



United Nations

Eighth United Nations Regional Cartographic Conference for the Americas

New York, 27 June-1 July 2005

Report of the Conference

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I. Organization of the Conference

A. Introduction

1. The Eighth United Nations Regional Cartographic Conference for the Americas was held in New York from 27 June to 1 July 2005 in accordance with Economic and Social Council decision 2001/232 of 19 July 2001.

B. Opening of the Conference

2. The outgoing Vice-President, Mr. Santiago Borrero (Colombia), opened the Conference.

3. The representative of the Department of Economic and Social Affairs of the United Nations Secretariat made an opening statement on behalf of the Under-Secretary-General for Economic and Social Affairs. An introductory statement was made by the Director of the United Nations Statistics Division.

C. Attendance

4. The Conference was attended by 158 representatives of 32 countries and 15 specialized agencies and international scientific organizations. The list of participants is contained in document E/CONF.96/INF/3.

D. Election of officers

5. At its 1st plenary meeting, on 27 June 2005, the Conference elected the following officers by acclamation:

President:

Mario Reyes (Mexico)

Vice-Presidents:

Luis Alegria (Chile)

Eduardo Nunes (Brazil)

Rapporteur:

Jean Cooper (Canada)

E. Objectives of the Conference

6. At the 1st plenary meeting, on 27 June 2005, the representative of the United Nations Statistics Division defined the objectives of the Conference as follows. The primary objective of the Conference was to provide a regional forum where governmental officials, 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 to address the common needs, problems and experiences in the field of cartography and geographical information, 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 by the Seventh United Nations Regional Cartographic Conference for the Americas; and on the recent developments and contributions of geographical information in support of the implementation of Agenda 21¹ and sustainable development.

F. Adoption of the rules of procedure

7. At its 1st plenary meeting, on 27 June 2005, the Conference adopted its rules of procedure as contained in document E/CONF.96/2.

G. Adoption of the agenda

8. At its 1st plenary meeting, on 27 June 2005, the Conference adopted its provisional agenda as contained in document E/CONF.96/1. The agenda was as follows:

1. Opening of the Conference.
2. Election of the President and other officers of the Conference.
3. Objectives of the Conference.
4. Organizational matters:
 - (a) Consideration and adoption of the rules of procedure;
 - (b) Adoption of the agenda;
 - (c) Establishment of committees and election of Chairmen;
 - (d) Organization of work;
 - (e) Credentials of representatives to the Conference.
5. Country reports.
6. Reports on the implementation of resolutions adopted at the Seventh United Nations Regional Cartographic Conference for the Americas.
7. Report of the Permanent Committee on Spatial Data Infrastructure for the Americas (PC-IDEA).
8. Reports on achievements in geographical information in 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.
9. Adoption of resolutions and of the report of the Eighth United Nations Regional Cartographic Conference for the Americas.

10. Review of the achievements of the Conference.
11. Provisional agenda for 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 27 June 2005, the Conference established the following three technical committees and elected their chairmen:

- Committee I: Strategy, policy, economic and institutional issues
Chairman: Carlos Laguna (Panama)
- Committee III: Spatial data infrastructures and their development in the Americas
Chairman: Leslie Armstrong (United States of America)
- Committee II: Geospatial data collection, management and dissemination
Chairman: Luis Paulo Souto Fortes (Brazil)

I. Organization of work

10. At its 1st plenary meeting, on 27 June 2005, 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 29 June 2005, 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 are available from <http://unstats.un.org/unsd/METHODS/CARTOG/unrcca.htm>.

II. Plenary session

13. At its 1st plenary meeting, on 27 June 2005, the Conference considered agenda item 5 (Country reports). As has been the practice during previous United Nations regional cartographic conferences, the country reports, contained in conference room documents, were not presented: they were only distributed to the participants. The delegate from Germany suggested that the papers tabled but not presented should at least be noted in the Conference report, and asked that for the next conferences, a slot of time should be allocated to country representatives willing to briefly present their country reports. The delegate from the United States of America strongly supported the suggestion, as the United States had five papers that had been submitted but not presented (E/CONF.96/CRP.12, 13, 14, 16 and 17). Germany also

had three papers that had been submitted but not presented (E/CONF.96/CRP.1, 2 and 11).

14. At the same meeting, in consideration of agenda item 6 (Reports on the implementation of resolutions adopted at the Seventh United Nations Regional Cartographic Conference for the Americas), Francisco Hansen, Executive Secretary of the Permanent Committee on Spatial Data Infrastructure for the Americas (PC-IDEA), presented a report, jointly prepared by the United Nations Statistics Division and the Permanent Committee, on the follow-up actions taken on each one of the nine resolutions adopted at the Seventh Conference. The report noted that some relevant actions had been undertaken, including the organization of the special forum on land information policies in Mexico, the extended coverage of the Geocentric Reference System for the Americas (SIRGAS) project and the establishment of a Permanent Committee working group on institutional strengthening, education and training. Although there is a growing awareness among the countries of the Americas of the importance of building national spatial data infrastructures (NSDIs), much effort and many concrete actions need to be undertaken in order to implement them. The Vice-Chair of the United Nations Group of Experts on Geographical Names (UNGEGN) encouraged the representatives of the Central and South American countries to enforce their collaboration with the Group of Experts and invited them to actively participate in its meetings.

15. Also at the 1st plenary meeting, John Parker, representative of the International Federation of Surveyors (FIG), presented a report (E/CONF.96/I.P.35) on the special forum on "Development of land information policies in the Americas" held in Aguascalientes, Mexico, on 26 and 27 October 2004, pursuant to resolution VII/5 adopted by the Seventh Conference. The main outcome of the forum had been the Aguascalientes statement which established awareness of the economic and social value of developing land policies that effectively and efficiently incorporated appropriate spatial data infrastructures, including an understanding of the value of integrating the land administration/cadastral/land registration function with the topographic mapping function. The report noted that funding support for the forum had been received from Natural Resources Canada, the United States Geological Survey/Federal Geographic Data Committee (USGS/FGDC) and the United States Agency for International Development (USAID) (United States of America), the World Bank through the Danish Trust Fund, and the Pan American Institute of Geography and History (PAIGH); facilities and resources were provided by the National Institute of Statistics, Geography and Informatics (INEGI) of Mexico; and administrative support was contributed by the United Nations.

16. At the same meeting, in consideration of agenda item 7 (Report of the Permanent Committee on Spatial Data Infrastructure for the Americas (PC-IDEA)), Mario Reyes, President of the Permanent Committee, presented an overview of the Committee from its establishment in 2001 (E/CONF.96/I.P.38), including its background, membership, organization and objectives, as well as its major activities in spatial data infrastructure development. Despite the fact that 22 countries in the Americas region were now working on the conception, construction and implementation of their spatial data infrastructure, there were three main problems stressed by the report: financial mechanisms, communication among countries and recognition of spatial data infrastructure among decision makers. The report recommended that the Permanent Committee should seek alternative sources of

financing in order to achieve its objectives and put in place working committees, better use of information and communication technologies (ICT) to strengthen the dialogue and sharing of good practices, and convince the decision makers to commit on building national and regional spatial data infrastructures.

