



Permanent Committee on GIS Infrastructure for Asia and the Pacific

**Working Group
Regional Fundamental Data
STATUS REPORT**

**FOR 16th United Nations Regional Cartographic Conference and 9th
PCGIAP Meeting**

**Okinawa Convention Center, Ginowan City, Okinawa, Japan
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Comments made by the Executive Board Meeting, Philippines, October 2002:

Given the sensitivity and the far-reaching effect of the international boundaries issue it is recommended that WG2 work in a cooperative and constructive way with UN, and ISCGM so as to avoid duplication and to ensure data consistency, and to mutual benefit. For reconfirmation of the PCGIAP' principle on this issue a strategic review should be presented at the 16th UNRCC-AP.

A comment was made to the effect that there might be a need to narrow down on specific and concrete targets, thus to contribute to the ultimate goal of PCGIAP.

Establishment of a joint taskforce of WG1 and WG2 was recommended to facilitate cooperative activities.

Action: Board and WG2 to prepare a strategic paper for discussion defining the principle on the administrative boundary dataset by the 16th UNRCC-AP.

Resolutions adopted by the 8th PCGIAP Meeting, Brunei Darussalam, APRIL 2002:

3. Policy Statement for Asia-Pacific Boundaries Dataset

The PCGIAP,

Noting that a principal objective of the PCGIAP is to develop a spatial data infrastructure for the Asia and the Pacific (the APSDI) and

Also noting the boundaries dataset, which includes international and administrative boundaries, is one of the essential components of the APSDI,

Further noting, The PCGIAP does not in any way represent the boundaries dataset of the APSDI to be the agreed and legally binding definition of country boundaries,

Acknowledging the boundaries data provided by the National Mapping Agencies of the member nations as being the most appropriate data from those countries,

Recommends that:

- The PCGIAP member nations are entitled to represent their boundaries data in accordance to their own stand on territorial sovereignty, and have the copyright and the right of explanation for their own boundaries data in the Asia-Pacific Regional Fundamental Dataset,
- The boundaries data provided to the PCGIAP by the member nations are consistent to with those that they provide to the UN,
- The Asia-Pacific boundaries dataset is separately stored country by country; Without the concerned country's authorization, PCGIAP does not make any modification to the data.

- The member nations entrust the PCGIAP with the responsibility to release their boundaries data while they do so on their own; The boundaries data released in the above two channels are equally copyrighted,
- International standards, and Common software data formats, should be used for AP Regional Fundamental Dataset for vector and raster data, and
- The representation of geographic names in the Asia-Pacific Regional Fundamental Dataset complies with the principles set by the UN Conference on the Standardization of Geographic Names.

4. Basic Principles for Developing and Utilizing the Asia-Pacific Regional Fundamental Dataset

The PCGIAP *recommends* that:

- The contents of the Asia-Pacific Regional Fundamental Dataset shall be defined, and further, the technical specifications of the Asia-Pacific Regional Fundamental Dataset shall be developed, with the Global Mapping Specifications as reference,
- For the first version of the Asia-Pacific Regional Fundamental Dataset, the vector data shall be no less accurate than 1:1 million in map scale, and the raster data shall be no less than 1KM in ground resolution. The member nations are encouraged to provide data at larger scales on a voluntary basis,
- The technical specifications of the Asia-Pacific Regional Fundamental Dataset shall include detailed measures for the implementation of, and shall not conflict with, the PCGIAP data policy,
- International standards and Common software data formats should be used for AP Regional Fundamental Dataset for vector and raster data,
- The PCGIAP maintain that the Asia-Pacific Regional Fundamental Dataset should be contributed to the Global Map and the GSDI as part of the global datasets, and
- Different pricing policies shall be adopted by the PCGIAP for different users, such as commercial and non-commercial purpose; Data will be made available at marginal cost for non-commercial purpose; For commercial purpose, the PCGIAP will follow the pricing principles of member countries.

