Pre Conference Workshop on Participatory GIS
Summary Proceedings

7th International Conference on GIS and Developing Countries (GISDECO 2004)
10-12 May 2004, Universiti Teknologi Malaysia, Johor Malaysia

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1 INTRODUCTION

This report presents a summary of the deliberations of a Pre Conference workshop on Participatory GIS held during the 7th International Conference on GIS in Developing Countries (GISDECO 2004), 10-12 May 2004, Universiti Technologi Malaysia, Johor Malaysia. The one-day plus workshop was jointly convened by ITC (Mike McCall and Erik de Man) and CTA (Giacomo Rambaldi), under the aegis of GISDECO International (Richard Sliuzas and Ahris Yaakup).

GIS for developing Countries (GISDECO) is a global network of practitioners and researchers dealing with geo-spatial information technologies in developing countries. GISDECO organises bi-annual international conferences where practitioners and researches can share experiences and lessons learned. The conferences are usually preceded by subject-specific one-day workshops.

1.1 Workshop Objectives

The major objective of the workshop was to promote Participatory GIS applications in Developing/ACP countries. More specifically the workshop aimed at setting the stepping-stones for a Co-seminar on Participatory Geo-spatial Information Management Systems in developing Countries in the year 2005. As designed in collaboration with ITC, the purposes and outputs of the workshop were the following:

(i) Raise the profile of Participatory GIS as a relevant and effective geo-information practice to support collaborative development and natural resource management;

(ii) Provide an opportunity for interaction, especially amongst ACP development PGIS practitioners;

(iii) Presentation of some on-going work in P-mapping and PGIS.

(iv) Identification of and debate on key issues, problems, capacities, and opportunities affecting PGIS in development situations.

(v) Preparation for a combined GISDECO / URISA / CTA Conference, in 2005; debating objectives and agenda.

1.2 Workshop Participants

Sixteen participants attended the workshop and breakout group on PGIS during the one-day and half period. The Seminar Support Programme of CTA enabled the participation of ACP nationals from Cameroon (2), Ghana (1), Jamaica (1), Papua New Guinea (1), Tanzania (2) and Zimbabwe (1), including two women. Nationals from India, Malaysia, Japan and Iran were also present. The names and full contact addresses of the PGIS workshop participants are found in Appendix 1.

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Participants were either working or are interested in a broad range of PGIS application areas including the following:

- Integrated NRM,
- Urban planning,
- PGIS training for local district planning,
- PGIS as tool for bridging communication gaps,
- Decision support,
- Integrating local knowledge and qualitative data into GIS for community use,
- Participatory 3D modelling and local planning/conflict management,
- PGIS in conflict management,
- Government line departments database establishment and use at local level, participation and
- PGIS and empowerment in PGIS
- Institutionalization of PGIS
- Animal disease risk mapping.

2 THE WORKSHOP

Three main activities characterised the sessions. Lead presentations and discussions in plenary, two workgroups to address specific issues followed by presentations and discussions in plenary and a general discussion group on May 11 focusing on issues relating to the 2005 co-seminar. Please see workshop programme in appendix 2. Mike McCall from ITC facilitated the workshop.

2.1 Plenary

The following resource persons delivered the three introductory PowerPoint presentations:

- Erik de Man (ITC) *"Participatory GIS: a matter of cultural and institutional embedded-ness"*
- Mike McCall (ITC*) "Good Procedure Good Practice"*
- Giacomo Rambaldi (CTA) – *"CTA Programmes and links to the PGIS Initiative"*

A number of interesting points were raised in the plenary session that followed the presentations. A summary is presented in the ensuing paragraphs regarding each of the PGIS concerns.

Standards for PGIS and or guidance against abuse/misuse: It was agreed that it would be difficult to reach agreement as to how to do PGIS. However a suggestion came up around the possibilities of having certified practitioners/professionals of PGIS such as the URISA certification program but there were strong arguments against the dangers of protectionism that such a scheme could bring.

Ethics: Problems of piracy of valuable local knowledge and recognition of local knowledge ownership and intellectual property rights are huge in current PGIS practice. Another pressing issue here is the respect for and protection of sacred information layers. Many practitioners still fail to respect such rights and community values. Short and unfocused PGIS interventions are likely to raise more expectations and bring conflicts to the fore than solve them especially if it is not in response to community demand. Valuable and productive PGIS should be community driven and owned, and embedded/integrated into a broader and long-lasting intervention.