17. Also at its 1st plenary meeting, the Conference began its consideration of agenda item 8 (a) (Reports on achievements in geographical information in addressing national, regional and global issues, including strategy, policy, economic and institutional issues). Barbara Ryan (United States of America) gave the keynote speech entitled “Integrated earth observations for sustainable development” (E/CONF.96/I.P.1), stressing that the main objective with respect to national geospatial data infrastructure was to observe the Earth at all scales (global, continental, national, local, spatial, temporal) in using remote sensing to understand the human and environmental dynamics of land change. Understanding past, present and future environmental consequences of land change to support better management of this effect on people, environment, economy and resources will contribute to reaching a sustainable development of resources. National spatial data infrastructures applications help diagnose and solve the problem and build capacity, and Earth observation applications for sustainable development have proved successful in the areas of forest fires, urban growth and the impacts on ecosystems (drought modelling/monitoring, agriculture resources).

18. At its 2nd plenary meeting, on 27 June 2005, the Conference continued its consideration of agenda item 8. Mr. Reyes presented the paper entitled “Spatial data infrastructure in the Americas: developments and challenges” (E/CONF.96/I.P.2). The paper reported that many countries of the Americas were currently facing technical, organizational and financial challenges in integrating their geographical data, including standardization and interoperability aspects. Members of the Permanent Committee needed to put together resources to enable them to draft a strategic plan and propose appropriate solutions in order to address these challenges. Furthermore, countries of the Americas should strive to benefit from their common network and strengthen the following aspects: technical issues in regard to defining the fundamental data and the appropriate ICT, organizational issues such as strategic alliances, information policy and human resource development. Countries should demonstrate the value of spatial data infrastructure in order to obtain money from the political fields, promote public policy to support spatial data infrastructure and include it in the national priorities.

19. At the same meeting, Santiago Borrero, President of the Pan American Institute of Geography and History (PAIGH), presented the paper entitled “Regional and national spatial data infrastructure in the Americas: institutional and capacity-building issues” (E/CONF.96/I.P.3), highlighting the fact that Latin America, with multiple spatial data infrastructure initiatives, was seriously examining the importance of having a regional spatial data infrastructure. According to the report, government budgets applied to mapping activities were in many nations marginal, and the pace of establishing a regional spatial data infrastructure was too slow, despite the fact that international technical cooperation was playing a crucial role in the development of more open, advanced, integrated and sustainable mapping systems in the region. The re-engineering of the Institute in 2004 was defined as having been a collective effort, based on the relevance of its mandate and its disposition to innovate, seeking to consolidate the renovated role of geographical information in the Americas. After the presentation, Indonesia brought up the issue

of the role that the private sector could play in data acquisition. Canada raised the problem of linkages of geospatial information with information technology; and India mentioned that, as many countries did not release spatial data to the general public, this practice might create a standards problem.

20. Also at the 2nd plenary meeting, Hermann Drewes, representative of the International Association of Geodesy (IAG), presented the paper entitled “The Global Geodetic Observing System (GGOS) of the International Association of Geodesy (IAG)” (E/CONF.96/I.P.4), highlighting the newly installed observing System, which served as a flagship of the association. The observing System aims at integrating all geometric and gravimetric observations, models and approaches so as to provide consistent and reliable products for science and practice. Its objectives consist of (a) the internal coordination of work within the Association’s geometric and gravimetric communities and (b) the external representation of geodesy in science and society through providing policymakers with the necessary information, and through its becoming a member of the Group on Earth Observations (GEO) and working intensively on the 10-year implementation plan for a Global Earth Observation System of systems (GEOS). Moreover, GGOS shall become a partner in the United Nations Integrated Global Observing Strategy (IGOS).

21. At the same meeting, Frazer Taylor, President of the International Steering Committee for Global Mapping (ISCGM), presented the paper entitled “Global mapping and spatial data infrastructure: developments and challenges for dissemination of geospatial data” (E/CONF.96/I.P.5). Global Map, a world map of integrated data layers at 1:1 million, now involves 146 nations and regions represented by national mapping organizations aiming to have complete coverage of the land surface of the Earth by the year 2007. Coverage of over 50 per cent of the world land surface has either been completed and released (13 per cent) or been completed and awaiting data verification (38 per cent). The Global Map project is making an important contribution to the support of capacity-building in developing nations; indeed, several countries such as Brazil and Kenya have used their global map coverage as a framework for building their national spatial data infrastructures. However, a big challenge remains: the involvement of Caribbean countries, for which a regional approach should be considered. Following the presentation, Finland questioned the free access to data, as European Union (EU) policy was to charge for spatial data; Global Map and EuroGlobalMap will cooperate to consider the availability of data.

22. Also at the 2nd plenary meeting, Gilberto Calvillo, President of the National Institute of Statistics, Geography and Informatics of Mexico, presented the paper entitled “Spatial data economic issues in the Americas: Mexico SDI as an example” (E/CONF.96/I.P.6) to the Mexican experience in spatial data infrastructure. Mexico’s spatial data infrastructure (IDEMEX) may be defined as the collection of the resources, standards, technologies, policies and legal, administrative and organizational frames necessary for the effective development, compilation, management, access, distribution, sharing and use of spatial data. Three aspects were identified as the main challenges to maintaining adequate usage of the infrastructure: (a) the human dimension aiming at the development of a system in the best interest of users and producers by providing free access to data and by creating a network of knowledge-based expert users; (b) the judiciary and legal aspect, to be underlined along with the technical ones; and (c) the necessary requirements for harmonizing the concept, for updating on a regular basis the

information obtained, and for providing data to municipalities. Selling the concept to decision makers and aligning the system with international standards remain the main challenges.

23. At the same meeting, Jean Cooper (Canada) presented the paper entitled “A national partnership to develop the Canadian geospatial data infrastructure (CGDI)” (E/CONF.96/I.P.7), outlining the Canadian experience within a global context. In Canada, the Copyright Act gives ownership over data to the State. As a result, much of these data are heavily fragmented and cannot possibly be deposited into and shared through a federal clearing-house structure. The country had needed to develop a common backbone for facilitating the sharing and delivery of Canada’s distributed geographical information on the Internet. As of 2005, most of the Canadian Geospatial Data Infrastructure (CGDI) has been built. GeoConnections worked through its federal/provincial/territorial and private sector partners to develop the technologies and content that formed the foundation of the structure. It developed a discovery portal, that is to say, a search engine with which to track data sets, organizations and data services available to users across Canada and internationally. Furthermore, with its partners, it developed the consistent national data themes that were commonly needed for most applications. The second phase of GeoConnections, which continues until 2010, will advance the infrastructure and applications that ensure that the priorities of public health, public safety, environment and sustainable development, and aboriginal well-being, are addressed.

24. Also at the 2nd plenary meeting, Frederic de Dinechin, representative of the World Bank, presented the paper entitled “Spatial data economic issues in the Americas: the World Bank approach” (E/CONF.96/I.P.8). The paper explained how to better demonstrate the economic value of spatial data and to develop spatial data infrastructure partnerships among national, regional and global stakeholders, including the United Nations, the Permanent Committee on Spatial Data Infrastructure for the Americas, the World Bank, the International Federation of Surveyors, etc. Spatial data infrastructures have become a priority for the World Bank with an upcoming land administration portfolio of more than US\$ 300 million. In Central America, 60-70 per cent of projects are in land administration, most of them in mapping surveys. They are essential for a transparent decision-making and sound land-based policy. Spatial data infrastructures support economic development and governance, encourage socially and environmentally sustainable development, and are essential elements of a programmatic lending structure.

