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Report of the Permanent Committee on Geographical Information
System Infrastructure for Asia and the Pacific**

**REPORT OF THE PERMANENT COMMITTEE ON GEOGRAPHICAL
INFORMATION SYSTEM INFRASTRUCTURE FOR ASIA AND THE
PACIFIC**

**Submitted by the Permanent Committee on Geographical Information
System Infrastructure for Asia and the Pacific (PCGIAP)***

* Prepared by Greg Scott, PCGIAP President



Permanent Committee on GIS Infrastructure for Asia and the Pacific (PCGIAP)

Established in 1995 by a United Nations Resolution



Report of PCGIAP to the 18th United Nations Regional Cartographic Conference for Asia and the Pacific (UNRCC-AP)

UN Conference Centre (ESCAP) Bangkok, Thailand, 26-29 October, 2009
Mr. Greg Scott, PCGIAP President

1. Introduction

This report covers the three years since the 17th United Nations Regional Cartographic Conference for Asia and the Pacific (UNRCC-AP) and the 12th meeting of the Permanent Committee on GIS Infrastructure for Asia and the Pacific (PCGIAP) held on 18-22 September 2006 in Bangkok, Thailand.

Documented in this report are activities of the Executive Board including the Committee's background and future directions.

2. Background

National surveying and mapping agencies around Asia and the Pacific region regularly met under the auspices of the UNRCC-AP, where diverse aspects of cartographic activities were discussed and experiences were shared across regional boundaries. Amid rapid socio-economic changes and huge technological progress, the members increasingly recognized changing needs in geographical information among people and governments.

In response to those growing needs a resolution was adopted to the effect of establishing a permanent committee dedicated to the development of a regional GIS framework at the 13th UNRCC-AP held in Beijing, China, in May 1994, in the following words;

Resolution: #16 Permanent regional GIS infrastructure committee

The Conference.

Recommends that within a year from now, with the initial administrative support of the United Nations Secretariat, directorates of national survey and mapping organizations in the region form a permanent committee to discuss and agree on, inter alia, geographical information system standards, geographical information system infrastructure and institutional development, and linkage of the prospective committee with related bodies in the world.

The Resolution became a reality in Kuala Lumpur, Malaysia, on 12-14 July 1995, marking the inauguration of the "***Permanent Committee on GIS Infrastructure for Asia and the Pacific***" as it was formally named. An Executive Board, as a coordinating body, was set up and its initial membership of ten countries included Malaysia, as President, China, Vice President, and Australia, Secretary, and as members Indonesia, Iran, Japan, the Republic of Korea, New Zealand, the Philippines, and Thailand.

3. Aims

The aims of the PCGIAP are to maximise the economic, social and environmental benefits of geographic information in accordance with Agenda 21 by providing a forum for nations from Asia and the Pacific to:

- Cooperate in the development of a regional geographic information infrastructure;
- Contribute to the development of the global geographic information infrastructure;
- Share experiences and consult on matters of common interest; and
- Participate in any other form of activity such as education, training, and technology transfer.

4. Objectives

The objectives of the PCGIAP are to:

- Define the nature of a regional geographic information infrastructure that each country in the region can contribute to in order to meet regional and global mapping and GIS requirements;
- Determine the nature of legislative and administrative procedures and orders appropriate to the acquisition and sharing of spatial data;
- Develop a regional geodetic framework, regional topographic datasets, national cadastral datasets and regional geographical names datasets as the basis for regional GIS activity;
- Document the status of key geographic datasets and key agencies in each member nation, and develop a framework for the exchange of such information;
- Prepare guidelines and strategies to assist member nations for the implementation of cadastral development to meet individual member nation needs;
- Determine the need for research, training and technology and policy exchange in relation to the beneficial impact of geographic information on the social, economic and environmental objectives of member nations of Asia and the Pacific region;
- Explore opportunities for aid funding to support development needs of member nations and for the development of a regional spatial data infrastructure.

5. Membership

The membership of the PCGIAP consists of the directorates of national survey and mapping organizations or equivalent national agencies of currently 56 nations from Asia and the Pacific, with Timor-Leste joining in 2005 as the newest member. The member countries are the same as the UN ESCAP members. Each nation nominates a single representative to the PCGIAP.

6. Meetings

The PCGIAP meetings are held in conjunction with the triennial UNRCC-AP meetings and also annually between them. Other international organizations in the SDI field, including ISCGM and GSDI, have organized meetings to coincide with the PCGIAP meetings to maximize the occasion, successfully creating synergetic effects. Details of PCGIAP meetings are shown in Table 1.

