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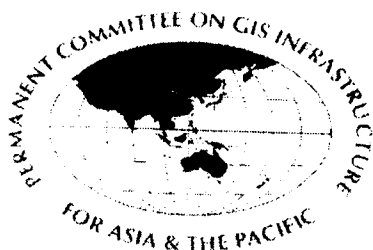
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WORKING GROUP 2 REPORT - REGIONAL FUNDAMENTAL DATA

Summary Report on Analysis of Regional Fundamental Datasets Questionnaire

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THE UNIVERSITY OF
MELBOURNE

Permanent Committee on GIS Infrastructure for Asia and the Pacific

**Working Group 2
Regional Fundamental Data**

Summary Report on

**Analysis of Regional Fundamental Datasets
Questionnaire**

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Background

The Permanent Committee on GIS Infrastructure for Asia and the Pacific (PCGIAP) has a vision for an Asia-Pacific Spatial Data Infrastructure (APSDI) that is a network of databases, located throughout the region. Together, they provide the fundamental data needed by the region in achieving the PCGIAP objectives. These include economic, social, human resource development, environmental management, research, GIS analysis and planning objectives.

Recognising that the fundamental dataset is the most important component of SDIs, and:

1. Considering Resolution 1 of the 14th United Nations Regional Cartographic Conference (UNRCC-AP) which recognised;

..the fundamental role played by the spatial data infrastructure in ensuring the successful implementation of the initiatives of Agenda 21 and in facilitating sustainable development..

2. Item C of Recommendation 3, of Resolution 12 of the conference that recommends PCGIAP;

..provide a generic template with which nations can report the status of surveying, mapping, and GIS activities, including relevant national issues actions taken and associated rationales for those actions.

3. Noting Recommendations 2 and 3 of Resolution 14 of the conference that;

..The United Nations urge all Governments in Asia-Pacific to consider participating in the work of the Permanent Committee in establishing the APSDI; and

..The United Nations urge the PCGIAP to endeavor to link the APSDI into the Global Spatial Data Infrastructure.

4. And that these recommendations were endorsed and supported by the PCGIAP.

The Permanent Committee, through its Working Group 2 (WG2), believes that the availability of fundamental data from member countries is essential to the:

- development of the Asia-Pacific Spatial Data Infrastructure;
- development of regional knowledge infrastructure;
- realisation of economic, social and environmental benefits for the region; and
- the implementation of the United Nations Conference on Environment and Development (UNCED) Agenda 21;

and that:

- data sharing avoids wasteful duplication of resources and facilitates data integration; and
- provides better data for decision making and thus expands market potential.

There is currently a general lack of transparency in the Asia-Pacific region as to what (mainly national) data exists regarding the commercial conditions of their usage and their scope and quality. In order to ensure access to data, directories are required to enable the location of existing information and its sharing for different purposes. Potential users of geographic information need to know what data exists, where it is located, who owns it, and how it can be accessed and purchased.

This is the background providing the justification for development of an Asia-Pacific Regional directory. However, there is a need to document the existing availability of national datasets in a standardised way to enable its collation. In order to overcome this situation, WG2 defined a project to assist its effort to fulfil its tasks regarding development of Regional Fundamental Datasets and to create a Metadata system for them. The overall objective is that member nations are aware of the existence of regional data, can make informed decisions based on the data's fitness for a given use, and can assess the suitability of data for their regional applications.

The Department of Geomatics, University of Melbourne, which currently has an active research group working in the field of SDI undertook the project for WG2. The Department was asked to design and analyse the results of a technical questionnaire to determine what data exists, where it is, its availability, and its quality.

In pursuing these objectives, and receiving support from the 5th meeting of PCGIAP in Beijing, April 1999, the questionnaire was distributed to all 55 countries in the region regarding national fundamental datasets, GIS facilities, and standardisation initiatives in each member countries. This questionnaire was developed to provide WG2 with a better appreciation of the situation existing in the countries of the region with respect to fundamental datasets, and the sharing and exchange of geo-referenced data at the national level. This information will help WG2 to better focus and manage the steps required for developing regional fundamental datasets and accurately identifying the proper coverage, scale(s), format, and the other important aspect of the Asia-Pacific regional fundamental datasets.

