Annual Report 2004

Introduction

The first Annual Report of the 2004 – 2008 inter-Congress period is herewith presented to your attention. The Annual Report in the Congress year differs from other years because of the change of Technical Commission Presidents. And actually this year we have a great change because the number of Technical Commissions has increased to eight and most of their names have changed. The new Technical Commission Presidents for the period 2004 – 2008 were elected in the General Assembly during the Istanbul Congress and they took over their positions as of July 2004. The decision to increase the number of the Commissions to eight was also taken in the General Assembly in Istanbul.

At the Congress, the previous Secretary General Ian Dowman presented the activities of the Technical Commissions during the previous four years and they were published in the September issue of Highlights. The reports contain the activities of the outgoing presidents and the circumstances the Commission is in at the end of the period. Then the incoming presidents report their views on what needs to be done and how their commission will try to solve these problems. I am hoping that these reports will give you information on the future activities of ISPRS.

I wish all members success in their scientific and technical activities.

Orhan Altan, Secretary General

Report from Council

1. Society Activities

The main activity during 2004 has undoubtedly been the XXth Congress of the Society. The preparations for the Congress and the post congress organisation of new Technical Commissions and Working groups has taken up a great deal of Council time. The Congress itself was very successful; details have already been published in Highlights, and in many other journals, the full report of the technical and business session will be produced in Archives A, which will be available during 2005.

The main decisions which are the culmination of work by Council during the past four years included ratification of the actions of Council to register ISPRS as a Not for Profit Corporation in Maryland USA and the ratification of the establishment of the ISPRS Foundation. The General Assembly also expelled a number of members and warned other over non payment of dues. It will be an important task for the next Council to find new members for the countries affected.

Technical Commission presidents were elected and will work with the new Terms of Reference approved by an earlier ballot. This will set the scope of the Science programme for the next four years.

Council met in Beijing in April with the TCPs to discuss the arrangements for the Congress, and Council met in Bursa, Turkey immediately before the Congress. Many meetings were arranged during the congress to discuss both internal ISPRS business, such as the Foundation, publications and meetings with members, and external relations, including a meeting of the Joint Board of GeoSpatial Information Societies. An innovation in 2004 was a one day meeting of the new Council and TCPs immediately after the Congress to initiate the process of setting up working groups.

Since the Congress Council has met in Istanbul and again, with the TCPs, in Chiang Mai, Thailand, during the Asian Conference of Remote Sensing. There have also been several informal meetings of some members of Council. As always there has been constant email communication.

The main preoccupation of Council since July has been to establish a science programme to be run by the Working Groups which reflects the Congress Resolutions and the current demands of the industry and users. This process has now been completed and the results reported later in this document. With eight Technical Commissions and 64 Working Groups, we have set an ambitious programme for 2004-2008. A new Editor-in-chief of the Journal has been appointed and new members to the Editorial Board; George Vosselman is taking over from Manos Baltsavias and aims to keep up the high standard achieved by Manos. A new contract has been signed with GITC to continue to publish Highlights.

Other issues discussed by Council have been the budget, (see below for more information), and our priorities for external activities. Council believes that we should initially focus on outreach in Africa and work with other regional and international groups to develop photogrammetry, remote sensing and spatial information science through workshops and tutorials. Discussions have been started with a number of organisations to achieve these aims.

Council has also initiated a programme to promote photogrammetry, remote sensing and the spatial information sciences and the role of ISPRS, and is producing a video for this purpose. Future work will focus on expanding membership and working with other international bodies.

The Technical Commission activities have also been focussed on preparing for Congress and for the next four year, these are reported in the below sections.

Based on the success of the Video prepared by the XXth ISPRS Congress Organising Committee under the guidance of the Congress Director Orhan Altan, the new elected Council has decided to prepare a similar Video for promoting the works and sciences related with the ISPRS activities. We hope that this would help to reach different parts and organisations of the world and to be finalised in early summer 2005.

