

ISPRS Society



Report on the ISPRS WG II/5, II/6, IV/1 and IV/2 Joint Workshop on "Spatial, Temporal and Multi-Dimensional Data Modelling and Analysis"

Québec, Canada from 2-3 October 2003

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The ISPRS joint workshop on "Spatial, Temporal and Multi-Dimensional Data Modelling and Analysis" was held on 2 and 3 October 2003 in Québec, Canada. The Centre for Research in Geomatics at Laval University was the sponsoring organisation.

The workshop gathered 33 participants coming from academia (Laval University, University of Maine, University of New Brunswick, Delft University of Technology, Ryerson University, University of Twente), government (Ordnance Survey UK, Quebec Ministry of Environment, Quebec Ministry of Transportations and Quebec Ministry of Natural Resources) and industry (Les conseillers KHEOPS, Swiftsure Spatial Systems, Viasat GeoTechnologies).

During these 2 days, we had 17 presentations and 3 demonstrations. The research themes tackled during this workshop are:

- Spatial Decision Support
- Spatio-Temporal GIS'
- 3D GIS
- Multi-Scale and Multimedia Representation
- Multi-Dimensional Database
- Spatio-Temporal Data Modelling
- Populating Spatial, Temporal and Multidimensional Databases.

Scientific Results

The workshop offered a broad spectrum of research subjects.

Common ground in the presentations was the increasing importance of the 3rd (3D space) and 4th (time) dimension in data analysis and data collection. We saw the role of time and 3D space in many application fields: from geology, spatial decision support systems, animation and Virtual Reality in simulation studies, to Spatial OLAP (OnLine Analytical Processing) and social-demographic research into personal biographies (when do people move, and where to: far away or within their district).

Although the workshop was primarily focused on data modelling and data analysis, we also saw interesting presentations on data collection techniques. The question here is how to cope with 'time series' in data collection, e.g. when obtaining trajectories (of cars, of people) from

time-stamped data streams. Compression techniques and filtering are necessary to reduce the amount of data, but how to guarantee complete (in a functional sense) and correct results?

A second common element in the research presented was the use of concepts and technology from outside the geospatial domain: the 'data cube' and 'drill down' principles in Spatial OLAP, web technology for 3D visualisation and analysis, (object-)relational database storage of vector data, compression techniques for reduction of the size of the bit stream, agent technology in simulation studies in 3D space.

The workshop clearly showed that ISPRS research is not only becoming more and more multi-dimensional in scope, but (maybe as a consequence) also more and more multi-disciplinary in approach!

The new technological possibilities also pose new challenges. To name a few:

- Besides spatial relationships and spatial operators, we need (more adequate) temporal relationships and temporal operators.
- Spatial and temporal operators should also be easy to understand by end users (e.g. 'samePlaceAs', 'sameTimeAs').
- Sometimes implementation differences occur as a consequence of unclear or incomplete definitions of basic concepts in spatial models. In that case refinement and unambiguous formulation of existing specifications is necessary (what is a 'valid' polygon, how to deal with crossing boundaries of polygons, how to deal with precision and tolerance).
- How to fruitfully combine raster and vector data in 3D visualisation, Augmented Reality, simulation of natural phenomena (e.g. water flooding) etc.
- How to handle large quantities of 'time stamped' spatial data in the data collection phase (how to extract information from what is essentially a bag of 'points' in time).

Presentations Available

The presentations available from the Workshop can be downloaded at: http://sirs.scg.ulaval.ca/isprs_wg4-1/wprogram.asp



Report on the ISPRS WG IV/4 Tutorial on Spatial Data Infrastructure for Urban Planning and Management

Indian Institute of Remote Sensing, Dehradun, India from 6-8 November 2003

By Dr P.S. Roy, Chair, WG IV/4, E-mail: psr@iirs.gov.in

Development of a National Spatial Data Infrastructure is a key issue for improving the quality of life for the civil society. The conceptual framework for the development of National Spatial Data Infrastructure is being formulated and efforts are also being made towards defining the metadata standards and data exchange standards.

A NSDI would enable towards a spatial society i.e. synergy of information, technology and access, the spatial and non-spatial information will force the establishment of proper infrastructures, encompassing the environment for a better quality of life. One of the major components in NSDI is the information related to urban centres. In the present scenario the problems faced by developing countries is the rapid pace of urbanisation and population explosion, which has resulted in increasing demand for land, shelter, and adequate infrastructure facilities. Hence proper planning and management of urban regions is required to cope up with the complex urban problems so as to make the optimum use of the resources, which in turn requires accurate spatial information, therefore it is imperative to develop a National Urban Information System to provide integrated solution to the civil society.

