (Best Practices and Applications).

48.   Committee III discussed best practices and applications and focused on the following topics:

(a)   The development of spatial data infrastructures in the Americas should follow a user-driven approach through the identification of the main applications priorities to undertake tailored SDI implementations, and take advantage of top-down and bottom-up approaches. Disaster risk management is an emergent priority already identified for the area;

(b)   Systematic communication and diffusion are key activities in order to disseminate best practices, experiences and knowledge related to SDI at the local, national, subregional and regional levels within the region;

(c)   The integration of local, national and regional SDIs, as well as other SDI initiatives of the United Nations, working in collaborative environments, is essential to achieving an effective use of SDIs at all levels;

(d)   The best arguments for convincing decision makers of the importance of SDI come from the dissemination of the benefits and the real impact on successful SDI initiatives on society.

49.   Committee III submitted to the Conference four draft resolutions on: communication and diffusion; user-driven SDI approach; collaboration and integration; and encouraging the Caribbean subregion.

VI. Resolutions adopted by the Conference

A. Titles

1. Workplan of the Permanent Committee on Spatial Data Infrastructure for the Americas and establishment of working groups

2. Mechanisms for the building of spatial data infrastructures

3. New study on the status of mapping by country and region

4. Forum for sharing spatial data infrastructure best practices

5. Follow-up meeting on disaster risk management and spatial data infrastructure

6. Funding issues

7. Support of spatial data infrastructure in the developing countries of the Americas and in particular in the Caribbean region

8. Tenth United Nations Regional Cartographic Conference for the Americas

9. Vote of thanks

B. Texts

1. Workplan of the Permanent Committee on Spatial Data Infrastructure for the Americas and establishment of working groups

The Conference,

Recalling resolution 2 entitled "Institutional strengthening, education and training", and resolution 6 entitled "Contribution of the Permanent Committee on Spatial Data Infrastructure for the Americas (PC-IDEA)", adopted by the Seventh United Nations Regional Cartographic Conference for the Americas,

Considering the importance of spatial data infrastructures and their development in the Americas and the necessity for the Permanent Committee on Spatial Data Infrastructure for the Americas to define clear objectives and time-bound goals,

Further considering that innovations for national mapping agency business models should include public/private and public/public partnerships, and that such models need to take into consideration resources for data collection, data security, cost recovery, data integration and interoperability,

Recommends that the Permanent Committee on Spatial Data Infrastructure for the Americas develop a workplan for the next four years, by establishing working groups on the following themes:

(a) Institutional strengthening, education and training;

(b) Technical standards and specifications;

(c) Best practices and applications;

(d) Innovations for national mapping agency business models.

2. **Mechanisms for the building of spatial data infrastructures**

The Conference,

Recalling resolution 4 entitled "Policy and reform", adopted by the Eighth United Nations Regional Cartographic Conference for the Americas,

Considering the importance of policies and legal instruments for the building of spatial data infrastructures,

1. *Recommends* that the Permanent Committee on Spatial Data Infrastructure for the Americas set up mechanisms to develop guidelines on geospatial data (creation, management and dissemination), metadata, and geospatial information policies and legal issues relevant to the region, using as a model the various initiatives developed by the INSPIRE Directive;

2. *Also recommends* that the Permanent Committee post on its website available SDI legislative frameworks, management models and national technical standards.

3. **New study on the status of mapping by country and region**

The Conference,

Considering that the last United Nations Status Report of World Topographic and Cadastral Mapping has been published in 1990 in "World Cartography", Volume XX, and recognizing the value of these reports for the countries,

1. *Recommends* that the United Nations conduct, within available resources, a new study of the status of mapping by country and region throughout the world. The study should take into consideration official national mapping agencies, other institutions, and the private sector, including both the status of technological and legal issues pertaining to geospatial data;

2. *Also recommends* that the Permanent Committee on Spatial Data Infrastructure for the Americas provide a forum for national mapping agencies to discuss optimal solutions and/or business cases for reducing the barriers of access to data: such as security, cost recovery, copyright, and different technological access to the data, including timely access to data for disaster prevention, mitigation and management;

3. *Further recommends* that the Permanent Committee provide a forum for national mapping agencies to discuss and advise Governments on its role in data collection, management and dissemination in the light of changing technologies and societal applications, and that Governments should be encouraged to make available sufficient resources for them to play a key role in geospatial technology and mapping within their countries, including the collection and dissemination of cadastral information.

4. **Forum for sharing special data infrastructure best practices**

The Conference,

Recognizing that the participants of the Ninth United Nations Regional Cartographic Conference for the Americas appreciated the increase in the number of best practices in spatial data infrastructure development in the region,

notwithstanding the lack of systematic dissemination and visibility of this information for all countries of the region,

Noting the need to establish collaborative and permanent mechanisms to maintain updated information and to exchange knowledge on the spatial data infrastructures and related best practices at the local, national and regional levels,

Recommends that the Permanent Committee on Spatial Data Infrastructure for the Americas create a virtual platform/forum to be hosted on its website to exchange and share spatial data infrastructure best practices.