25. At the same meeting, Ergin Ataman, representative of the Food and Agriculture Organization of the United Nations (FAO), presented a paper on the FAO global poverty mapping project and UNGIWG activities (E/CONF.96/I.P.9), which focused on two topics. The first was the objectives, the structure and activities of the United Nations Geographic Information Working Group (UNGIWG), particularly those undertaken by its six task groups: (a) international and administrative boundaries; (b) core geo-database; (c) remote sensing; (d) interoperable services; (e) geographic information systems map production guidelines; and (f) global navigation satellite systems. The second topic highlighted by the paper was the global poverty-mapping project of FAO, including its use of maps/data for estimation of poverty, food insecurity and vulnerability at the global level.

26. At its 3rd plenary meeting, on 28 June 2005, the Conference began its consideration of item 8 (b) (Reports on achievements in geographical information in addressing national, regional and global issues, including spatial data infrastructures). Ian Dowman, President of the International Society for Photogrammetry and Remote Sensing (ISPRS), presented the paper entitled “High resolution remotely sensed data and spatial data infrastructure development” (E/CONF.96/I.P.10), which outlined the critical role of remotely sensed data in the creation and maintenance of spatial data infrastructure. High-resolution data from satellite platforms is now widely available and is used for many applications. These range from mapping at large scales for urban planning, where accurate geospatial information is required, to damage assessment after disasters, where speed of delivery is critical. The paper examined the current range of sensors and technology available to collect and distribute data, and the organizational structures, which ensured that suitable data were acquired in the required timescale and provided to the end-user.

27. At the same meeting, Menno-Jan Kraak, representative of the International Cartographic Association (ICA), presented the paper entitled “Cartography and geo-information science: an integrated approach” (E/CONF.96/I.P.11). The paper asserted that the discipline of cartography had developed a whole set of design guidelines with which to realize the most suitable map for offering insight into spatial patterns and relations. Maps are used to stimulate (visual) thinking about geospatial patterns, relationships and trends. Several current trends have had a tremendous impact on the discipline of cartography. The paper distinguished between developments that were mainly related to the working environment (such as the on-screen multiple dynamically linked view, the geodata infrastructure and data portals (clearing houses), the possibility for visual collaboration and location-based services) and those that influenced the map appearance (such as the dimensionality of the map content, the design approach, the alternative views and the realistic maps views (virtual and augmented reality).

28. Also at the 3rd plenary meeting, Stig Enemark, representative of the International Federation of Surveyors, presented the paper entitled “Supporting capacity development for sustainable land information infrastructures” (E/CONF.96/I.P.12). The paper stressed that, in many countries, especially developing countries and countries in transition, the national capacity to manage land rights, restrictions and responsibilities was not well developed in terms of mature institutions and the necessary human resources and skills. In this regard, the capacity-building concept offered some guidance for analysing and assessing the capacity needs and for identifying an adequate response to those needs at societal, organizational and individual levels. The main challenge facing land management stemmed from the fact that there were legal rights on one side and topography on the other one, with no comprehensive educational approach having been taken.

29. At the same meeting, Allan Doyle, representative of the Global Spatial Data Infrastructure (GSDI) Association, presented the paper entitled “Global spatial data infrastructure: recent developments and future challenges” (E/CONF.96/I.P.13). The paper gave an overview on the mission, the structure and the current projects of the Global Spatial Data Infrastructure Association, including the SDI Cookbook (revised version 2.0) and the Universal Description Directory and Integration (UDDI) of Web services Registry. The Cookbook provides geographical information providers and users with the necessary background information with which to

evaluate and implement existing components of spatial data infrastructure, and facilitates participation within the growing (digital) geographical information community. The Registry could be used by spatial data infrastructure publishers to advertise the existence of their services; and research on its use as a service directory for the Global Spatial Data Infrastructure is under way.

30. Also at the 3rd plenary meeting, Peter Holland, President of the Permanent Committee on GIS Infrastructure for Asia and the Pacific (PCGIAP), presented the paper entitled “Spatial data infrastructure development: the Asia and the Pacific approach”, which gave an overview of the activities undertaken by the Committee over the past 10 years to assist member nations in their national spatial data infrastructure initiatives, including the issues associated with building a regional spatial data infrastructure that had been confronted. The presentation described some of the experiences of the Committee relevant to the Americas, in particular the establishment of a new geodetic datum for the region, the benchmarking of cadastral systems, the conceptualization of a framework for marine zone administration in the future, and the strategic issues confronting the Committee at the start of its second decade of operation such as its relationship role with the United Nations, the participation of the 55 countries, the importance of appropriate leadership, and problems of funding. Canada introduced the consideration that the United Nations framework, although its importance was recognized, did not ensure the availability of large amounts of money.

31. At the same meeting, Heli Ursin (Finland), presented a paper entitled “EuroGlobalMap database” (E/CONF.96/I.P.15). EuroGlobalMap, a digital topographic database in scale 1:1,000,000, is produced by the European national mapping agencies under the umbrella of EuroGeographics (www.eurogeographics.org), the association of the European National Mapping and Cadastral Agencies, and coordinated by the National Land Survey of Finland. The EuroGlobalMap database was released in May 2004 and currently covers 35 European countries. Data themes are administrative boundaries, hydrography, transport network, settlements, elevation and named locations.

32. Also at the 3rd plenary meeting, Luiz Paulo Souto Fortes (Brazil), presented the paper entitled “The SIRGAS International Project: current status and future development” (E/CONF.96/I.P.16). The SIRGAS (Geocentric Reference System for the Americas) international project had been created in 1993 as a joint initiative of South American countries to provide the region with a homogeneous geocentric reference frame, and emerged as one of the most important enterprises worldwide within this area of science. After its two successful geodetic campaigns, in 1995 and 2000, SIRGAS could define a reference frame for the American continent, which provided a response to the most updated requirements of modern geodesy. At present, its goals aim at a total regional integration, the maintenance and processing of the permanent stations network in the continent, the adoption of a unique vertical datum, and the definitive incorporation of Central America and Caribbean countries into the project (<http://www.ibge.gov.br/sirgas>). The audience appreciated the importance of a common framework for the interoperability of databases.

33. At the same meeting, Neil Ackroyd (United Kingdom of Great Britain and Northern Ireland), presented the paper entitled “Developing the spatial data infrastructure of Great Britain” (E/CONF.96/I.P.17). The paper provided an overview on the spatial data infrastructure experience of the Ordnance Survey. It

focused on a user-pay model built by the organization which allowed migration from a cartographic map to digital mapping to a central information database system. It was argued that a spatial data infrastructure might provide the greatest possible value to users when the infrastructure was transparent and the geographical components were hidden.