Looking at the need of the hour a tutorial was organised on "Spatial data Infrastructure for Urban Planning and Management" under the auspices of ISPRS WG IV/4 and the Indian Society of Remote Sensing (ISRS) at Indian Institute of Remote Sensing, Dehradun from 6th – 8th November 2003. In total 31 participants from India and Asia pacific countries viz. Philippines, Nepal, Bangladesh, Sri Lanka, Vietnam, Indonesia, Uzbekistan, Mongolia, Maldives, Azerbaijan, China, Fiji, Kyrgyz Republic, Myanmar, and Thailand attended the program. The tutorial was organised through lectures and case study demonstration by experts from India and abroad.



Opening Ceremony: participants.

The tutorial was inaugurated by Prof. Martien Molenaar, Rector, ITC, The Netherlands. Dr P.S. Roy, Chair ISPRS WG IV/4 welcomed the tutorial participants and the guest. The opening remarks were made by the guest of honour Dr R.R. Navalgund, President ISPRS TC VII. He gave an overview of remote sensing program and satellite system for urban mapping. He also highlighted the importance of geoinformation science in empowering local administrative bodies to improve the quality of life. Prof. Martien Molenaar delivered the keynote address on Spatial Data Semantics in NSDI in which he highlighted the importance of defining standards with respect to the semantic aspects of geoinformation. He also touched upon how a mathematical formalisation would help in the formulation of rules for specifying unambiguous spatial data models relating thematic and geometric data, based on the combination of spatial and thematic partitions. This approach will lead to a better insight how thematic vagueness generates spatial uncertainty.



Opening ceremony: Dr R.R. Navalgund speech.



Valedictory function: distribution of certificates by Dr P. Nag, Surveyor General of India.

The other topics covered during the tutorial were Spatial Data Infrastructure concepts – its components and purpose, standardisation and metadata concepts (SDI Technology), NSDI-India's vision and spatial data infrastructure for urban planning and management, Perspectives on Indian scenario in emerging Urban Information System, National Urban Information System (NUIS)- Salient features, Use of spatial data in municipal governance, The role of geoinformatics in the preparation of a development plan. A number of case studies and pilot projects highlighting the use of remote sensing, GIS and advanced

visualisation tools for proper urban planning and Infrastructure management was also demonstrated. During the discussion two participants also presented their case studies on urban sprawl and navi mumbai development plan.

The three-day workshop was concluded with a valedictory address by Dr P. Nag, Surveyor General of India, highlighting the initiatives and plans taken by Survey of India, towards the development of the Indian national spatial data infrastructure.



Report on the International Workshop on Radiometric and Geometric Calibration

Gulfport, Mississippi, USA from 2-5 December 2003

By Stan Morain, President, ISPRS Commission-I, E-mail: smorain@edac.unm.edu

The ISPRS-CEOS WGCV Joint Task Force on Radiometric and Geometric Calibration met on the last day of an international workshop held in Gulfport, Mississippi last 2-5 December. The Workshop was organised jointly by I/2 (Manfred Schroeder, Chair and task force members at the John C. Stennis Space Center. The agenda included a tour of NASA's field and laboratory calibration test facilities, two days of technical sessions, and a half-day of "break out" sessions for task force members to discuss radiometric, geometric, and image quality parameters.

There were two stimuli for the workshop. One was provided by a CEOS Resolution, the terms of which ask for the establishment of a Joint Task Force with ISPRS to: (a) collect and collate lists of parameters for Earth Observing (EO) sensors; (b) recommend a standard list of sensor parameters; identify ambiguities among terms and recommend solutions; and (d) prepare a document for describing EO sensors. The second was a white paper prepared by Dr. George Joseph, the 1996-2000 President of ISPRS Commission-I toward the end of his Commission. In his white paper, Dr Joseph presented compelling arguments

for needing a list of Earth observing sensor parameters, agreed upon definitions for these parameters, and traceable methods for their measurement. His hope was that dialogue on these issues would continue into the new Congress period 2000-2004.