Practicalities: There are clear issues of availability of hardware, software, and accessibility to data and to reliable energy supply in the sort of local communities being referred to in Developing countries. Attention has to be given to such practical issues from the planning stage of PGIS if success is to be attained

Participation / Institutionalization: Most communities in which PGIS is carried out are often fragmented and as such varied tools/methods and technologies and skills are needed to get diverse stakeholders participating. Specific attention should be given to underprivileged groups to enable sufficiently broad, inclusive and equitable participation. The PGIS facilitator then becomes a mediator in the process. Multi-disciplinary teams are often required to best facilitate the process. The advantage of PGIS in bringing together fragmented groups is that it is in itself a learning process that broadens the horizon of those involved. This enables and enhances participation. But PGIS would also have to be embedded in the culture and institutions for maximum learning - the process of institutionalization of PGIS. This will mean appropriate consideration for issues of power distance, individualism versus collectivism (how culture accommodates the "group"), masculinity and femininity, uncertainty avoidance and more.

Considering that "communication" is a crucial element in practicing PGIS, one crucial question is when does participation become meaningful in establishing two-way communication pattern, given that there can be no communication without participation. The answer would be found in looking at the participation ladders (e.g. Pretty, 1995)

Collaboration: From more than 700 cases documented, PGIS has mostly been a collaborative effort between Local communities, NGOs and experts. Sometimes including government officials can be helpful. It mostly requires multiple skills and resources that may not be provided by one stakeholder, therefore multi-disciplinary teams are often most appropriate.

Integration: PGIS often involves integrating local / indigenous knowledge and modern scientific knowledge, with huge deriving mutual benefits. This involves combining low and high technology, resulting in questions of accuracy tradeoffs, reliability and acceptability. Most GIS software can represent information in 2D and 3D but local knowledge can be up to seven dimensions and so it may not be adequately represented by existing GIS software or interpreted by communities. Some community information can be very qualitative and may not be adequately represented in a purely cartographic GIS environment. Multi-media ICT tools seem to have some potential for solving some of these representation problems.

Accuracy: This is often a big issue in PGIS especially when some government staff think that community-generated maps are less accurate simply because these are not produced by the national mapping authorities. More so, quite often emphasis of the PGIS products is put on geometric rather than thematic accuracy. Both need to be considered important in PGIS and there is need to ask at every point in the process what degree of accuracy is needed for the purpose of the exercise. Therefore tools should be chosen on purpose with the required accuracy as a criterion.

Acceptability/ Legitimacy: How acceptable are PGIS products and to whom? Some government staff in many developing countries may not trust and would hardly accept PGIS products even when they are geometrically accurate. Especially in cases where governments see NGOs as rival forces at the lower levels of government. Such a problem can be solved in one of the following ways, embracing local government surveyors in the local PGIS process or sensitizing local government officials and involving them if necessary in the PGIS process, that way they provide some sort of certification of the process and products. Another way out is to lobby for

a political and legal context that allows for the acceptance of such products in courts of law for land claims or in planning and decision-making fora.

2.2 Workgroup assignments

Key sets of issues put forward for discussion:

(i) What problems constraints and opportunities are experienced in PGIS in practice? Review functional and implementation problems (- for examples, legal limits, political constraints, problems of technology, and in technical skills, availability and reliability of data sources, visualisation. Does PGIS need complementary supporting actions?)

(ii) Consider the extent of P-GIS applications in developing countries (especially in ACP, also in other GISDECO countries). Based on experiences, and analyses of experiences, what would be needed to better identify the practical requirements of "good practice"? How?

(iii) Does PGIS empower, or marginalise people and communities? Are there differences in this, in particular social-cultural or political contexts? Consider the functioning of PGIS in relation to good governance conditions of transparency, accountability, etc. What are the expected outcomes of implementing PGIS?

(iv) What is special about PGIS? Is it mainly about applications, which increase the scale or quality of participation or mainly about popularisation and downscaling of GIS-technology? Or, is PGIS an emergent practice in its own right, developing out of both GIS-technology and participatory approaches in planning and decision-making?