34. At its 4th plenary meeting, on 28 June 2005, the Conference began its consideration of agenda item 8 (c) (Reports on achievements in geographical information in addressing national, regional and global issues, including geospatial data collection, management and dissemination). Eduardo Pereira Nunes, President of the Instituto Brasileiro de Geografia e Estatística (IBGE), presented the paper entitled “Activities and experiences of Brazil in the field of cartography” (E/CONF.96/I.P.18) highlighting the activities and experiences of the Institute in the field of cartography. The geodetic, cartographic and thematic mapping activities and those related to the construction of the national spatial data infrastructure were described. Despite budget limitations, the Institute had been successful in conducting cartography projects on, inter alia, the conversion of analogical mapping into digital; the integrated cartographic digital base of Brazil to the millionth scale, with effects on the global mapping project; municipal mapping supporting census operations, etc. However, a steady reduction of the available financial resources had caused difficulties in the implementation of activities related to land administration.

35. At the same meeting, Joern Sievers (Germany), as representative of the United Nations Group of Experts on Geographical Names, presented the paper entitled “EuroGeoNames: the vision of integrated geographical names data within a European SDI” (E/CONF.96/I.P.19). Geographical names were considered to be the main search item/keyword within GIS and search engines for spatially referenced information. Although geographical names constituted one of the three most important components of reference data in the context of the INSPIRE initiative of the European Commission, they had not been the object of an attentive focus yet. Therefore, the EuroGeoNames project had been initiated in pursuance of resolution VIII/6, adopted at the Eighth United Nations Conference on the Standardization of Geographical Names (see E/CONF.94/3, chap. III) (Berlin, 2002) which had recommended a better integration of geographical names data into national and regional spatial data infrastructures. The project, supported by the United Nations Group of Experts on Geographical Names, aims at linking official geographical names sources across Europe by setting up a customizable and interoperable Internet service that will enlarge the availability and equal accessibility of geographical names for all official European languages, including the officially recognized minority languages. Maintenance and updating of data will be the responsibility of the participating countries themselves.

36. Also at the 4th plenary meeting, Ivan Valdespino, representative of the Inter-American Biodiversity Information Network (IABIN), presented the paper entitled “IABIN connectivity program: links between geospatial and biodiversity information data sets”. The Network, an initiative of the countries of the Americas established to promote compatible means of collection, communication and exchange of biodiversity information relevant to decision-making and education using the Internet, is funded under the Global Environment Fund. Species do not recognize political boundaries. Therefore, issues such as invasive species, migratory birds, amphibian decline, and the spread of diseases can be addressed effectively

only if member countries share information across borders. Providers, in respect for the intellectual property rights, control the data.

37. At the same meeting, Gottfried Konecny (Germany) presented the paper entitled "The cadastre as part of a spatial data infrastructure for developing countries" (E/CONF.96/I.P.21). It is difficult for developing countries to collect cadastral information, which can be included in a spatial data infrastructure. The case of Georgia in respect of the establishing of cadastral information through integrated technologies in a German technical cooperation project had shown that a cadastre could be established in a four-year period at a cost of \$2 per parcel. Another important aspect was the use of high-resolution satellite imagery to geocode and update building records for the integration of existing analogue records in the preparation of regulatory plans for fast-developing urban areas, as had been shown for the city of Tirana.

38. Also at the 4th plenary meeting, Tatiana Delgado Fernández (Cuba) presented the paper entitled "Evaluating an SDI readiness index in Cuba" (E/CONF.96/I.P.22). As in many development programmes, building national capacity was essential when the development of a spatial data infrastructure, particularly in developing countries, was beginning. A model of a spatial data infrastructure readiness index, integrating organizational, information, access network, people and financial resources factors, was presented. The model was based on fuzzy compensatory logic owing to the qualitative nature of factors. Assessing the model demonstrated its suitability for comparing spatial data infrastructure progress over time within a country. Future work is planned on applying the model at regional and global levels.

39. At the same meeting, William Tefft, representative of Map Link, presented a paper on the status and challenges in respect of acquiring a basic topographic map in the twenty-first century (E/CONF.96/I.P.23), highlighting the current state of the map business with some prospects for the future. The market had been experiencing some changes related to inventory and sales conditions, access to data, retailers, publishers and user expectations. New channels and formats were now emerging and the market had to adapt quickly. There were more hard-copy products than ever before. There are more outlets for these new products, too. Still, the consumer was confronted with a growing selection of free, and very low cost mapping options. The paper stated that the art, science and craft of cartography and its production must be nurtured and protected through public awareness of copyright laws.

40. Also at the 4th plenary meeting, Carmelle Côté, representative of ESRI, presented the paper entitled "Spatial data dissemination: a key component of the National Spatial Data Infrastructure (SDI)" (E/CONF.96/I.P.24). The paper asserted that national mapping organizations and other entities that had a role in or responsibility for geographical data dissemination were utilizing several delivery mechanisms, including traditional hard-copy maps and charts, digital data on CDs and, more recently, GIS portals. A GIS portal was a key component of a spatial data infrastructure programme, providing search, discovery and access to geographical data and services. A variety of content could be catalogued and disseminated via a GIS portal, provided that the content had been documented with metadata and stored in the metadata catalogue of the portal. Existing GIS portals had demonstrated that National Mapping Organizations needed to provide an intuitive user interface, a map viewer, "two clicks to content" and fast searches.

41. At the same meeting, Ignacio Guerrero, representative of Intergraph, presented the paper entitled “Geospatial data collection, management and dissemination issues: some tools facilitating their solutions” (E/CONF.96/I.P.25) outlining the advantages of using open standard database technology and the definition of these industry standards. International standard bodies could help define the needs on the matter. Geospatial technology and information technology must converge and the industry must make an investment in standards. Interoperability broadened use of geospatial data but was not possible without agreement on communication standards. Heterogeneous data holdings created the need for multi-source data access, standards, catalogues and metadata.

42. At its 5th plenary meeting, on 29 June 2005, the Conference began its consideration of item 8 (d) (Reports on achievements in geographical information in addressing national, regional and global issues, including best practices and applications). Luis Alegría (Chile), presented the paper entitled “Cartographic production in the context of the National Territorial Information System (SNIT): the initiative of the Chilean National Spatial Data Infrastructure” (E/CONF.96/I.P.26). The Military Geographical Institute (IGM) of Chile had carried out a survey at the national level in order to obtain an overview of the current state of territorial information and drafted a 2003-2005 national plan for the capture and standardization of this information. The Institute recognized that geospatial data infrastructure was a national necessity, involving the difficult task of convincing the authorities and finding political support for putting it into effect. Although the National Territorial Information System had achieved a great deal and made some progress, including the proposal of a law to establish the legal and economic foundation for building the Chilean National Spatial Data Infrastructure, it lacked sufficient funding.

43. At the same meeting, Manuel Vidaurre, representative of the Pan American Health Organization (PAHO), Washington, D.C., presented the paper entitled “GIS-based health applications in the Americas” (E/CONF.96/I.P.27). Since 1993, the Pan American Health Organization had been providing technical cooperation and assistance in applying GIS for Public Health (GIS-PH) decision-making, crucial for understanding the dynamics and distribution of health-related phenomena. The best practices and strategies implemented by the Pan American Health Organization and the World Health Organization (WHO) for GIS in public-health capacity-building included: developing/adopting standards, norms and codes; producing and disseminating guidelines for application of GIS-PH; tools, methods and applications for facilitating the application of GIS-PH; adopting and disseminating best practices, lessons learned and successful applications; strengthening public-health human resource in GIS through workshops tailored for different audiences; information dissemination and advocacy of GIS in public health; and intergovernmental work to support the application of GIS in public health.