5. APSDI Clearinghouse Node

The PCGIAP,

Noting that many changes have been taken place in the taskforce focusing on data node, which was organized in the 7th PCGIAP meeting, and with following current members: Mr.

Glenn Jonestone for Australia, Mr. Zhou, Xu for China, Mr. Sri Kusno Gularso for Indonesia, Mr. Gholam Reza Fallahi for Iran, Mr. Akeno, Kazuhiko for Japan, Prof. Kim, Kyehyun for Korea,

Also noting that the draft Guidelines for APSDI Clearinghouse Node Development has been revised according to the outcomes of the activities after the 7th PCGIAP meeting, and submitted to the 8th PCGIAP meeting as the 2nd version for comments,

Further noting, the contents are reorganized to comply with the candidate PCGIAP Metadata Profile, and include an implementation strategy,

Noting that a candidate PCGIAP Metadata Profile complying with ISO19115 Core Metadata Profile has been developed by APSDI Data Node Taskforce,

Recommends

- That suggestions and comments about the Draft Guidelines to be submitted to the taskforce by the end of May 2002,
- To update the profile to reflect the outcomes of the coming ISO/TC211 meeting in May 2002 in Bangkok,
- To use the result in APSDI Data Node Implementation, and
- That ISO compliant software for metadata management and searching be used and extended as the basis to implement APSDI Clearinghouse Data Node.
- Noting that Members will support the taskforce for testing, using the software and improving the outcomes of the software development

6. BARENTS Geographic Database

The PCGIAP,

Noting that an analysis report on the BARENTS Geographic Database was presented by the Working Group 2, which analyzed the objectives, implementation phases, technical aspects as well as the similarities of BARENTS project with PCGIAP Dataset Project,

Recognizing that

- BARENTS Geographic Database specification experience be used in the development of APSDI Fundamental Dataset, and
- A special workshop with focused theme plays key role in promoting the business of a PCGIAP Working Group, such as the Hai'nan Workshop of Working Group 2 on APSDI Clearinghouse Data Node held in Nov. 2001,

Recommends that

- The taskforce of Working Group 2 on Fundamental Datasets continues to work on the data specification of PCGIAP, and
- A workshop be organized by Working Group 2 in 2002 whose focus will be on the development of Regional Data Specification and Applications.

Activities undertaken during 2000-2003 period:

Four main tasks (projects) for WG2 were approved at the 6th Meeting in Kuala Lumpur and have been continued since then, are listed below. Attachment 1 lists activity plan for 2002 and attachment 2 lists strategy of the work plan for 2002-2003.

1. Policy for Sharing Fundamental Data

- Policy Statement for Asia-Pacific Boundaries Dataset (Resolution 3) Composed of seven policy issues was accepted during 8th PCGIAP meeting.

2. Develop Fundamental Data

- Administrative boundaries pilot project was carried by Mr. Abbas Rajabifard, Department of Geomatics, the University of Melbourne. The project is a part of the working plan of the PCGIAP-WG2 for the Development of the Fundamental Data.
- As part of this pilot project a technical Specification and User guide was developed for running this pilot project and they have been submitted to the PCGIAP-Executive Board meeting held in Hiroshima, Japan November 2000
- Five countries in the pilot area have provided their dataset to the project. These countries are China, Japan, Korea South, Nepal and Sri Lanka.
- Basic principles for developing and utilizing the Asia-Pacific Regional Fundamental Dataset Composed of 6 items were accepted (Resolution 4).
- An analysis report on the BARENTS Geographic Database was presented during the 8th PCGIAP Meeting. Result of this analysis was accepted as Resolution 6

3. Development Network of APSDI

Dr. Zhou Xu has reported the activities of the "APSDI Data Nodes Taskforce" which can be found as attachment 1 to this report

4. GIS Applications

- The project within Russia (the Delta Region of Baikal) in conjunction with USGS presented by Mr. Aleksandrov at 6th PCGIAP meeting. This project is used to predict what would happen with various geographical areas if particular weather events took place;
- Presentations made at the 7th PCGIAP meeting include "Regional GIS application – GIS projects for Barents and Baltic regions";
- Presentations made at the 8th PCGIAP meeting include "Regional GIS application on the basis of space of technology, including high resolution satellite images".