Does PGIS strengthen or diminish the value of indigenous (spatial) knowledge, and alternative knowledge systems? For whom? What are the goals of PGIS practice?

2.3 Main issues raised by the work groups (summary)

There is the need to *describe* and not *define* Participatory GIS. Many terms and acronyms are used but none covers the real extent of the practice, which fundamentally builds on PRA methods and tools supported by geospatial information management and communication technologies ranging from sketch mapping, participatory 3D modelling, GPS readings, GIS, ortho-photomapping, remote sensing and more.

There was a general consensus that PGIS is a practice, and that such practice is meant to (i) address common needs, (ii) be flexible and adapted to different socio-cultural and bio-physical environments, (iii) support indigenous spatial knowledge (ISK) communication and management.

Inputs would include mental cognition of space (informants), base maps, aerial photos, RS imagery and GPS data. Tools, methods and technologies supporting data processing (mental and computer-based) would include: sketch mapping, scaled sketch mapping, Participatory 3D Modelling (P3DM), GIS, Mobile Integrated GIS (MiGIS), participatory interpretation of aerial photos and satellite imagery, transect walks and other PRA tools. Physical outputs would include 2 and 3 dimensional physical and virtual maps and models, thematic information layers, interactive web-based maps and reports. Non-physical outputs would include knowledge acquired

through social and discovery-learning processes, increased awareness, improved communication base, and added authority to ISK and "imperfect data[3]".

There was a general consensus among participants that PGIS empowers and marginalizes communities at the same time: Those who participate are empowered (given heads up) and those who do not participate directly may be at the loosing end. The degree of empowerment or disempowerment would vary within different socio cultural contexts (e.g. despotic or autocratic regimes versus democratic settings)

PGIS is an emergent practice in its own right; developing out of both participatory approaches in planning and decision making and spatial information management technologies and systems.

PGIS practices can strengthen the value of indigenous spatial knowledge (ISK) to the extent to which GIS can be used to represent such knowledge[4]. It can improve, expand, complement and add authority to it.

PGIS practices have been successfully used to manage conflicts. The participants made the following considerations:

- Introduce PGIS to specifically address conflict only when conflict is already an issue;
- Be prepared to deal with new realities (incl. conflicts) which may emerge while practicing PGIS;
- Consider PGIS as a practice to be embedded in a lengthily dynamic interactive process;
- The final output (conflict solution) should be based on acquired consensus and not imposed.

The following strengths were identified in using PGIS practices in conflict management:

- Added transparency;
- Provision of equal access to information to conflicting parties
- Eased communication among parties;
- Conflicts made explicit (in a known conflict situation) and visualized;
- Added value and authority to local knowledge;
- Multidisciplinary/multi-sectoral team approach.
- Potential for integrating ICT, Multimedia and GI Technology

3 2005 PROJECT DESIGN (CO-SEMINAR)

The participants to the PGIS workshop (and other conference participants) reconvened as a buzz-group on May 11 to purposely discuss the planned 2005 Co-Seminar. The following is the combined output of PGIS workshop and buzz-group exercises:

Project (conference-workshop) title: *To be determined.*

Problem Statement: The workshop participants identified the following constraints in dealing with geospatial information and indigenous spatial knowledge (ISK) at community level: (i) lengthily process; (ii) widespread difficulties encountered by people in reading maps; (iii) difficulties encountered by informants in communicating if language (spoken and visual) is not common property of the parties; (iv) difficulties

[3] "Imperfect data" may be more *reliable* than "precise data".
[4] Some indigenous communities think in up to seven dimensions (quote from the presentation done by Mike McCall), and GIS software cannot represent these ... so far ...

encountered by informants in understanding technical operational aspects[5]; (v) difficulty in interpreting reduced reproduction of reality displayed by GIS and 2D maps; (vi) risk of triggering latent conflicts on resource use and access if boundaries are visualised; (Vii) Difficulties with determining acceptable ad relevant thematic and geometric accuracy; (vii) Cost and time investment requirements

At institutional level: (i) commitment required from all stakeholders; (ii) insufficient support from higher authorities; (iii) investment in terms of cost and time;

Intervention logic:

(Draft) Project Goal: PGIS practices adopted in developing countries to support community empowerment and management of Indigenous Spatial Knowledge in the contexts of rural development, natural resource management, resource rights & entitlements, land tenure, community needs assessment, neighbourhood planning, etc.