Council members have continued to represent ISPRS at International fora which includes the United Nations, CEOS and ICSU. ISPRS has joint the GeoUnions Group of ICSU and will be involved in the International Polar Year. ISPRS has also joined the Group on Earth Observation (GEO). The President, Secretary General and Congress Director visited a number of member organisations, including Russia, Germany, Lithuania, China, Japan, Switzerland, Croatia and Cuba.

Ian Dowman

3. Membership

According to the most recent decisions the current status of memberships is:
- 9 active, 3 expelled 2 not active with a total of 14 Associate Members.
- 85 active, 12 expelled, 1 not active and 6 suspended with a total of 104 Ordinary Members.
- 12 active, 1 expelled with a total of 13 Regional Members.
- 58 active, 3 not active, 13 stopped with a total of 74 Sustaining Members.

The following Regional Members were admitted at the XX. Congress:
India – Centre for Space Science and Technology Education in Asia and the Pacific (CSSTEAP)
Tunisia – Centre Regional de Teledetection des Etats de l'Afrique du Nord (CRTEAN)
Nigeria – Regional Centre for Training in Aerospace Surveys (RECTAS)
Kenya – The Kenyan Regional Centre for Mapping and Resources for Development (RCMRD)

The following organisations have been admitted as Associate Members:
Morocco – Centre Royal de Teledetection Spatiale (CRTS)
Iran – Iran Space Center

The following organisation has been admitted as Ordinary Member:
Nigeria – Geoinformation Society of Nigeria (GEOSON)

MESCIOGLU Engineering Co. has been admitted as a new sustaining Member.

The following changes in category of Ordinary Members have been approved:
Turkey from 2 to 4.
Israel from 2 to 3.
India requested a decrease from category 8 to 6.

Membership now stands as follows:

Ordinary members	90
Associate members	11
Sustaining members	71
Regional members	12

4. Intersociety Activities

Introduction
As an international society, ISPRS naturally has relations with other international organisations. These can be divided into two groups: InterGovernment Organisations (IGOs) and umbrella organisations: ICSU, United Nations and CEOS fall into this category, and other international societies. We are also a member of the Joint Board of Geo Information Societies.

International Council for Science (ICSU)
ICSU is a non-governmental organization founded in 1931 to bring together scientists to work together in international scientific endeavour. It comprises 98 multi-disciplinary National Scientific Members, Associates and Observers (scientific research councils or science academies) and 27 international, single-discipline Scientific Unions to provide a wide spectrum of scientific expertise, enabling members to address major international, interdisciplinary issues which none can handle alone. ISPRS became a full Union Member of ICSU in 2002.

The ISPRS has been active in a number of areas: in April Secretary General Ian Dowman attended a meeting of the ICSU Unions in Paris and also contributed to a meeting

on Science for Health and Wellbeing. Important issues which were discussed included the establishment of Regional Offices, of which one in Africa would be the first; the ICSU grants programme, which was being scaled down because of shortage of funds; and the establishment of an International Polar Year (IPY) and an electronic Geophysical year (eGY).

Ian Dowman and Stan Morain also attended a meeting of the ICSU GeoUnions in Boulder, USA in September. The GeoUnions comprise IUG (Geography), IUGS (Geological Science), IUGG (Geophysics and Geodesy), IUSS (Soil Science) and ISPRS. Five themes (desertification, cities, ground water, health and hazards) have been agreed and position papers are being prepared to identify promising areas for collaborative projects.

Professor Ray Harris has represented ISPRS on the Priority Area Assessment committee on Data and Information, which reported during 2004.

The ICSU Plenary will be held in 2005 at which ISPRS will be represented by the President and Secretary General.