44. Also at the 5th plenary meeting, and Steeve Ebener, representative of WHO, presented the paper entitled the Second Administrative Level Boundaries (SALB) project: current status and new challenge for the Americas (E/CONF.96/I.P.28). The SALB data set project had been launched in 2001 in the context of the United Nations Geographic Information Working Group. The paper provided an overview of SALB, including the process used for collecting, compiling, cleaning and publishing validated information and maps for the Americas, and the state of progress in the continent. The report stressed the importance of strengthening the

collaboration with institutions such as the International Steering Committee for Global Mapping, the Permanent Committee on Spatial Data Infrastructure for the Americas, the Pan American Institute of Geography and History and the Economic Commission for Latin America and the Caribbean (ECLAC); finding and pooling resources was also emphasized. Because of the good level of achievement already reached, it was hoped that the Americas would become the first continent for which the SALB data set was complete and up to date.

45. At the same meeting, Yves Baudouin (Canada) presented the paper entitled “Indice de développement cartographique adapté au territoire canadien” (E/CONF.96/I.P.29). The Department of Geography of the Université du Québec à Montréal had been focusing over the past 10 years on the national cartography question and developed an index of cartographic development. The results had been presented at the Seventh United Nations Regional Cartographic Conference for the Americas (New York, 2001). Thereafter, the Index of Cartographic Development was refined. In 2004, the Topographic Information Center of Sherbrooke (Cit-s), Natural Resources Canada, had shown interest in the application of the index to evaluating its cartography as applied to provincial frontiers and northern territories and also to the drawing of a Canadian profile.

46. Also at the 5th plenary meeting, Abbas Rajabifard (Australia) presented the paper entitled “Integration of built and natural environmental data sets within the context of national spatial data infrastructure initiatives” (E/CONF.96/I.P.30). The paper examined the problems associated with the integration of built and natural environmental data sets within the context of a national spatial data infrastructure from technical, institutional and land policy perspectives. These issues included interoperability, data models and standards for this integration, specifically in respect of federal topographic and State cadastral data sets. In all countries, the two foundation data sets were developed to serve different purposes and were usually managed separately. This separation was recognized as a barrier to implementation of sustainable development. Despite some successes, lack of understanding of the importance of and necessity for access and interoperability between the two forms of data persisted among policymakers.

47. At the same meeting, Carmen Reyes Guerrero (Mexico) and representative of the International Cartographic Association, presented the paper entitled “National Spatial Data Infrastructure: sharing geo-spatial information as an asset for environmental public policies” (E/CONF.96/I.P.31). Although the concept of spatial data infrastructure had been in existence for more than a decade, only in recent years did some countries in Latin America turn their attention to the importance of adopting a more holistic and “demand-driven” approach to the societal needs for geospatial information and knowledge. A regional initiative developed by international organizations, such as the International Cartographic Association and the United Nations Environment Programme (UNEP), could be a driving force in establishing a regional policy for geo-spatial data-sharing, an issue to which countries in Latin America had not devoted enough attention. Services such as regional geo-spatial data libraries, environmental atlases and real-time satellite image services, among others, could be in place as a resource for the different countries of the region.

48. Also at the 5th plenary meeting, Kamil Eren, President of Geo-Tech Group, presented the paper entitled “The issues related to geoinformation in developing

countries” (E/CONF.96/I.P.32). The importance of geo-information worldwide, especially in developing countries, was discussed. The foundation of geo-information was the establishment of a reliable, accurate and complete geo-database consisting of maps, topography, orthorectified images and ortho-photo and, finally, all types of application layers. The standardization and sharing of geo-databases were important, but equally important was the collection of data, especially in developing countries. In this context, modern technologies such as continuously operating reference stations (CORS), with virtual real-time kinematic capabilities, real-time image mapping, portal GIS, location-based services, and virtual cities, were discussed as reflecting future trends for the compilation of geo-databases and associated applications.

49. At the same meeting, Paul van der Molen (Netherlands), presented the paper entitled “Developing SDIs for sustainable development: highlighting issues and influencing factors” (E/CONF.96/I.P.33). Europe’s history had resulted in the creation of a variety of nations, with various land policies and a diversity of land administration systems. Despite all their differences, however, these nations had something in common: the fact that land policies were in place and systems of land administration as well. The fact that a fundamental rethinking of information flows was necessary to support the exercise of public functions revealed the need for an infrastructural approach to data acquisition and information supply. This approach has two drivers: (a) the need for quality information for decision support; and (b) the optimization of the return on investments in public information availability. To capitalize on a better information process, there must be an elimination of certain problems and barriers, which in some cases was not possible without political attention and decisiveness.

50. Also at the 5th plenary meeting, Menno-Jan Kraak, (Netherlands) and representative of the International Cartographic Association, presented the paper entitled “Geospatial capacity-building, best applications and practices” (E/CONF.96/I.P.34). Nowadays, the geographical information community consists, increasingly, of highly educated professionals who, more and more, work in a data demand-driven environment. These professionals can be divided into three major categories, each with its own educational needs, namely, experts in the field of spatial information-handling, users of geo-information, and decision makers and policymakers who are developing the required legislation and institutional arrangements. However, they operate in a changing environment and will have to deal with the methods and techniques of that environment, while recognizing the changing balance between geo-services supply and information demand in the spatial data infrastructure framework. Updating educational programmes is an evolutionary step in the continuous adaptation to the needs of the market, and regularly needs complete re-engineering so as to offer the right lifelong learning opportunities.

51. At the same meeting, Nigel Waters and Shelley McConnell, representatives of the Canadian Foundation for the Americas (FOCAL), presented the paper entitled “Mapping the media in the Americas: an innovative application of geographical information systems” (E/CONF.96/I.P.36). The Carter Center, FOCAL and the University of Calgary have established a joint GIS-based project entitled “Mapping the media in the Americas”, devised to map the media and analyse spatially the pivotal role of the media in political finance in 12 countries in the Americas. Various data sets (media, election and census) from each country will be organized

geographically in a GIS for visualization purposes, and GIS techniques such as proximity, overlay and geo-statistical analyses will be performed to better understand associations and patterns within these disparate data sets. Once created, the maps will be a tool for the development of political parties and public education, among other uses, and will draw increased attention to, and support reform of, political finance laws and practices.

52. At the 6th plenary meeting, on 29 June 2005, and following the plenary, a discussion was held on how to improve the work of the Permanent Committee on Spatial Data Infrastructure for the Americas. The objective of the panel was to discuss the following issues: defining the frontier for geospatial data; identifying the right model of spatial data infrastructure for the Americas; and the need to achieve a common ground, to set realistic objectives, and to exchange views on the Committee's leadership, loss of enthusiasm and communication, links with higher-ranking bodies, funding, and the need for strong committees to address important regional issues.