Pending issue: Scope - *rural*, or *rural & urban* PGIS applications?

Project Objective:

To promote PGIS practice in developing countries.

Project outputs:

(i) Enabling conditions for PGIS to function identified.
(ii) Guidelines for good or appropriate PGIS practice produced.
(iii) Instruments for ensuring recurrence of PGIS practices in developing countries identified.

Activities to achieve Output (i): Enabling conditions for PGIS to function identified

(i) Identify preconditions for PGIS practices to be adopted and implemented
(ii) Based on identified constraints, identify mechanisms and recommend actions for establishing the enabling environment
(iii) Identify target audiences and awareness raising mechanisms

Activities to achieve Output (ii): Guidelines for good or appropriate PGIS practice produced.

(i) Share lessons learned in practicing PGIS in developing countries in the context of broader interventions where:
    a. Spatial Information Management has complemented /reinforced participatory approaches
    b. Results are measurable (ex-post evaluations)
    c. Experience has been gained in different regions (Africa, Americas, SEA, etc.) and contexts (e.g. rural and urban)
(ii) Discuss methodological issues dealing with appropriate scale, precision, accuracy and sensitivity in practicing PGIS and handling of dynamic processes.
(iii) Discuss ethical issues related to indigenous spatial knowledge intellectual property rights, data privacy, access and exclusion.

Activities to achieve Output (iii): Instruments for ensuring recurrence of PGIS practices in developing countries identified.

[5] Constraint addressed by (i) choosing appropriate ICTools and processes for different purposes, people and situations; (ii) integrating available tools, methods and technologies.

(i) Identify avenues (physical and/or virtual) for PGIS practitioners where to
   a. Share information
   b. Obtain advice
   c. Acquire skills and knowledge (e.g.)

(ii) Identify existing centres of excellence;

(iii) Identify or conceptualise network(s), define and prioritize their roles and expected services.

3.1 Practical project implementation issues

3.1.1 Where?

There was general consensus on organizing the 2005 conference-workshop (Co-seminar) in the South. Priority was given to Africa. Proposals were made based on existing relationships between ITC and local partner institutions (e.g. Tanzania, Botswana and South Africa). In Tanzania ITC has a long-lasting collaboration with the University College of Lands and Architectural Studies (UCLAS) at the University of Dar-es-Salaam and has organized several workshops at the Training Center for Development Cooperation (TCDC) near Arusha. Some participants endorsed the TCDC conference facilities as a possible venue. According to information posted on its web site http://www.mstcdc.or.tz/pages/tcdcworkshops.htm TCDC is fully equipped to host events with up to 100 participants.

Another idea proposed holding the conference alongside the GIS Africa conference in South Africa. Dr Chukwudozie from UNECA put forward this idea.

3.1.2 When?

It was agreed that the conference-workshop would take place in the second half of 2005, probably during the month of September.

3.1.3 Who?

Recommendations were made on ensuring the participation of the following:

(i) *PGIS practitioners* operating out of the following working environments: (i) research, (ii) NGO, (iii) CBOs and (iv) Government agencies. Essentially *PGIS practitioners* should be a blend of (i) development practitioners with solid experience in community-based mapping (from sketch maps upward) and (ii) GIS practitioners/researchers who have acquired experience in community-based planning, etc.

(ii) Target Audience to be sensitized on the value of PGIS practices, including e.g. government agencies and policy makers (?)

(iii) Community-based organizations and groups, which benefited from external PGIS support.

A few practitioners / researchers from the North will also be invited to share experiences during this conference (i.e. European, Australian, URISA, First Nations)

3.1.4 How?

The outcome of the workshop held at GISDECO 2004 will be shared at the forthcoming URISA PPGIS conference[6] and further refined. This will form the basis for preparing a conference-workshop outline and project proposal, which will be submitted, to various development partners for co-funding. Building on existing

[6] July 18-20, 2004, University of Wisconsin-Madison; Madison, Wisconsin, USA

relations, ITC/GISDECO suggested involving Habitat, UNDP and ESRI (private sector). Other donors which may be interested in supporting the event may include CIDA, SIDA, DFID and the Ford Foundation.