Acknowledgments

Working Group Members and other people interested in the WG activities have had major role in progress of the tasks and activities of WG2, and I extend my thanks to them and their host organizations.

Work plan Summaries

The work plan for 2003-2006 can be found as attachment 2 to this report.

Taskforce Report on APSDI Clearinghouse

Prepared by
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Introduction

In the 7th Meeting of the PCGIAP, 2001, Tsukuba, a taskforce was formed within WG2 for promoting the planning and implementation of APSDI spatial data clearinghouse with distributed data nodes according to the adopted resolutions. And PCGIAP Workshop on APSDI Clearinghouse was hold in November, 2001, Hainan Island, China. According to related resolution and work plan of the 8th PCGIAP meeting, a guideline for APSDI clearinghouse development and the core metadata profile of ISO 19115 should be finished up to 9th meeting, and implement the prototype clearinghouse based on the guideline.

Activities undertaken during 2000-2003 period

Core metadata profile

According to ISO 19115, a core metadata profile (Table1) is documented, which can be a choice when the members implement their clearinghouse node. And a metadata entry tool named **Mediator** complying with this profile is developed and free available.

Table 1 ISO19115 Core metadata elements

No.	Title	Definition	Man./Opt.
<i>Information about Metadata</i>			
1.	Metadata point of contact	MD_Metadata.contact > CI_ ResponsibleParty	M
2.	Metadata date stamp	MD_Metadata.dateStamp	M
3.	Metadata language	MD_Metadata.language	C
4.	Metadata character set	MD_Metadata.characterSet	C
5.	Metadata file identifier	MD_Metadata.fileIdentifier	O
6.	Metadata standard name	MD_Metadata.metadataStandardName	O
7.	Metadata standard version	MD_Metadata.metadataStandardVersion	O
Identification Information			
8.	Dataset title	MD_Metadata > MD_Identification.citation > CI_Citation.title	M
9.	Abstract describing the dataset	MD_Metadata > MD_Identification.abstract	M
10.	Dataset reference date	MD_Metadata > MD_DataIdentification.citation > CI_Citation.date	M
11.	Dataset language	MD_Metadata > MD_DataIdentification.lauguage	M
12.	Dataset topic category	MD_Metadata > MD_DataIdentification.topicCategory	M
13.	Dataset character set	MD_Metadata > MD_DataIdentification.characterSet	C
14.	Geographic location of the dataset (by four coordinates or by geographic identifier)	MD_Metadata > MD_DataIdentification.extent > EX_Extent > EX_GeographicExtent > EX_GeographicBoundingBox or EX_GeographicDescription	C
15.	Dataset responsible party	MD_Metadata > MD_Identification.pointOfContact > CI_ ResponsibleParty	O

16	Spatial resolution of the dataset	MD_Metadata > MD_DataIdentification.spatialResolution > MD_Resolution.equivalentScale or MD_Resolution.distance	O
17	Additional extent information for The dataset (vertical and temporal)	MD_Metadata > MD_DataIdentification.extent > EX_Extent > EX_TemporalExtent or EX_VerticalExtent	O
18	Spatial representation type	MD_Metadata > MD_DataIdentification.spatialRepresentationType	O
<i>Distribution Information</i>			
19	Distribution format	MD_Metadata > MD_Distribution > MD_Format.name and MD_Format.version	O
20	On-line resource	MD_Metadata > MD_Distribution > MD_DigitalTransferOption.onLine > CI_OnlineResource	O
<i>Data Quality Information</i>			
21	Lineage	MD_Metadata > DQ_DataQuality.lineage > LI_Lineage	O
<i>Reference System Information</i>			
22	Reference system	MD_Metadata > MD_ReferenceSystem	O

There are totally more than 20 entities and 80 elements when the relationships are expanded; among these elements, there are 9 primary mandatory elements; generally, at least 25 to 40 elements need to be used for describing a geospatial dataset.