53. The opening remarks were made by the Chair of the Permanent Committee on GIS Infrastructure for Asia and the Pacific (Australia), who provided as an example, what is happening in the Asia-Pacific region. The participation level of the countries remained a problem, as only 50 per cent of the 55 countries attended the annual conference. The large geographical territory, the differences between income levels and travel issues were obstacles that needed to be overcome. Success would also be difficult to achieve without strong leadership in areas of interest. The establishment of a core group of 10 key countries that attended the meetings and considered ideas needed to be implemented. The Asia-Pacific region had also put in place an active and sustainable secretariat which ensured that business was dealt with smoothly. The members were well informed and focus was maintained. It had taken charge of logistics and the working group project and carried out its work seamlessly.

54. The representative of the Permanent Committee on Spatial Data Infrastructure for the Americas expressed his views on the topic through two major points. First, the three-day Conference had permitted the conceptualization of the vision of the member countries on the basis of data collection, processing and dissemination. The recent trends in spatial data infrastructure highlighted the importance of defining its frontiers in terms of topography, hydrography and other information related to human activities. Second, strong leadership was required to define the model for Latin America. The Permanent Committee would be the main body and there would be subcommittees. Each country would be in charge of integrating its own information. In order to achieve something, it would be essential to overcome the lack of funding, deal with the conceptual diversity in each country, and establish realistic objectives with specific milestones.

55. The representative of Chile explained that the Permanent Committee was the coordinating entity that allowed each national government information base to be interoperable for the continents. The communication problem had been created by the fact that the Permanent Committee was a goodwill initiative rather than a technical body that was part of an official organization. This was one explanation of the difficulty in securing funds. The Permanent Committee must become a part of a higher-ranking body to secure access to funding. The Permanent Committee also needed a real commitment from the members in order to advance. The Ninth International Conference of the Global Spatial Data Infrastructure would certainly

experience challenges and would need support in order to contribute actively to the activities.

56. The representative of Cuba mentioned that her country had been the latest to ask to be part of this group. In order to continue the work on mapping and developing a GIS, it now had to adopt measures and make decisions. Attending the Seventh United Nations Regional Cartographic Conference for the Americas allowed Cuba to become aware of what had been happening in the region. It now needed to communicate and share with other countries what had been achieved. The Permanent Committee needed to define its purpose and to create working groups that would establish their own mandates. Generating stronger outcomes, and having committed technical experts who would tailor work to technical issues and better communicate the importance of establishing a spatial data infrastructure to the decision makers should be among the top priorities of the Permanent Committee.

57. The representative of Peru outlined problems that his country was facing. In Peru, the 1:1 million scale was used for the global mapping project although some resistance was being experienced with respect to the 1:100,000 scale, owing to security and frontier issues. The model chosen by the Permanent Committee was therefore very important and the project needed to address external issues before entering into mapping matters.

58. The representative of Mexico supports the need to focus on projects for the Americas and to be precise in respect of what the Permanent Committee wanted to achieve. Duplication of ideas and activities should be avoided.

59. The representative of Mali explained that the country had institutes to carry out national mapping and that different commissions undertook the establishment of spatial data infrastructure. Dissemination of information, bringing together of the actors, and growing utilization of modern technology had allowed progress. However, coordination remained weak among States. Coordination at State level, followed by work at the national level and harmonization at the Permanent Committee level, would provide the solution.

60. The representative of Bolivia affirmed that the international financial institutions did not financially support the military geographical institutes. The country could provide mapping at the 1:1 million scale and the 1:100,000 scale to the Permanent Committee but the project still must be completed. In order for this to occur, Bolivia needed support from the World Bank, the Inter-American Development Bank and any other international financial institutions. The international boundary was another issue to be considered.

61. The representative of the Permanent Committee then specified that it had never requested the development of maps at any scale. It wanted general information on activities and crucial areas.

62. The representative of Brazil endorsed the statement made by Bolivia. There was a lack of information in many countries in South America and they were all struggling with the need for basic information. It was therefore difficult to undertake collaborative work. The funding did not go towards the production of fundamental data. This example proved once again the importance of convincing the decision makers of the need to fund projects having a fundamental data component.

63. The representative of Germany proposed the consideration of a donor coordination strategy by giving the example of the World Bank in Africa and noted that satellite imagery had proved to be complementary technology.

64. The representative of the Pan American Institute of Geography and History suggested that the United Nations should be involved in the debate on how to reactivate the work of the Committee and re-evaluate its functionality. A resolution aimed at raising the awareness of decision makers on the importance of spatial data infrastructure had already been adopted at the Seventh Conference. The need now was to focus on how to evolve towards establishing an organization that had money and sustainability. The framework of the Permanent Committee was already present. It would therefore be a good idea to link the Permanent Committee to an upper-level organization and to position the Permanent Committee under the umbrella of another organization.

65. At the end of the discussion, the representative of the United Nations, talked about the importance for the member countries to be committed and involved. A strong leadership was needed and core countries should be identified. The creation of a sustainable secretariat was also needed. He also understood the need for the United Nations to help improve the work of the Permanent Committee.

III. Work of Technical Committee I: Strategy, Policy, Economic and Institutional Issues

66. At its 7th plenary meeting, on 1 July 2005, the Conference considered agenda item 9 (Adoption of resolutions and of the report of the Eighth United Nations Regional Cartographic Conference for the Americas. Carlos Laguna (Panama) presented an oral report on the work of Technical Committee I (Strategy, Policy, Economic and Institutional Issues). In its work, Committee I had discussed the following topics:

- (a) Involvement of Governments at the political level in the development of the spatial data infrastructure of each country and the region;
- (b) Development by the Permanent Committee on Spatial Data Infrastructure for the Americas of a work programme with a time frame to monitor improvement in the development of the spatial data infrastructures;
- (c) Reinforcing resolution 7 adopted by the Seventh United Nations Regional Cartographic Conference for the Americas, held in 2001 in New York;
- (d) Exploring possible funding mechanisms to further develop capacity-building in the region, encompassing education, skill development, infrastructure development and management.

67. Committee I submitted to the Conference for discussion two draft resolutions on: the benefits of developing a regional spatial data infrastructure in the Americas and the need to build a partnership approach in developing spatial data infrastructure.

IV. Work of Technical Committee II: Spatial Data Infrastructures and their Development in the Americas

68. At the 7th plenary meeting, on 1 July 2005, Leslie Armstrong (United States of America) presented an oral report on the work of Technical Committee II (Spatial Data Infrastructures and their Development in the Americas). The work of Committee II had covered the following topics:

(a) Review of Spatial Data Infrastructure and its status of development in the Americas region, including the progress achieved by the countries members of the Permanent Committee on Spatial Data Infrastructure for the Americas.

(b) Discussions on the building of an Americas spatial data infrastructure and regional geodesy network that would continue to provide a focus for the development of national spatial data infrastructures.

69. Committee II submitted to the Conference, for discussion, three draft resolutions on: training, education and spatial standards; policy and reform; and outreach and related areas.

V. Work of Technical Committee III: Geospatial Data Collection, Management and Dissemination

70. At the 7th plenary meeting, on 1 July 2005, Luiz Fortes (Brazil) presented an oral report on the work of Technical Committee III (Geospatial Data Collection, Management and Dissemination).