4 THE MAIN CONFERENCE

The main conference took place on 11-12 May and included presentations and breakout group sessions. One of these sessions dealt with the planning of the 2005 conference workshop (Co-seminar). Inputs from the CTA SSP-supported participants added value to the plenary discussions and contributed to broadening the geographical scope of the debate by balancing out an otherwise prevailingly Asian and European audience[7].

5 CONCLUSIONS

The Pre conference workshop on PGIS enabled the presentation of four papers on PGIS in the main GISDECO conference thereby putting PGIS as a topic on the GISDECO agenda firmly. This can be considered a big step in its promotion, as this is the best presence of the subject of PGIS at GISDECO thus far.

The workshop also enabled ACP country nationals to attend the GISDECO conference without which the conference would have had little less than three Africans, Caribbean or Pacific country participants.

The pre conference workshop also provided an excellent opportunity for establishing contacts, sharing experiences, learning about new approaches to managing spatial information and making best use of it for learning and communication purposes.

Finally the workshop laid out a sufficient outline for the planning of the 2005 co-seminar as expected.

6 FOLLOW-UP ACTIVITIES

It was agreed to set up an electronic discussion group on PGIS to support the preparation of the 2005 co-seminar.

[7] Approximately 120 people attended the conference from 20 different nationalities.

Appendix 1 List of Participants to the PGIS workshop and follow-up activities

Ms	Mr	Name	Position	Organisation and address	E-mail contact
	x	Akira Hirano	Assistant Professor	Graduate School of Humanities and Social Sciences, University of Tsukuba, Japan	ahirano@sakura.cc.tsukubs.ac.jp
	x	Erik de Man	Assistant Professor	ITC, Enschede, Netherlands	deman@itc.nl
	x	Farshad Nourian	Assistant Professor	University of Tehran Department of Urban and Regional Planning Tehran, Iran	fnoorian@ut.ac.ir
	x	Giacomo Rambaldi	Program Coordinator	CTA, Wageningen, Netherlands	rambaldi@cta.int or grambaldi@iapad.org
x		Harlina Jamil	Assistant Secretary	Ministry Of Federal Territories, Malaysia	harlina@bkwp.jpm.my
x		Ishak Adanan	Assistant Secretary	Ministry Of Federal Territories, Malaysia	ishak@bkwp.jpm.my
	x	Jimy Maro	GIS Officer	National Agricultural Research Institute Sir Alkan Tololo Research Centre P.O. Box 4415 Lae 411, Morobe Province, Papua New Guinea	gis@global.net.pg
	x	Mike McCall	Associate Professor	ITC, Enschede, Netherlands	mccall@itc.nl
	x	P.C Tiwari	Associate Professor	Komaon University Nainital, Uttaranchal, India	pctiwari@yahoo.com
	x	Peter A. Kyem	Associate Professor	Central Connecticut State University, 1615 Stanley Street P.O. Box 4010 New Britain CT 06050-4010, USA	kyemp@mail.ccsu.edu
	x	Peter Akong Minang	PhD student at ITC, Netherlands	Sustainable Development Associates, P O Box 8094, Yaounde, Cameroon,	paminang@yohoo.com minang@itc.nl and sdacam@yahoo.co.uk
	x	Peter Mbile Ngembeni	Integrated Natural Resources Management Researcher	World Agroforestry Centre. Africa Humid Tropics Regional Programme. P.O. Box 2067, Yaoundé, Cameroon	p.mbile@cgiar.org
	x	Pius Yanda	Associate Professor Natural Resources and Environment	University of Dar-es-Salaam P.O. Box 35097 Dar-es-Salaam, Tanzania	yanda@ira.udsm.ac.tz
	x	Richard Sliuzas	Assistant Professor	ITC, Enschede, Netherlands	sliuzas@itc.nl
x		Stella Massawe	Associate Professional Officer, Research GIS	ILRI, P.O. Box 30709 Nairobi 00100, Kenya	s.massawe@cgiar.org
x		Susanne Davis	Senior Research Officer - CHM	Natural History Division, Institute of Jamaica 10 - 16 East Street, Kingston, Jamaica	chm.nhd@cwjamaica.com
	x	Wilbert Karigomba	Ph.d candidate	West Virgina University, USA	wkarigomba@geo.wvu.edu

Appendix 2 PGIS for Local Level Planning - Pre-conference workshop and follow-up events