Table 1: Details of PCGIAP meetings

Meeting	Location	Date
13 th UNRCC-AP	Beijing, China	May 1994
1 st PCGIAP	Kuala Lumpur, Malaysia	July 12-14, 1995

2 nd PCGIAP	Sydney, Australia	Sept 29-Oct 4, 1996
14 th UNRCC-AP & 3 rd PCGIAP	Bangkok, Thailand	Feb 1-7, 1997
4 th PCGIAP	Tehran, Iran	Feb 28-Mar 4, 1998
5 th PCGIAP	Beijing, China	April 19-22, 1999
15 th UNRCC-AP & 6 th PCGIAP	Kuala Lumpur, Malaysia	April 11-14, 2000
7 th PCGIAP	Tsukuba, Japan	April 24-27, 2001
8 th PCGIAP	Negara, Brunei Darussalam	April 16-19, 2002
16 th UNRCC-AP & 9 th PCGIAP	Okinawa, Japan	July 14-18, 2003
10 th PCGIAP	Bangalore, India	Jan 30-31, 2004
11 th PCGIAP	Bali, Indonesia	May 18-21, 2005
17 th UNRCC-AP & 12 th PCGIAP	Bangkok, Thailand	Sep 18-22, 2006
13 th PCGIAP	Seoul, Korea	Jun 12-15, 2007
14 th PCGIAP	Kuala Lumpur, Malaysia	Aug 19-22, 2008
18th UNRCC-AP & 15th PCGIAP	Bangkok, Thailand	Oct 26-29, 2009

The 16th PCGIAP Meeting will be hosted by Singapore Land Authority and will be held in conjunction with GSDI-12 in Singapore 18-22 October 2010. Possibilities of concurrence with conferences of other international organizations are being explored for future meetings.

7. Executive Board

The PCGIAP is managed through an Executive Board. The functions of the Executive Board are to:

- Plan and coordinate the Committee work program between plenary sessions of the Committee;
- In consultation with the United Nations, plan and manage the activities that the Committee undertakes for the UNRCC-AP;
- Manage the continuing administrative affairs of the Committee;
- Define, monitor and assess the regional spatial data infrastructure;
- Make recommendations on objectives and on activities and work programs to the Committee;
- Arrange and manage publications including directories, internet sites and promotional material, and to distribute appropriate documents to Members, individuals and organizations concerned;
- Prepare and submit reports on activities of the Committee to the UNRCC-AP;
- Represent the Committee and present a paper at other regional and international conferences such as PC-IDEA, ISO/TC211, ISCGM, ICA and GSDI, etc;
- Promote appropriate collaborative efforts with other leading SDI partners from academia, Mysore University, India, Inha University, Korea, and University of Melbourne, Australia, and the private sector including GISTDA, GIS Development, ESRI, etc, through seminars or publications

The Executive Board consists of 12 national representatives, that is, three leadership members and nine members. Although there have been a number of personnel changes for some of the representative nations, membership for the current term (2006-2009) is as below:

President	Australia	Mr. Greg Scott
Vice President	Japan	Dr. Komaki Kazuo
Secretary	China	Mr. Li Weisen
Board Members	Brunei	Hj Mohd Jamil Hj Mohd Ali
	Fiji	Mr. Barma Nand
	India	Maj. Gen. RS Tanwar
	Indonesia	Mr. Bebas Purnawan
	Korea	Mr. KIM, Kyoung Soo
	Malaysia	Dato Prof Dr. Abdul Kadir bin Taib
	Philippines	Mr. Diony A. Ventura
	Russia	Mr. Alexander Prusakov
	Singapore	Mr. SOH Kheng Peng

8. Working Groups

Working Groups are established, where required, to undertake projects in pursuit of the PCGIAP aims and objectives. The present Working Groups and their operational areas for 2006-2009 are shown below:

WG1: Regional Geodesy (Chaired by Japan)

1. Enhance the regional geodetic infrastructure to contribute to monitoring, warning and post-event reconstructions through cooperative observations of crustal deformation and plate motion, and information exchange, including tide gauge networks and placement of new GPS key sites.
2. Encourage the transfer of GPS technology to nations in need through annual campaign observations, and the development and sharing of analysis techniques in geodesy workshop activities.
3. Promote the application of new geodetic adjustment techniques and datum change transformation parameters for regional spatial data integration, and for geo-referencing cadastral and statistical information.
4. Interact with IAG (International Association of Geodesy) Commissions 1 and 2 on the status of the regional geodetic reference frames and geoid determination using absolute gravity, satellite, airborne and terrestrial gravity.
5. Review the status of geodetic networks in individual countries and upgrade PCGIAP web site information.
6. Support the expansion of continuous GPS installations in areas of earthquake and tsunami hazards and strongly encourage nations making such data readily available on a weekly basis for shared scientific study and warning systems in relation to tectonic events.