This profile abstract all elements included in table 1 and those related to these elements without changing the relationship between these elements and the status (mandatory and recommended optional) of them. It's enough to provide metadata for spatial data at dataset level for the purpose of resource discovery, resource online access and general resource evaluation.

The software solution

Necessity of an optional software package for APSDI clearinghouse

To implement the APSDI Clearinghouse, there are some existing software system can help us, including commercial and non-commercial software. For most commercial software, they are very powerful, but to some extent it's costly. For non-commercial software, there exists some limitations more or less for widely use, for example, document, technical support and so on. To encourage PCGIAP members joining APSDI clearinghouse, we must limit the entrance cost as low as possible so that every potential participants of APSDI clearinghouse can offer the prerequisite. So there must be an applicable free software solution for clearinghouse development. Of course, participants can adapt any other software solution. The purpose of the taskforce is to provide a free alternative for APSDI clearinghouse implementation.

Introduction

Based on a study on the currently available Clearinghouse nodes server software and the architecture of the spatial data clearinghouse of USA, Australia and Canada, and with a period of development and practice, a free software solution is presented by the APSDI Clearinghouse taskforce.

The software solution includes three components. Figure 1 shows the components and their roles in constructing APSDI clearinghouse.

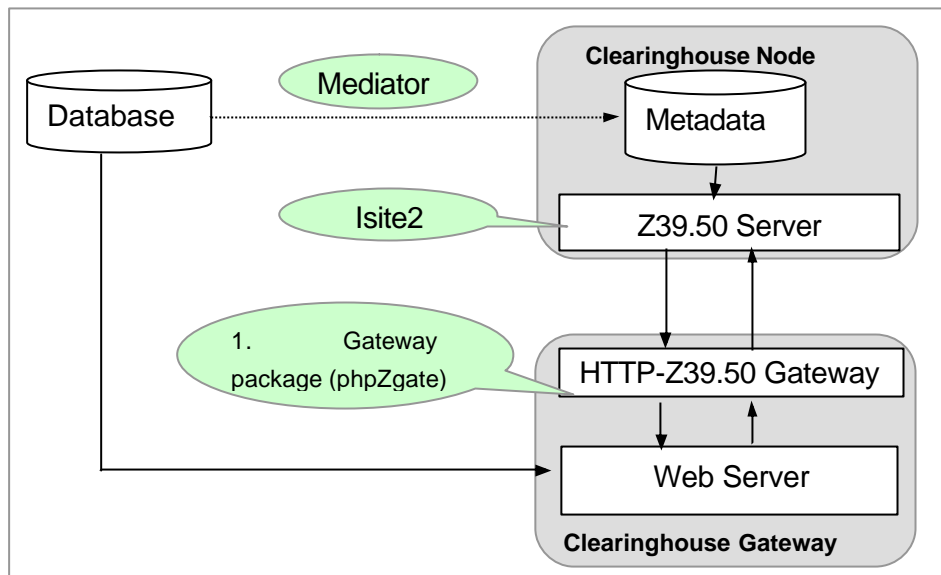


Figure 1. Components of the software solution

1). Mediator (<http://moie.sourceforge.net>)

This is a metadata editor (fig.2), it can be used to prepare ISO19115 compatible metadata for APSDI Clearinghouse. Mediator is packaged with an XML schema which contents are including all the core elements of ISO19115, and Mediator provides facilities to create metadata, even you can use it to create any kind of XML file by customizing it.