The questionnaire contains five sections. Section A includes information about the existing national datasets including national base map series, hardware and software and institutional arrangements for using and sharing Geographic Information in member nations. Section B provides information about the current use and knowledge about spatial data and data exchange standards in member nations. Section C provides information about the data policy, pricing and copyrighting issues involve with their national datasets. Section D provides information about the potential users of, and expected coverage of spatial data in the Asia-Pacific regional fundamental dataset, and number of personnel active in the field of national datasets. The last section (General),

includes information about anticipated technical and political barriers expected when developing regional fundamental datasets.

This Report summarises the key findings from that survey on Regional Fundamental datasets.

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Executive Summary

This questionnaire was developed to provide WG2 with a better appreciation of the situation existing in the member nations of the region with respect to fundamental datasets, and the sharing and exchange of geo-referenced data at the national level. Responses were returned by 17 organisations from 17 countries out of 55 countries from the Asia-Pacific region. All of the organisations who returned the questionnaire were engaged in surveying and mapping.

There is more than one organisation in half of countries which produce/provide national datasets. The number of organisations responsible for producing or providing national dataset ranges from 2 to 7 in these counties with all being Governmental Departments.

There are large amounts of digital data available at different scales in the region that could be useful for the creation of a regional Fundamental dataset. Four countries have data only in a paper format. The availability of national datasets ranges from small to large scale depending on the size of the counties. The range in scale is from smaller than 1:5,000,000 to larger than 1:2,500. There are also many common layers in different datasets that could be used for a possible regional fundamental dataset.

Almost all the countries have adopted national standards for the preparation of their datasets. Very few countries have commenced converting their datasets into the ISO/TC211 standards. However most countries have indicated that they plan to adopt the ISO/TC211 standards in the near future.

In the existing datasets of most countries, the main items of available Metadata are comparable. This similarity should facilitate the development of a common Metadata system for the region. It would be useful to prepare a regional directory concerned with the availability of national datasets using a common metadata system for the region.

Regarding organisational infrastructure based on availability of the hardware systems, the dominant hardware used are Personal Computers (88 percent of countries). More than two-thirds use Workstations, and a minority use Mainframes. Large format plotters and digitisers are installed at over 85 percent of countries, two-thirds of countries have large format scanners and a few countries have Film writers.

ARC/INFO and ArcView are the most widely used software and are installed in 65 percent of countries. Other GIS and graphical software include MapInfo, Microstation and MGE (Intergraph).

Almost all countries indicated that they are planning to undertake some form of national mapping project within the next five years. The scales of these projects are mostly 1:250,000, 1:100,000 and 1:50,000. The main sources of data collection are aerial photos and satellite imagery.

The main problems and issues experienced during data exchange between organisations within different countries includes security, cost recovery, copyright, non-standard data formats, metadata and the quality of datasets.

Only seven countries indicated that they have joint projects along their national borders with other countries. The total number of countries from the Asia-Pacific region that are involved in such joint projects is 17.

Almost all countries have their own cost recovery or charging policies for digital data which includes useful suggestions which may be used in the preparation of a regional data exchange policy.

Over 82 percent of countries are exchanging data within their countries. Their organisations typically exchange large volumes (range from >100 MB to 150 GB) of data infrequently, from twice-monthly to once a year. Only three countries indicated that they do not exchange data between organisations.

Storage media (disks, CDs, ...) are used most commonly for both types of data exchange between and within organisations. The second commonly used method is Local Area Networks (LAN). Very little use is made of World Wide Web (WWW) and Wide Area Networks (WAN), a reflection of the fact that very few organisations are interconnected.

DXF and ASCII files are the most common formats used for the exchange of data. The most important datasets which are desired by different users (over 70 percent) to be in a regional fundamental dataset include Geodetic, Topography, Hydrologic and Costlines, Transportation, Environmental data, Place names, Statistics data, and Landuse and Forestry data.

The most anticipated political barriers regarding the establishment of a regional fundamental dataset includes access to datasets for security reasons, lack of resources, national administrative boundaries as a data layer, and copyright issues. Regarding technical barriers, the important issues are using different standards, lack of technical expertise, lack of valid information, lack of uniformity in dataset specifications, and differences in geodetic reference frameworks and lack of basic infrastructure in the area of GIS.