WG2: Fundamental Data (Chaired by Indonesia)

1. Development and implementation of a seamless dataset for the Asia Pacific region in close collaboration with the national mapping agencies, ISCGM and SALB.
2. Development of a metadata profile for the region.
3. Development of a data node network for the region.

WG3: Land Administration (Chaired by Australia)

1. Sharing of land administration experiences, issues, challenges, best practices and implementation via an annual land administration forum in the Asia-Pacific region.
2. Creation of a framework and model for integration of built (cadastral) and natural (topographic) environment datasets within national SDI initiatives.
3. Focusing on the concepts and principles of spatially enabled government, investigate the issues associated in the development of spatially enabled

government including: institutional; technical; policy; and socio-economic. The relationships between SDI, land administration and capacity building will need to be considered. Outcomes will be delivered via a number of international forums, workshops, scientific papers and the SDI Asia Pacific Newsletter.

WG4: Institutional Strengthening (Chaired by India)

1. Development of plans and strategies (a roadmap) of capacity building, education and training in the field of geodesy, surveying, mapping and creation of fundamental datasets and GIS programs.
2. Identification of technical needs among the member nations for GIS development.
3. Efforts for funding options to improve participation rate in the Committee activities.

9. Links with Other Organizations

In addition to reporting to the UNRCC, the Permanent Committee maintains strong and established liaison arrangements and relationships with national, regional and global organisations such as the:

- Permanent Committee for Spatial Data Infrastructure in the Americas (PC-IDEA).
- United Nations Regional Cartographic Conference for the Americas (UNRCC-A).
- Global Spatial Data Infrastructure (GSDI) Association.
- International Federation of Surveyors (FIG).
- International Steering Committee for Global Mapping (ISCGM).
- International Association of Geodesy (IAG).
- International Cartographic Association (ICA).
- International Society for Photogrammetry and Remote Sensing (ISPRS).
- EuroGeographics.
- EUROGI.
- International Standards Organization technical committee on international GIS standards (ISO /TC211).

Experiences and information are shared and exchanged through representation, paper presentation at one another's meetings, and through joint workshops. For example: PCGIAP WG 3 and GSDI Association jointly hosted an international workshop on Spatial Enablement of Government and NSDI – Policy Implications at the 13th PCGIAP meeting in Seoul, Korea in June 2007; PCGIAP WG 2 organized a Workshop on the Asia and Pacific Metadata Profile on 20 August 2008 jointly with ISO/TC211 as part of the 14th PCGIAP Meeting; and ISCGM convenes its annual meeting jointly with PCGIAP.

Examples of these constructive endeavours continuing include: the 16th meeting of ISCGM being convened in Bangkok in October 2009 in conjunction with the 18th UNRCC-AP and 15th PCGIAP meetings; and the 16th PCGIAP meeting being convened in conjunction with GSDI-12 in Singapore in October 2010.

A number of liaison activities have also contributed significantly to PCGIAP's links with other important organizations. The PCGIAP WG 3 Vice Chair, Associate Professor Abbas Rajabifard participated and introduced PCGIAP to the GSDI community at the 10th GSDI Conference in February 2008 in Trinidad. He was elected Vice-President and President Elect of the GSDI Association at the Conference, and has assumed the role of President of GSDI Association at GSDI-11 earlier in 2009. PCGIAP liaison reports were presented to the 14th Meeting of the ISCGM on 14 July 2007 in Cambridge, UK and to the 15th Meeting of ISCGM on 4 June 2008 in Tokyo, Japan. Cooperation for development of a seamless dataset for Asia and the Pacific region has been going on among PCGIAP WG 2, Global Mapping and the WHO SALB project.