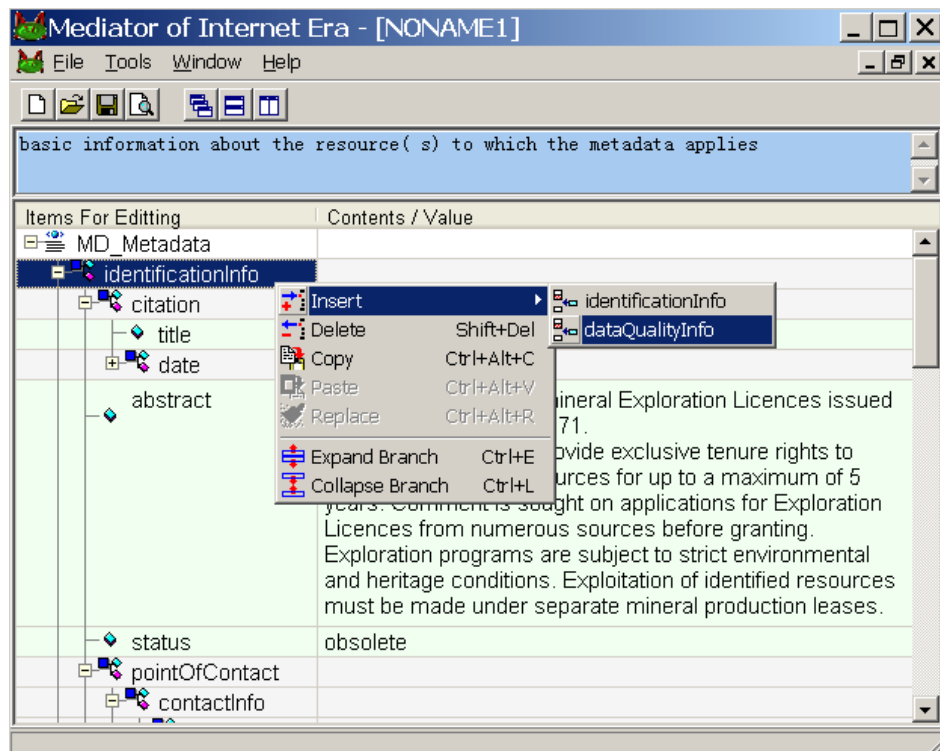


Figure 2. Mediator User Interface

2). **Isite2** (<ftp://ftp.awcubed.com/pub/Software/Isite2/>)

This widely used clearinghouse software is developed by The Clearinghouse for Networked Information Discovery and Retrieval (CNIDR: <http://www.awcubed.com/Isite/index.htm>). It is recommended by FGDC to be used in FGDC clearinghouse construction. There are many FGDC specific help files in the official distribution, for the convenience of PCGIAP members, a step-by-step description of APSDI clearinghouse node development using this software is developed and available at <http://phpzgate.sourceforge.net>.

3). **Gateway Package – phpZgate** (<http://phpzgate.sourceforge.net>)

This package provides a gateway between HTTP and Z3950 so that the Internet users can search APSDI Clearinghouse through web browser, also it enable the APSDI Clearinghouse node and gateway developers to register their gateway/node in the clearinghouse. Use this package, developers only need to register at any one of APSDI Clearinghouse Gateways, then all the others can be updated to include information about the registration. This package is written in PHP, which is a kind of HTTP server side script, so it can run with many PHP enabled web server on many OS platform.

Developers can visit <http://nfgis.nsd.gov.cn/apsdi> to test it and download the software from <http://phpzgate.sourceforge.net>. Also the metadata profile and *Guidelines for APSDI Clearinghouse Node Development* also can be downloaded from this web site.

Technical specification for APSDI Clearinghouse implementation

With the practice of the software solution, a technical specification for APSDI Clearinghouse node development *Guidelines for APSDI Clearinghouse Node Development* has been finished. This specification gives step-by-step technical instructions for APSDI Clearinghouse node and gateway construction with the help of Isite2 and other complementary software package provided by the taskforce.