5. **Follow-up meeting on disaster risk management and spatial data infrastructure**

The Conference,

Welcoming the decision to consider the theme "Building geospatial infrastructure in support of disaster prevention and management" at the Ninth United Nations Regional Cartographic Conference for the Americas,

Considering the diversity of subregional and national initiatives in the use of geospatial information related to disaster risk reduction and the urgent need to integrate them in a collaborative regional geospatial data infrastructure oriented to disaster risk reduction,

Recommends that the Permanent Committee on Spatial Data Infrastructure for the Americas convene a follow-up meeting on disaster risk management and spatial data infrastructure, within one year, that would allow the participation of the majority of Latin American and the Caribbean countries, if possible in conjunction with United Nations and/or other international organizations events.

6. **Funding issues**

The Conference,

Recognizing that spatial data infrastructure is a cross-cutting issue in the context of economic, ecological, social and sustainable development,

Also recognizing that the development of spatial data infrastructure is a worldwide challenge from the local, to the national, regional and global levels,

1. *Recommends* that spatial data infrastructure should play a central and systematic role for all United Nations activities concerning economic, ecological, social and sustainable development;

2. *Also recommends* that the United Nations Statistics Division, in conjunction with the Permanent Committee on Spatial Data Infrastructure for the Americas, explore the possibilities to use existing funds and/or create a new trust fund to support spatial data infrastructure development at each administrative level.

7. **Support of spatial data infrastructure in the developing countries of the Americas and in particular in the Caribbean region**

The Conference,

Considering that a geodetic reference frame is a fundamental component of a spatial data infrastructure,

Recognizing the different levels of spatial data infrastructure development among the subregions of the Americas,

Further recognizing the efforts of the Global Mapping project in encouraging the implementation of spatial data infrastructure and providing spatial data of high quality,

Also recognizing the need to continue collaboration and integration efforts towards the development of spatial data infrastructure in the Americas,

Bearing in mind the urgency to assist countries that are currently establishing their national spatial data infrastructure, starting with the promotion of political and public awareness of spatial data infrastructure development and its benefits, and metadata management,

Also noting that, owing to its unique geographical position, the Caribbean region has been specifically affected by natural disasters,

1.	*Recommends* that the Permanent Committee on Spatial Data Infrastructure for the Americas and United Nations system agencies support the development of local, national and regional spatial data infrastructure in the near future in the developing countries of the Americas, and in particular in the Caribbean region;

2.	*Further recommends* that Member Countries be encouraged to participate in the Geocentric Reference System for the Americas (SIRGAS) project as well as in the new World Height System (WHS) being prepared by the International Association of Geodesy (IAG) and adopt both as the official reference frames.

## 8.	Tenth United Nations Regional Cartographic Conference for the Americas

The Conference,

Noting the progress made in the work of the spatial data infrastructure, at the national, regional and global levels, by States Members of the United Nations,

Noting also the essential role played therein both by the present United Nations Regional Cartographic Conference for the Americas and by the Permanent Committee on Spatial Infrastructure for the Americas,

Noting further that the Permanent Committee was established in 2000 pursuant to resolution 3 adopted by the Sixth United Nations Regional Cartographic Conference for the Americas,

Noting that the Permanent Committee has expressed its willingness to hold its meeting in conjunction with the Tenth United Nations Regional Cartographic Conference for the Americas,

Recognizing the necessity of continuing this important work,

Recommends to the Economic and Social Council that the Tenth United Nations Regional Cartographic Conference for the Americas be convened in 2013.

9. **Vote of thanks**

The Conference,

Expresses its deep appreciation to the Secretariat for the excellent substantive servicing provided to the Ninth United Nations Regional Cartographic Conference for the Americas,

Expresses its sincere appreciation to the Bureau of the Conference and to the officers of the technical committees, the invited speakers and the representatives of international organizations, for the excellent manner in which the Conference was conducted,

Expresses its thanks to the other officers of the Conference and staff of the United Nations, including the editors, interpreters, translators and secretarial support staff for their dedicated work.

Annex

Provisional agenda for the Tenth United Nations Regional Cartographic Conference for the Americas

1. Opening of the Conference.

2. Election of the President and other officers of the Conference.

3. Adoption of the agenda and other organizational matters:

    (a) Consideration and adoption of the rules of procedure;

    (b) Adoption of the agenda and organization of work of the Conference;

    (c) Establishment of technical committees and election of the chairperson of each committee;

    (d) Credentials of representatives to the Conference.

4. Objectives of the Conference.

5. Conference reports:

    (a) Reports on the implementation of resolutions adopted at the Ninth United Nations Regional Cartographic Conference for the Americas;

    (b) Country reports.

6. Report of the Permanent Committee on Spatial Data Infrastructure for the Americas (PC-IDEA).

7. Invited papers on recent developments in geographic information in respect of addressing national, regional and global issues, including:

    (a) Strategy, policy, economic and institutional issues;

    (b) Spatial data infrastructures and e-government;

    (c) Geospatial data collection, management and dissemination;

    (d) Best practices and applications;

    (e) Climate change;

    (f) Disaster risk reduction.

8. Reports of the technical committees of the Conference.

9. Provisional agenda for the Eleventh United Nations Regional Cartographic Conference for the Americas.

10. Adoption of the report of the Tenth United Nations Regional Cartographic Conference for the Americas.

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