PCGIAP has also offered support to the following activities in the Asia-Pacific region:

- The International Workshop “Good Land Administration – Its Role in Economic Development” held on 27-29 June 2007 in Ulaanbaatar, Mongolia, hosted by the Administration of Land Affairs, Geodesy and Cartography of Mongolia.
- The Pacific Islands GIS/RS User Conference held on 4-7 December 2007 in Suva, Fiji.
- The 3rd Indonesian Geospatial Technology Exhibition held on 6-9 August 2008 in Jakarta, Indonesia.
- Map Asia 2008 held on 18-20 August in Kuala Lumpur, Malaysia.
- The International Seminar on Land Administration Trends and Issues in Asia-Pacific, 19-20 August 2008, in Kuala Lumpur, Malaysia.
- A Training Workshop on SDI, jointly organized by the State Bureau of Surveying and Mapping of China (SBSM) and PCGIAP at the PCGIAP Training Center in Wenchang, Hainan Province, China, was conducted from 4-10 January 2009.
- The 3rd Land Administration Forum for the Asia and Pacific Region – “Re-Engineering the Cadastre to Support e-Government”, 24-26 May 2009, Tehran, Iran.

10. Strategic Issues

Relationship with the United Nations

As a committee created in 1995 by a UN resolution and reporting to the UN, PCGIAP should consider adopting a stronger working relationship with the UNRCC-AP. It is recognised that this relationship is important and should be nurtured to ensure PCGIAP continues to be relevant to the UN and properly aligned with its expectations. This has been, and will always be, a high priority for the PCGIAP. Efforts for further strengthening of the relationship are to be encouraged. Developing proposals or adequate mechanisms to foster interregional coordination and work towards a better global coordination of cartographic and related activities should be high on our collective agendas.

Recognition by the UN is vital to the ongoing success of the PCGIAP and its ability to operate effectively. In such a large and important region as Asia and the Pacific, with very diverse levels of economic and social development and maturity, it is imperative to ensure continuation of good working models of how tangible outcomes can be achieved. Therefore, the activities of PCGIAP, including formal meetings, will need to continue to be attractive, meaningful, substantial, and meet the real needs of the member countries, the region, and the UN. This requires ready contributions and higher participation in the PCGIAP activities in order to ensure successful implementation of projects and achievement of goals, to the benefit of all.

Relationship with other global and regional organizations

The network built upon linkages with other global and regional organizations, and associated liaison activities, has proved very effective and productive. These relationships have facilitated and promoted information and data sharing, and implementation of collaborative projects across national and regional boundaries. In SDI, interoperability is a growing trend and a key for further successful development and application of geospatial data. However, the whole SDI community has to work together to remove barriers, not only through standardization efforts, but also through institutional and legal systems so that it can meet challenges presented by the ever changing and evolving needs of the day. There is no doubt that geospatial technologies are now reaching a stage of advancement and maturity so that the remaining policy and governance issues and challenges can be confronted head on.

Recognizing the ongoing need and importance for coordinated efforts for SDI objectives beyond a regional boundary, PCGIAP has maintained a formal cooperative relationship with the Permanent Committee on SDI for the Americas (PC-IDEA) and the GSDI Association. This relationship has been exemplified in 2009 with the GSDI Association (June), UNRCC-Americas (August), and UNRCC-AP (October) meetings all being convened within a five month period. Each of these very important forums, along with the Cambridge Conference: The Exchange (July), was attended (with presentations) by the President of PCGIAP. Importantly, the Presidents of PC-IDEA and GSDI Association will be attending and presenting at the UNRCC-AP.

Review of aims and objectives

The aims and objectives of PCGIAP (as described earlier in this report) were defined in 1995 and have remained virtually unchanged since then. The past decade has seen tremendous changes at every level, most impressively in socio-economic and technological aspects. During this period we have seen GIS and SDI play an increasingly important and diverse role, while their potential has been continuously explored and expanded. Commensurate with this, we are seeing significant changes in the “traditional” functions and operational roles of national mapping agencies, not only within the Asia-Pacific region, but around the globe.

The daily business of mapping agencies is no longer just about coordination and delivery of cartographic and related activities. And to some degree, it is no longer just about GIS and SDI. The message and motivation is consistent across many forums, that it is not just about an "SDI", but how geospatial information and related technologies are applied to the contemporary problems facing the world today. It is not just about the data and technology, but the policy and governance to enable the information to be leveraged, integrated and delivered appropriately, and in a timely manner. For example, it is now common understanding that spatial information and related services are indispensable tools to support disaster mitigation and management.

In this context, the aims and objectives of PCGIAP should be subject to continuous review, which are to be followed by actions, if necessary. Discussions should be made on how the PCGIAP can contribute to the region, to spatial enablement, to sustainable development, to the Millennium Development Goals, to climate change, and to disaster risk reduction as the themes of this conference exhort, while the ultimate goal of national, regional and global SDI development is pursued.