Implementation of APSDI Clearinghouse

A gateway of APSDI clearinghouse has been set up at <http://nfgis.nsd.gov.cn/apsdi> using this package. A node of Global Map China dataset (ISO19115 Metadata Standard) has also been set up with Isite2 and registered in it. Several nodes from FGDC clearinghouse are also registered in this gateway for test. Users can search these nodes with the provided web interface by temporal, spatial or textual conditions now (fig. 3).

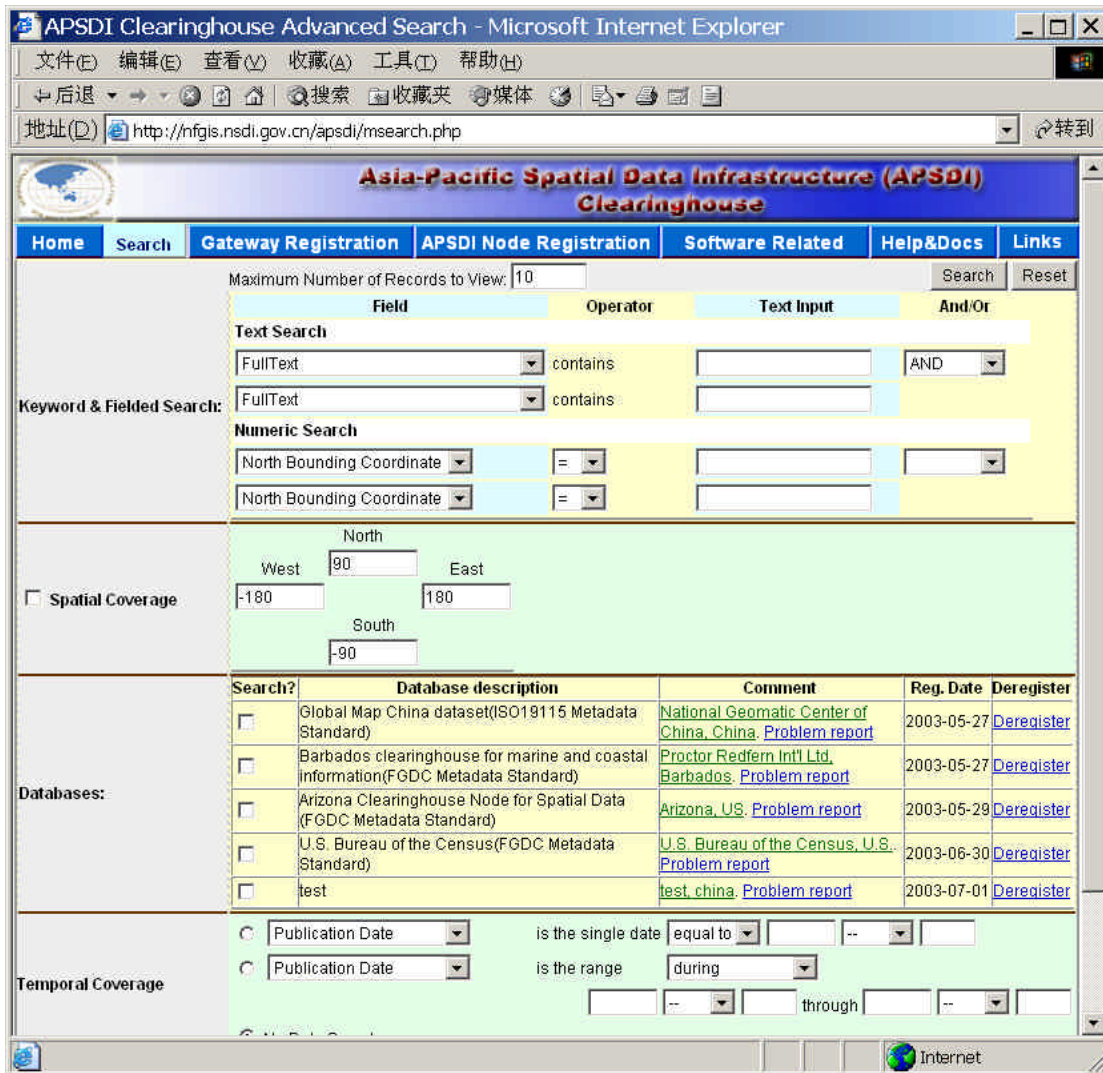


Figure 3. Search APSDI clearinghouse

Problems

Training

Now the prototype is to be completed, other members will be encouraged to join the clearinghouse. We need consider the feasibility and potential means of providing training for them.