The workshop in Gulfport attracted some 80 experts from seven nations to begin a dialogue addressing issues





surrounding sensor parameters, definition, and calibration measurement technologies. Twenty-seven invited speakers made presentations in seven technical sessions with four interspersed discussions focused on the specific CEOS terms-of-reference. The seven sessions were titled:

1. Identifying and Describing Sensor Parameters
2. Standards and Guidelines
3. Methods and Approaches for Radiometric Calibration
4. Methods and Approaches for Geometric Calibration
5. Intersensor Calibration
6. Examples of Sensor and Image Characterisation Programs
7. Calibration Test Sites and Ranges

Three products will emerge from the workshop:

1. A CD-ROM of the technical presentations will be distributed to all workshop participants in January 2004. Additional copies will be available at the Commission-I office during the XXth Congress of ISPRS in Istanbul in July 2004.
2. As per the CEOS Resolution a report of the workshop's findings will be prepared and presented to both the WGCV at their next meeting in Sioux Falls, South Dakota in June 2004, and to the ISPRS Council in July.

The report will be briefed at Theme Session #4 during the Congress.

3. Most of the workshop presentations are being converted to manuscript format for a peer-reviewed book being published by Swets & Zeitlinger in The Netherlands (Balkema). It is scheduled for publication in June 2004 and is intended as supporting technical material for the Task Force workshop report. It, too, should be available at the ISPRS Congress in Istanbul.

Membership on the Joint ISPRS / CEOS WGCV Task Force on Radiometric and Geometric Calibration is informal and non-binding. Anyone interested in serving on the Task Force should contact Stan Morain, President, ISPRS Commission-I before July 9, 2004 at the following address:

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Zarko Jacksic past President of Commission II, died 20 March 2003 from acute leukaemia.

He was former director of the photogrammetric research group at National Research Council, Canada and had many significant accomplishments for the benefit of our profession, both there and at the Canadian Space Agency when the research group was moved there.

An obituary will appear in the next issue of Highlights.



Announcement on the 5th Joint Workshop on Incremental Updating and Versioning of Spatial Databases

Istanbul, Turkey, 12-14 July 2004

By Ammatzia Peled, Treasurer, ISPRS Council 2000-2004, E-mail: peled@geo.haifa.ac.il

Scope

The year 2004 meeting of the International Cartographic Association's (ICA) Working Group (WG) on "Incremental Updating and Versioning" will take place at the Istanbul Convention and Exhibition Centre, in Istanbul, Turkey, 12-14 July 2004. This meeting is a joint workshop of the International Cartographic Association (ICA), the International Society for Photogrammetry and Remote Sensing (ISPRS), and the EuroGeographics R&D Forum. This workshop will bring together researchers, developers and users from these organisations, who carry out research and development in novel systems based on geo-spatial data, information and knowledge. After the workshop the ISPRS XX Congress and General Assembly will take place from 14-23 July 2004, at the Istanbul Convention and Exhibition Centre. Please visit the Congress web-site for more details: <http://www.isprs2004-istanbul.com/>.

The workshop will provide a forum for discussing original research contributions, and practical system design, implementation, and applications of incremental updating and versioning in GIS and other spatial data bases. The program (two and a half days) will cover Mapping agencies status reports, innovation in incremental updating and versioning and discussions over the IU&V concepts (<http://geo.haifa.ac.il/~icaupdt/>).

Topics of interest include but are not limited to the following:

Geo-spatial data bases: Design, Updating, Maintenance, Incremental updating, Versioning, Identifiers, Multiple representation/resolution data bases, History, Implementations at Mapping Agencies.

Geo-spatial data: Warehousing and indexing, Distribution, Mining, Quality control, Fusion, Visualisation, Generalisation concepts, Standards.

Also, please visit our WG web site <http://geo.haifa.ac.il/~icaupdt/> where some more issues for further discussion and investigation are listed.

Abstract Submission

Authors must submit short abstract of their presentation by e-mail to peled@geo.haifa.ac.il by 16th April 2004. The abstract must include the title of the presentation, name and address of the contact author, a summary of the presentation, and names and addresses of co-authors, when applicable.

Electronic Submission of Presentations

Handouts of your slides will be distributed to the participants of the workshop, if you prepare an electronic ver-

sion (*.pdf, *.ps, or *.ppt) of your presentation until 2nd July 2004 and send it by e-mail to peled@geo.haifa.ac.il or bring 40 copies at least to the WS.

Discussion Papers

In addition to "traditional" oral presentations, participants are called to present short discussion papers on issues related to Incremental Updating and Versioning of Spatial Data Bases. Such issues are presented on the Commission web site <http://geo.haifa.ac.il/~icaupdt/>, under "concepts". These issues and other, as may be suggested by the participants, will be discussed during the WS. All participants will be encouraged to contribute.