12. Major Achievements

Important achievements of the PCGIAP from 2006-2009 include:

- Annual regional geodetic observation campaigns to connect national geodetic networks and develop a regional geodetic framework using GPS, SLR, and VLBI.
- Facilitation of three International Land Administration Forums focusing on land administration issues, challenges and implementation in the Asia-Pacific region.
- Developed the concepts and principles of spatially enabled government via several conferences and seminars.
- Completed a project on developing a framework model and associated tools for the integration of built (cadastral) and natural (topographic) environmental datasets within National SDI initiatives.
- Development of a regional framework data set.
- Development of a regional metadata profile and data node network.
- Facilitated an International Training Workshop on SDI.
- Maintained the joint PCGIAP-FIG Cadastral Template and extended the number of countries contributing.

Further details of the PCGIAP and its works are available at the PCGIAP web site:

<http://www.pcgiap.org>

13. Conclusion

The PCGIAP has continued to make steady progress and has established itself as one of the important partners in the global SDI community representing Asia and the Pacific. The cooperation, goodwill and dedication of many countries, organizations and people have enabled the PCGIAP to make some important achievements in the past fifteen (15) years. To continue the path of progress nothing is more essential than the UN support and involvement and contributions from the 56 members. Representing the largest and most populous region with possibly highest economic development potential, the PCGIAP is determined to go forward and meet the requirements of the region and challenges ahead through cooperation at all levels, from among the PCGIAP members to regional to global. Nevertheless, there is always room for improvement.

As a voluntary committee, PCGIAP's main obstacle for rapid progress is arguably its near complete reliance on the member countries in the region to provide resources to allow it to operate. In addition, some of the PCGIAP activities may have been driven by long-term regional or global needs and interest, which may not have met short-term national needs for some of the member countries. Whilst acknowledging the current global financial crisis, understanding that members expect tangible outcomes, and understanding that it is reasonable that these same member countries must contribute more, the future directions, vision, and activities of the PCGIAP were discussed at the recent Executive Board Meeting in Xi'an, China.

National mapping and spatial data organizations are in a period of change. Mapping and geographic information are on the cusp of playing a major "information infrastructure" role globally. As the regional forum for national mapping organizations the PCGIAP must continue to lead, support and unite development of national SDI of each member nation. Every country should have access to the 'road map' to develop an SDI and cadastral/land administration capacity, at least within their borders. This capacity should contribute to building capability in areas of disaster management, climate change, economic growth, and sustainable development. In order to achieve capability, and acknowledging that the levels of geographic information vary quite significantly between the developing and developed nations and regions, PCGIAP aims to develop the platforms and resources necessary to ensure a base level of SDI capacity across the Asia-Pacific region.

The mapping agencies need to act as data providers and integrators, and that data needs to be connected to the requirements of users across all levels of governments. Issues pertaining to integrating SDI's, capacity building, volunteer geographic information, maximising mapping with minimum investment, spatially enabled government/societies, the use of geospatial information in response to disasters, research and innovation, land information convergence, etc. are all real and valid in today's world. Representing our collective member countries within the PCGIAP and UNRCC, we must be cognisant of such issues and directions.

Acknowledgements

On behalf of the Executive Board and the Members of the PCGIAP, it is fitting that I farewell and acknowledge the very significant services and contributions of three long serving PCGIAP and UNRCC-AP members with a collective contribution of over 50 years: Mr Peter Holland; Professor Ian Williamson; and Associate Professor Abbas Rajabifard.

Peter Holland first attended the 2nd PCGIAP meeting in Sydney, Australia, and has since attended every PCGIAP and UNRCC-AP over a 12 year period, representing Australia since April 2000. He has served in many of the executive positions in PCGIAP, initially as Chairman of Working Group 4, and then Working Group 2. Peter was elected Vice President of PCGIAP in 2000, and was President from 2003 until his retirement in 2008. He also served as President at the last UNRCC-AP held in Bangkok, 2006.

Ian Williamson has been actively involved in UNRCC meetings since 1983 becoming involved a little later in the PCGIAP after it was established. Ian is now the longest serving Working Group chair of PCGIAP, having chaired what has been an exceptionally active and successful Working Group 3 from its inception.

Abbas Rajabifard is the longest serving member of the PCGIAP being involved since the very first meeting in 1994 when he was the Iranian delegate. Since then he has supported Ian as the Vice Chair of Working Group 3 (with Mr Ahmad Fauzi). As President of GSDI Association, Abbas will continue to have a strong association with the PCGIAP.

I am sure you will join me in wishing Peter and Ian well in their well deserved retirements, and support Abbas in his role as President of GSDI Association for the next three years.