Language

At present, we use English in metadata capturing, clearinghouse search etc. But for many members, their existing dataset and metadata records are written in native languages other than English, it's necessary providing a common solution for cross-language query for APSDI clearinghouse.

Future work

Maintaining the software package

The software package is still only an initial version, a lot of maintenance is needed to make it more applicable, stable and powerful. For example, enabling user customizing the interface of gateway package, adding new features to the metadata editor, and revising the technical specification, etc.

Technical support

To offer the members technical support in time, two open source projects **phpZgate** (<http://phpzgate.sourceforge.net>) and **Mediator of Internet Era** (<http://moie.sourceforge.net>) have been started in Sourceforge.net. Developers of APSDI Clearinghouse can join the projects, subscribe mail-list or visit there to get help and share experience. The taskforce members will try there best to provide technical support for the participants of APSDI Clearinghouse.

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Attachment 2

PCGIAP Working Group 2 on Regional Fundamental Data**General , Work Plan for 2003 - 2006:**

No.	Project	Responsibility	Target Date	Comments
1	Discuss cooperating with UN activities relating to WG2.	WG2 - Chair, Project Coordinators and other members	9th PCGIAP Meeting	A report will also be prepared and delivered to the 16th UNRCC-AP meeting on what activities have been undertaken within the WG2.
2	Discuss how to establish cooperation with other International organizations like Asian Center for research on remote sensing (ARCRORS) , GSDI,ISO/TC21 1 and OPEN GIS	WG2 - Chair, Project Coordinators and other members	10th PCGIAP Meeting	

PCGIAP Working Group 2 on Regional Fundamental Data

Work Plan for APSDI Data Taskforce 2003 - 2006:

No.	Action	Responsibility	Target Date
1.	Maintaining the software package	APSDI Data Node Taskforce	10th Meeting and
2.	Technical support	APSDI Data Node Taskforce	10th Meeting
3.	Training for APSDI Clearinghouse Development	APSDI Data Node Taskforce	To be discussed on 10th PCGIAP meeting
4.	Developing Implementation plan for the APSDI Clearinghouse	APSDI Data Node Taskforce	11th PCGIAP meeting
5.	Workshop for APSDI Data Node	PCGIAP Secretariat and WG2 members	To be discussed on 10th PCGIAP meeting

PCGIAP Working Group 2 on Regional Fundamental Data

Action Plan for Fundamental dataset Taskforce 2003 - 2006:

No.	Action	Responsibility	Target Date
1.	Develop specifications for regional fundamental dataset using the pilot project specifications and other international experiences as reference	Fundamental datasets taskforce	10th Meeting
2.	State and Develop Asia and Pacific regional fundamental datasets which contribute to Global Map	Fundamental datasets taskforce	10th Meeting
3.	Complete the pilot project about fundamental datasets	Fundamental datasets taskforce	To be discussed on 10th PCGIAP meeting
4.	Hold Training and workshop	PCGIAP Secretariat and WG2 members	To be discussed on 10th PCGIAP meeting
5.	Develop Implementation plan for the PCGIAP fundamental datasets	Fundamental datasets taskforce	11th PCGIAP meeting
6.	Determine potential regional fundamental data layers other than administrative boundaries.	WG2 - Chair, Project Coordinators and other members	10th PCGIAP Meeting
7.	Discuss how to enrich the regional fundamental data with existing statistics (population, economy, etc.)	WG2 - Chair, Project Coordinators and other members	10th PCGIAP Meeting