Day 1 – 10 May, 2004	
0915-1000	Welcome openings and round of Introductions
1000-1030	Presentation by Erik de Man (ITC) *"Participatory GIS: a matter of cultural and institutional embedded-ness"*
1030-1045	Open Forum, Q&A
1045-1100	Tea Break
1100-1115	Presentation by Mike McCall (ITC) *"Good Procedure Good Practice"*
1115-1135	Open Forum, Q&A
1135-1150	Presentation by Giacomo Rambaldi (CTA) – *"CTA Programmes and links to the PGIS Initiative".*
1150-1300	Open Forum, Q&A and presentation of afternoon tasks by workgroups
1300-1430	Lunch pause
1430-1615	Workgroups addressing series of questions
1615-1630	Tea break
1630-1700	Presentations by workgroups and follow-up discussion
Day 2 – 11 May, 2004	
1600-1745	Break-out group: Participatory GIS - the way forward Buzz-group (18 people) on defining the objectives of the 2005 PGIS conference workshop.
Day 3 – 12 May, 2004	
1530-1545	Presentation of the findings and recommendations of the Breakout Group on PGIS (by Giacomo Rambaldi)

Appendix 3 Programme of the Conference (incl. Pre-conference Workshops)

Monday 10 May 2004

Group	Title	Chairman/Facilitator
1	'Opportunities and Constraints to use Digital Geo-Information in Developing Nations' Room: Bilik Mesyuarat 3	Neil Stuart and Duncan Moss Institute of Geography, School of Geosciences, University of Edinburgh
2	'Participatory GIS' Room: Bilik Mesyuarat 4	Eric de Man, Mike McCall (ITC) and Giacomo Rambaldi (CTA)
3	'Planning and Decision Support System' Room: Bilik Kuliah 1	Luc Boerboom Department of Urban and Regional Planning & Geo-Information Management, ITC
4	'Implementing Statewide GIS' Room: Bilik Kuliah 2	Alias Abdul Rahman Faculty of Sciences & Geo-Informatics, UTM

Basic Time schedule for workshop activities

0830 – 0900	:	Workshop registration and selection of workshops
0900 – 1030	:	Workshop begin
1030 – 1045	:	Coffee
1045 - 1300	:	Continue with Workshop
1300 – 1400	:	Lunch
1400 - 1630	:	Continue with Workshop
1630 – 1730	:	Coffee/Pre-conference registration Setting up poster exhibition at foyer Dewan Senat

Tuesday 11 May 2004

0800 – 0830	:	Registration of participants and setting up poster exhibition Registration for Visit to Singapore Land Authority (13 May 2004)
0830 – 0900	:	Arrival of Y.Bhg. Datuk Prof. Ir. Dr.Mohd. Zulkifli B. Tan Sri Mohamad Ghazali, Vice Chancellor, Universiti Teknologi Malaysia
		Arrival of YB Tan Sri Muhamad Isa B. Dato' Hj. Abdul Samad, Minister of Federal Territories, Malaysia
0900 – 1030	:	**OPENING CEREMONY**
0900 - 0905	:	Doa Recitation
0905 – 0910	:	**Welcome Speech** on behalf of GISDECO by Mr. Richard Sliuzas, Coordinator of GISDECO International Committee
0910 – 0915	:	**Welcome Speech** by Y.Bhg. Datuk Prof. Ir. Dr.Mohd. Zulkifli B. Tan Sri Mohamad Ghazali, Vice Chancellor, Universiti Teknologi Malaysia
0915 – 0930	:	**Opening speech** by YB Tan Sri Muhamad Isa B. Dato' Hj. Abdul Samad, Minister of Federal Territories, Malaysia
0930 – 1000	:	**Key Note Address 1:** '*Capacity Building for Spatial Data Infrastructure Development*' by Prof. Ian Masser, Centre for Advanced Spatial Analysis (CASA) University College London
1000 - 1030	:	Poster exhibition and Photo session
1030 – 1045	:	Refreshment/ Poster exhibition
1045 – 1115	:	**Key Note Address 2:** Chaired by Prof. Dr. Sharifah Sutan Saidi *'Advances in SDI Development in Africa'* by Dr. Chukwudozie Ezigbalike (UNECA, Addis Ababa, Ethiopia)
1115 – 1145	:	**Key Note Address 3:** *'Development of GIS in Asia' by* Prof. Dr. Anthony Gar-On Yeh (University of Hong Kong)
1145 – 1215	:	**Session 1:** Local & Regional Experiences; Chaired by Prof. Dr. Alias Abdulah '*Spatial Planning and Decision Support System for Better Governance*' by Luc Boerboom, ITC, The Netherlands
1215 – 1245	:	*'Web based GIS for Collaborative and Public Participation in Urban Planning'* by Ahris Yaakup, UTM, Malaysia
1245 – 1300	:	Break Out Group Announcement by Richard Sliuzas (Selection for discussion topics at secretariat counter) Announcement Singapore Land Authority (SLA) Visit Thursday (13 May 2004), 10.00am to 12.00pm
1300 – 1400		Lunch/Posters exhibition Lunch served at Dewan Jamuan Poster exhibition is at Dewan Senat's foyer and Dewan Jamuan Confirmation for free activities to Secretariat*
	:	**Session 2**: GIS Infrastructure & Policies Chaired by Richard Sliuzas