Notification to Authors

The contact author will be notified about acceptance of the presentation by 3rd May 2004.

Registration

The registration fee for the workshop on "Incremental Updating and Versioning of Spatial Data Bases" is US\$ 125. This includes:

- abstracts proceedings
- handouts of the presentations,
- lunches on 12-13 July,
- coffee, tea, refreshments and snacks during the coffee breaks
- presentations CD (will be mailed after the Congress)

Please use the ISPRS XX Congress Services to register for the workshop. This Workshop is referred as WS4 within the Congress records: <http://www.isprs2004-istanbul.com/downloads/Registration%20Form.pdf>

Accommodation

Sufficient number of rooms have been reserved at international standard category hotels in Istanbul for the Congress. Special rates have been obtained for the participants of the Congress. However please note that this rate may be applied only if you book by filling the accommodation form offered by the ISPRS XX Congress Organisers. You are cordially invited to use their good services: visit the information page: <http://www.isprs2004-istanbul.com/hotel/hotel.htm> and reserve your hotel room through the registration form (at the bottom) <http://www.isprs2004-istanbul.com/registration/registration.htm>.

A Congress Hospitality Desk will welcome and help participants at the Istanbul Atatürk Airport on 10, 11, 12, 13 and 14 July 2004 for 24 hours. Please fill in the "Transfer" section of the Registration Form for your transfer from

the airport to your hotel: <http://www.isprs2004-istanbul.com/congress/information/geninfo/geninfo.htm>.

Venue

The workshop will take place at the Istanbul Convention and Exhibition Centre. For more information please visit the Congress web-site: <http://www.isprs2004-istanbul.com/> and <http://www.isprs2004-istanbul.com/congress/information/cityplan/cityplan.htm>.

WS4 (5th Joint ISPRS/ICA/EuroGeographics WS) Convenors

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Further details about the workshop: <http://geo.haifa.ac.il/~icaupdt>



An Overview of the Scientific Programme and Exhibition of the XXth ISPRS Istanbul Congress

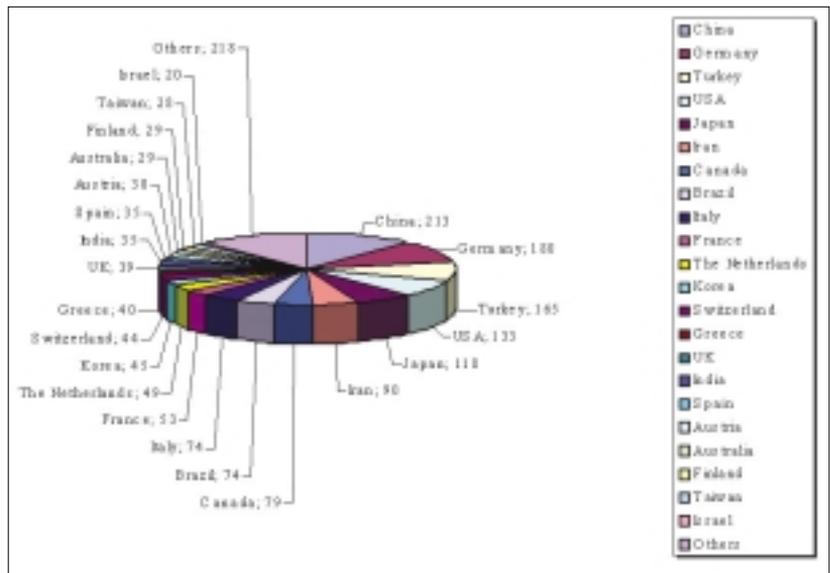
By M. Orhan Altan, Congress Director ISPRS Council 2000 - 2004

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According to the evaluations sent by the Technical Commission and Working Group Presidents, the Scientific Programme of the XXth ISPRS Congress has been arranged. The schemes showing the distribution of the abstracts according to the countries and the percentages is herewith presented. In this programme, there are three plenary sessions on 15th, 20th and 22nd with nine speakers. 122 oral sessions and 66 poster sessions have been planned. The number of presentations in the oral sessions is 569 and the number of presentations in the poster sessions is 1256. In addition there are 39 invited papers.