71. Committee III had focused on the following main concerns and considerations:

(a) The development of a fully operational Spatial Data Infrastructure that would incorporate data that would be available at as little cost as possible and would respect the wishes of the donor agencies in this regard;

(b) That all countries be encouraged to develop their Spatial Data Infrastructure in accordance with the Geocentric Reference System for the Americas (SIRGAS) and, where needed, supported financially in achieving this objective;

(c) That the Permanent Committee on Spatial Data Infrastructure for the Americas and the Pan American Institute of Geography and History (PAIGH) support the Second Administrative Level Boundaries (SALB) project and the global mapping initiative by providing the necessary data and information required;

(d) That existing and future United Nations Geographic Information Working Group (UNGIWG) documents on spatial data standards should be reviewed for adoption by the Permanent Committee;

(e) That Landsat-like observation systems be considered for monitoring changing global environmental conditions in order to maintain continuity;

(f) That satellite data be made available openly at the cost of reproduction and dissemination to developing countries, as foreseen in the forthcoming Advanced Land Observing Satellite (ALOS) Mission;

(g) The argument that global digital elevation data from the Shuttle Radar Topography Mission (SRTM) C-band should be made available from the National Geospatial-Intelligence Agency (NGA) at the highest possible posting (one arc second) for developing countries;

(h) That, in various projects in developing countries supported by donor agencies, they should also consider inclusion of financial support for the development of the spatial data infrastructure;

(i) Donor agencies should set a policy, in line with Committee III draft resolution 5, for the long-term dissemination of, and public access to, the spatial data developed under such donor agency-supported projects.

72. Committee III submitted to the Conference, for discussion, five draft resolutions on: the Global mapping and Second Administrative Level Boundaries (SALB) projects, the Geocentric Reference System for the Americas (SIRGAS) project, availability of satellite data under conditions favourable to developing countries, spatial data dissemination, and funding issues.

VI. Resolutions adopted by the Conference

A. Titles

1. Benefits of developing a spatial data infrastructure
2. Partnership approach in developing spatial data infrastructure
3. Training, education and spatial standards
4. Policy and reform
5. Outreach and related areas
6. Global mapping and Second Administrative Level Boundaries projects
7. Geocentric Reference System for the Americas (SIRGAS) project
8. Satellite data
9. Spatial data dissemination
10. Funding issues
11. Meeting on geospatial data infrastructure and information of the Americas for sustainable development
12. Interregional meeting
13. Ninth United Nations Regional Cartographic Conference for the Americas
14. Vote of thanks

B. Texts

1. Benefits of developing a spatial data infrastructure

The Conference,

Taking note of resolutions 1 entitled “Development needs” and 7 entitled “Implementation of national spatial data infrastructures in the Americas”, adopted by the Seventh United Nations Regional Cartographic Conference for the Americas,

Considering that the development of spatial data infrastructures in the Americas is important for the sustainable social and economic development of the region,

Considering also that the advancement of such development has been slower than expected in some countries,

Recommends that the national organizations or agencies in charge of the development of spatial data infrastructure in those countries should make an effort to secure the involvement of high-level government executives in the project, and that to achieve this, the heads of those bodies should make visible the benefits of developing a good spatial data infrastructure for countries and for the region.

2. Partnership approach in developing spatial data infrastructure

The Conference,

Noting the ability of some countries to support the development of the spatial data infrastructure in countries of the Americas,

1. *Recommends* that the countries of the region use the experiences of, and the resources generated by, other countries;

2. *Also recommends* the building of a partnership approach to the development of the spatial data infrastructure that follows the model of the Geocentric Reference System for the Americas (SIRGAS) project using bilateral cooperation.

3. Training, education and spatial standards

The Conference,

Recalling resolution 2 entitled “Institutional capacity-building, education and training”, adopted by the Seventh United Nations Regional Cartographic Conference for the Americas,

Considering general and specialized training needs, including the use of the new remote spatial data infrastructure class in Cuba or the Internet Global Positioning System (GPS) class of Finland as a model,

1. *Recommends* that the Permanent Committee on Spatial Data Infrastructure for the Americas add a training section to its revised website and seek support for regional workshops;

2. *Also recommends* that the Permanent Committee develop educational materials on the benefits of geographical data and mapping for cross-organizational consortia and other United Nations programmes, for example, sustainable

development and national security, and ensure that its members attend non-geographical meetings at the United Nations and other forums to educate others about the value of spatial data infrastructure and geographical information;

3. *Further recommends* that the Permanent Committee review, for adoption, the two draft reports and the core standards document on spatial standards that have been prepared by the United Nations Geographic Information Working Group.

4. Policy and reform

The Conference,

Considering the disconnect between the spatial data producers and spatial data managers,

1. *Recommends* that the Permanent Committee on Spatial Data Infrastructure for the Americas, in coordination with the Permanent Committee on GIS Infrastructure for Asia and the Pacific and the United Nations Secretariat, develop a spatial data policy on standard mapping, spatial data infrastructure and metadata requirements to be presented to donor agencies, for example, the World Bank;

2. *Also recommends* that the members of the Permanent Committee on Spatial Data Infrastructure for the Americas provide information on national policy, law or specifications to post at the websites of the Permanent Committee on Spatial Data Infrastructure for the Americas and the United Nations Group of Experts on Geographical Names.

5. Outreach and related areas

The Conference,

Recalling 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 low level of activities undertaken in recent years and the inability to sustain progress,

1. *Recommends* that the Permanent Committee on Spatial Data Infrastructure for the Americas meet more frequently, redefine goals and roles, and coordinate the development of its website;

2. *Also recommends* that members of the Permanent Committee on Spatial Data Infrastructure for the Americas attend the upcoming meetings in Canada in June 2006, in Santiago in November 2006 and in Cuba in 2007, and other relevant meetings, and seek funding for a meeting to showcase the regional Spatial Data Infrastructure prototype.

6. Global mapping and Second Administrative Level Boundaries projects

The Conference,

Recognizing that the availability of fundamental framework data sets, such as national administrative divisions, is crucial for the analysis and management of socio-economic phenomena,

1. *Welcomes* the efforts of the global mapping project and those of the United Nations Geographic Information Working Group Second Administrative Level Boundaries (SALB) project in the generation of global seamless data sets of importance for the Americas;

2. *Recommends* that Member States, particularly through their national mapping agencies and notably with the help of the Permanent Committee on Spatial Data Infrastructure for the Americas and the Pan American Institute of Geography and History, support and participate actively in the Second Administrative Level Boundaries and global mapping projects by providing the necessary data and information they require;

3. *Also recommends* that Member States in the Americas take full advantage of participating in the global mapping project for capacity-building to help establish national and regional spatial data infrastructures in the region.

7. Geocentric Reference System for the Americas (SIRGAS) project

The Conference,

Considering the achievements of the Geocentric Reference System for the Americas (SIRGAS) project with respect to the establishment of a continental geodetic framework,

Recognizing the efforts that have been undertaken by many countries of the Americas towards the development of the activities of the Geocentric Reference System,

Noting that not all countries have integrated their spatial data infrastructure with the Geocentric Reference System or with other compatible systems,

Considering the ongoing efforts towards the establishment of a unique vertical reference system for the continent,

Bearing in mind the need for a globally integrated system,

1. *Recommends* reinforcing resolution 4 entitled “Fundamental data: SIRGAS project” adopted by the Seventh United Nations Regional Cartographic Conference for the Americas in 2001;

2. *Especially recommends* the integration of countries of Central America and the Caribbean into the Geocentric Reference System for the Americas (SIRGAS) project;

3. *Recommends* that all countries continue to work on the integration and dissemination of gravity and levelling data to support the unification of the height system.