1400 – 1430	:	*'Capacity Building of Government Line Departments for the use of Geospatial database in natural Resource management in India'* P. C. Tiwari and Bhagwati Joshi, Kumaon University, Uttaranchal India
1430 - 1500	:	*'And If Geospatial Data Infrastructures Were Fragmented and Splintering?*' by W.H Eric de Man, ITC, The Netherlands
1500 - 1530	:	*'Power, Participation, and Inflexible Institutions: An Examination of the Challenges to Community Empowerment in Participatory GIS Applications'* by Peter A. Kwaku Kyem, Central Connecticut State University, New Brittain, USA
	:	Introduction Break Out Groups Reminder for SLA Visit and Free* activities
1530 – 1600	:	Coffee/Poster exhibition
1600 - 1700	:	Break Out Groups
1700 - 1750	:	Coffee/Poster exhibition
	:	Free*
2000 – 2200	:	Dinner**

Wednesday 12 May 2004

0800 – 0830	:	Registration of participants
0830 – 1030	:	**Session 3: GIS** Competencies & Skills in the Face of ICT Advancements; Chaired by Neil Stuart
0830 – 0900	:	*'Developing Versatile Land-Use Information System Based On Satellite Imagery For Local Planning In Indonesia'* by Projo Danoedoro, Gadjah Mada University, Indonesia
0900 - 0930	:	*'Can Participatory – GIS Help Local Communities in Decentralized Spatial Planning?'* by Michael K. McCall, ITC, The Netherlands
0930 – 1000	:	*'Who Owns The Legend?*' by Giacomo Rambaldi, CTA
1000 – 1030	:	Coffee/Posters exhibition
1030 – 1230	:	**Session 4:** GIS Education & Curriculum Development Chaired by Michael McCall
1030 – 1100	:	*'GIS in Planning Education: Case Malaysia Universities Education'* by Dazilah Abdul Samad, International Islamic University Malaysia
1100 - 1130	:	*'Factors Affecting the Use of GIS in Urban Transportation Planning & Management'* by Ata M. Khan, Carlenton University Ottawa, Canada
1130 – 1230	:	Feedback from Break Out Groups
1230 – 1400	:	Lunch/Poster exhibition
1400 – 1630	:	**Session 5:** GIS Infrastructure & Policies (continue session 3) Chaired by Ass. Prof. Dr. Ahmad Nazri Ludin

1400 – 1430	:	*'GIS in the Municipality of Tehran: Achievements and Failures'* Farshad Nourian, University of Tehran, Iran
1430 - 1500	:	*'The Integration of GIS into Policy Making Through Intra-Urban Indicators, Case Study Rosario (Argentina)'* by Javier Alberto Martinez, Utrecht University
1500 - 1530	:	*'Factors Constraining the Adoption of GIS in Developing Countries: A Survey Delegates (ten years after the first year conference)*'by Neil Stuart, University of Edinburgh, UK,
1530 - 1600	:	*'Beyond the Management Approach to GDI Implementation: Lesson from Costa Rica'* by Hugo de Vos, Wageningen University & Research Centre
1600 – 1630	:	Wrap up speech from Organising Committee
1630 – 1700	:	**Closing Ceremony**
1700 - 1730	:	Coffee