We are pleased to announce *Table showing the number of participants from countries.*

that 55 booths are sold in the exhibition area and only 14 are left as of 15th January. We wish to thank the participants to the exhibition for their contributions. Since the previously planned poster area became insufficient due to the large number of poster presentations, we had to move the poster area to the lower floor of the Exhibition Hall. This alteration paved the way to enlarge the exhibition area as well and now 14 more booths are available on the

lower floor of the exhibition hall on the way to the poster area. Moreover, upon receiving various requests, we have arranged an "innovators corner" for the low budgeted newly developed companies. Within these booths, planned as 2x2m², these companies can promote their services and/or products. The details of the second floor and the "innovators corner" can be found in the web-site of the congress.

The winners of the 'XXth Congress: 50 questions and 3 prizes'

1. Birute Ruzgiene - Lithuania
2. Felicia Akinyemi - Nigeria

Since these two people answered most questions correctly, the Congress Director Prof. Orhan Altan decided to give them free registrations.

Congratulations.



Report on Commission IV Joint Workshop 'Challenges in Geospatial Analysis, Integration and Visualization II'

Stuttgart, Germany from 8-9 September 2003

By Marguerite Madden, Center for Remote Sensing and Mapping Science (CRMS), The University of Georgia, Athens, Georgia, USA, E-mail: mmadden@crms.uga.edu

A Commission IV Joint Workshop "Challenges in Geospatial Analysis, Integration and Visualization II" was hosted by WG IV/7 in Stuttgart, Germany on 8-9 September 2003. The Chair of WG IV/7, Michael Hahn, and Co-Chair of WG IV/6, Jochen Schiewe, co-organised this workshop that involved Working Groups IV/3 (Chair, Monika Sester), IV/6 and IV/7, as a follow-up event of the first Joint Work-

shop of the same name that took place at the University of Georgia, USA in October 2001. A total of 78 participants from 28 countries contributed to the scientific discussions and enjoyed a field trip to the Black Forest of southern Germany. Approximately 25 of these participants were students from the International Master's Course in Photogrammetry and Geoinformatics at the



Group photograph of the participants.

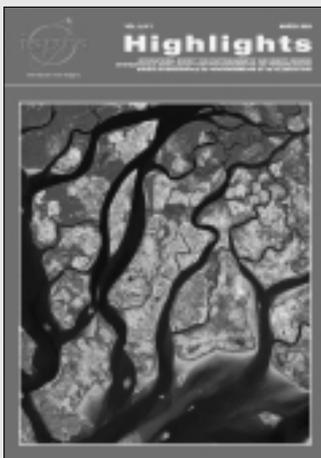
Stuttgart University of Applied Sciences. The workshop, therefore, provided an excellent opportunity for students from around the world to interact with top researchers in their field and share in their ideas for future work and employment.

The goal of the 2003 Stuttgart workshop was to provide an international forum for in-depth presentation and discussion on new developments in the field of analysing, integrating and visualising geospatial data. For this purpose three speakers were invited to emphasise the three aspects of the workshop's goals: Farhad Samadzadegan (Iran) for integration, Toni Schenk (U.S.A) for geospatial analysis and Matt Dunbar (U.S.A) for visualisation. Farhad Samadzadegan opened the workshop with his invited paper on fusion techniques in remote sensing, a subject that has emerged as a promising research area due to the availability of multi-sensor data in many fields. He noted current, low-level data fusion takes place at the pixel or image level before any processing of the data. Other methods include intermediate-level fusion using extracted features from each sensor and high-level fusion using the identity declaration provided by each sensor with subsequent object recognition fusion. Toni Schenk discussed automated processes for extracting information and

knowledge from sensory input data, including feature extraction and their perceptual organisation. He provided some examples of operations on features as they pertain to applications in photogrammetry, remote sensing and GIS, pointing out that this leads quickly to "unchartered land" and the opportunity to point out many unresolved problems. Matt Dunbar presented a paper on 3D visualisation and spatial analysis that depicted realistic computer visualisations of dynamic changes in forest environments in Yellowstone National Park in the US. He also portrayed spatio-temporal changes and analysis of human-land interactions in a time series of forest and tallgrass prairie ecotones over a 60-year period.

These papers and others from the workshop were distributed on CD as digital proceedings and also are accessible to the public through the internet Workshop web site at: <http://www.iuw.uni-vechta.de/personal/geoinf/jochen/isprs03.htm>. Readers may also be interested in a special issue of the ISPRS Journal of Photogrammetry & Remote Sensing that resulted from the first Joint Workshop, "Challenges in Geospatial Analysis and Visualization", edited by M. Madden and J. Schiewe Volume 57, Issue 5-6 (April 2003). This special issue is available online at: <http://www1.elsevier.com/pub/9/9/43/si.htm?jnl=photo>.

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