8. Satellite data

The Conference,

Recalling the continuous development of satellite systems for obtaining global data by optical and radar sensors to a level that is of importance to national mapping requirements, extending from Landsat in 1972 to QuickBird in 2000 and from Seasat in 1978 to the Shuttle Radar Topographic Mission in 2000,

Recalling also the planned future moderate- and high-resolution satellite sensor missions,

Considering that satellite image data products can be used to an accuracy of from one to several metres in the form of georectified images or digital elevation models,

Considering also that these products constitute a cost- and time-effective alternative with respect to providing synoptic and geometrically correct map substitute products, to which existing map coverages may be fitted and updated, taking into account the Geocentric Reference System for the Americas as a geodetic framework,

1. *Recommends* that Landsat-like satellite missions be continued and that Landsat-like observation systems be considered for monitoring changing global environmental conditions;

2. *Also recommends* that satellite data be made available openly at the cost of reproduction and dissemination or under conditions favourable to developing countries, as foreseen in the forthcoming Advanced Land Observing Satellite (ALOS) Mission;

3. *Further recommends* that global digital elevation data from the Shuttle Radar Topographic Mission C-band be made available from the National Geospatial Intelligence Agency of the United States of America at the highest possible posting for developing countries.

9. Spatial data dissemination

The Conference,

Recalling resolution 7 entitled “Implementation of national spatial data infrastructures in the Americas”, adopted by the Seventh United Nations Regional Cartographic Conference for the Americas, in which the Conference recommended that Member States embrace the concept of national spatial data infrastructures and develop implementation strategies,

Recognizing the need for a comprehensive spatial data dissemination policy in each Member State,

Noting the difficulties faced by many Member States, aid and relief organizations and commercial enterprises in understanding the existing spatial data infrastructure in many Member States,

Noting also the need for a spatial data dissemination policy to be an essential component of a spatial data infrastructure,

Recognizing that the lack of a comprehensive and current spatial data dissemination policy is a cause of concern for development and disaster relief,

Recognizing also the different needs of the public, commercial enterprises, relief agencies, non-governmental organizations and United Nations organizations,

Bearing in mind the needs and objectives of each Member State, and the evolving nature of spatial data and emerging technologies and imaging platforms,

1. *Recommends* that Member States examine, review and set a comprehensive spatial data dissemination policy;

2. *Also recommends* that Member States freely distribute their spatial data dissemination policies;

3. *Further recommends* that Member States examine, review and set a comprehensive pricing policy in accordance with the needs and objectives of various organizations such as public and commercial enterprises, relief agencies, non-governmental organizations and United Nations organizations.

10. Funding issues

The Conference,

Noting the financial difficulties faced by many Member States in respect of the development of a basic national spatial data infrastructure,

1. *Recommends* that in various projects in developing countries supported by donor agencies, those agencies should also consider inclusion of financial support for the development of the spatial data infrastructure;

2. *Also recommends* that the donor agencies should set a policy in line with resolution 9 adopted by the present Conference for the long-term dissemination of, and public access to, the spatial data developed under such donor agency-supported projects.

11. Meeting on geospatial data infrastructure and information of the Americas for sustainable development

The Conference,

Considering that the Eighth United Nations Regional Cartographic Conference for the Americas provided an excellent forum for the exchange of ideas, information and experiences on geospatial information, spatial data infrastructure and land management,

Recalling that the United Nations Regional Cartographic Conference for the Americas established the Permanent Committee on Spatial Data Infrastructure for the Americas,

Considering that the United Nations, in collaboration with the Permanent Committee on Spatial Data Infrastructure for the Americas and the International Federation of Surveyors, and together with Mexico, had organized a special forum on development of land information policies in the Americas, held in Aguascalientes, Mexico, on 26 and 27 October 2004,

Recognizing that countries of the Americas that are members of the Permanent Committee need to continue advancing the exchange of information on geospatial approaches and spatial data infrastructure in order to address key issues such as sustainable development and land management,

Bearing in mind the financial limitations and importance of individual needs and approaches regarding geospatial information and spatial data infrastructure in the member countries,

Recognizing that the United Nations Regional Cartographic Conference for the Americas encourages countries of the Americas that are members of the Permanent Committee to continue to exchange information, experiences and ideas concerning geospatial information and spatial data infrastructure,

Recommends that countries members of the Permanent Committee be encouraged, to the extent possible, to attend a United Nations Regional Cartographic Conference for the Americas-endorsed gathering in Canada in June 2006 to further the collaborative exchange of ideas, information and experiences on geospatial information and spatial data infrastructure of the Americas for sustainable development.

12. Interregional meeting

The Conference,

Considering that spatial data infrastructures at the regional level are necessary as a support basis for information development within a framework of harmonized purposes,

Bearing in mind that, at the regional level, spatial data infrastructures are under development in Europe, Asia and the Pacific, the Americas and Africa under the aegis of organizations such as EuroGeographics, EUROGI (European Umbrella Organisation for Geographic Information), the Permanent Committee on GIS Infrastructure for Asia and the Pacific, the Permanent Committee on Spatial Data Infrastructure for the Americas, and the Committee on Development Information of the Economic Commission for Africa,

Considering the benefits to be derived from these organizations' working and developing the regional spatial data infrastructures within a framework of harmonized and integrated goals,

1. *Recommends* that the presidents, vice-presidents and secretaries of EuroGeographics, EUROGI (European Umbrella Organisation for Geographic Information), the Permanent Committee on GIS Infrastructure for Asia and the Pacific, the Permanent Committee on Spatial Data Infrastructure for the Americas, and the Committee on Development Information of the Economic Commission for Africa, hold a meeting with the purpose of evaluating progress in each region, examine common problems, propose solutions and define courses of action and policies, including possible means of cooperation, that would permit the harmonized development of the spatial data infrastructure for each subregion according to common objectives within a context of global integration that would be of benefit to all, with the particulars of the proposed meeting to be agreed by the five aforementioned organizations and the outcomes thereof to be reported to the United Nations;

2. *Requests* the United Nations Secretariat to assist, within available resources, in the preparation of such a meeting, including the identification of possible funding sources.

13. Ninth 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 Data 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 Ninth 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 Ninth United Nations Regional Cartographic Conference for the Americas be convened in 2009.

14. Vote of thanks

The Conference,

Expresses its deep appreciation to the Secretariat for the excellent substantive servicing provided to the Eighth 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.

Notes

¹ *Report of the United Nations Conference on Environment and Development, Rio de Janeiro, 3-14 June 1992*, vol. I, *Resolutions Adopted by the Conference* (United Nations publication, Sales No. E.93.I.8 and corrigendum), resolution 1, annex II.

Annex

Provisional agenda for the Ninth 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. Organizational matters:
 - (a) Consideration and adoption of the rules of procedure;
 - (b) Adoption of the agenda;
 - (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 (PC-IDEA).
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.

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