Committee on Earth Observing Satellites (CEOS)

CEOS Plenary

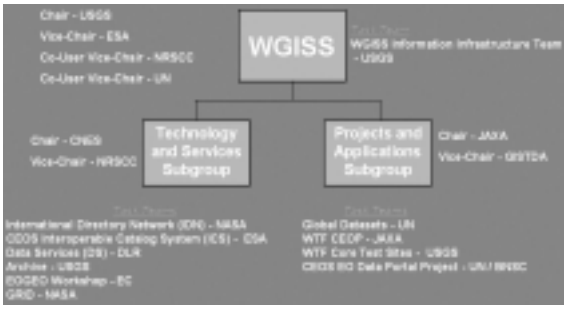
ISPRS is a CEOS Associate and so is represented at the CEOS Plenary. ISPRS is also involved in the three CEOS Working Groups: Information Systems and Services, Cal/Val and Education. During the past year ISPRS has made input to all of the Working Groups. President Ian Dowman attended the CEOS Plenary in Beijing in November and gave a report on the publication of the proceedings of the Workshop on Radiometric and Geometric Calibration in the ISPRS Book Series, and on the ISPRS Congress. The main items of business at the plenary were the relationship between CEOS and GEO (see below), and reports from the working groups. CEOS is likely to change significantly if GEO is set up, with a new role to co-ordinate space sector activities within GEO.

CEOS WGCV

The CEOS Working Group on Calibration and Validation (WGCV) met for its 22nd meeting in June. Two themes dominated the meeting, first the reports of the subgroups which generated much discussion on the selection and use of test sites, and second collaboration with other organisations, particularly ISPRS through the Joint Task Force, and also through the global observing programmes. Stan Morain reported on the joint ISPRS/CEOS Task Force on geometric and Radiometric Calibration and presented the report which had been prepared after the workshop held in December 2003. The task force is continuing its work under the new president of Commission I.

CEOS WGISS

The Working Group on Information Systems and Services is one of the most active areas of CEOS. The current structure and activities are best illustrated by the following diagram, prepared by the chair, John Faundeed for the Plenary.



WGEdu

The Working Group on Education, Training and Capacity Building has been preparing a new strategy and in 2005 proposes to carry out a number of important activities.

1. Increase the amount of education, training and capacity building materials through the CEOS Education Portal.
2. Carry out a pilot project as a practical test of the revised draft Plan of Implementation of the CEOS Data Principles for education purposes. The target groups in the pilot project would be (a) the regional centres for space science and technology education, affiliated to the United Nations; (b) the Universities of Beijing and Wuhan as well as the Harbin Institute of Technology in China; and institutions represented in the African Advisory Group.
3. To continue to coordinate and cooperate with Module 1 of the CEOS World Summit on Sustainable Development Follow up Programme in capacity building activities, particularly in support to the work of other Modules of the WSSD Follow up Programme.
4. To maintain WGEdu linkages, and contribute as possible, to the broader EO education, training and capacity building community, in particular to the capacity building efforts of the Global Earth Observation System of Systems.
5. To pursue through workshops organized by its membership and participation in workshops organized by others the following objectives:
   a. Promote the implementation of the recommendation of the CEOS ad hoc Team on Utilization that wherever possible, capacity building be integrated within specific projects and in particular in ones where sustained funding will be available following the success of the prototype phase;
   b. Aid potential satellite data users to understand how data products and space-derived services can benefit them;
   c. Promote capacity building in areas related to the IGOS Themes.

6. Coordinate with the African Advisory Group on ways through which the WGEdu can support capacity building in African institutions.
7. To contribute, as appropriate and possible, to the capacity building efforts of the Global Earth Observation System of Systems.

ISPRS expects to link with many of these activities during the following year.

UN Committee on the Peaceful Uses of Outer Space (COPUOS)

COPUOS is organised by the Office of Outer Space Affairs (OOSA) from the UN Office in Vienna. ISPRS has attended and presented technical reports and statements at the annual Science and Technology meetings of COPUOS in February and the COPUOS Full Annual meetings in June, since 1989. At the annual June 2004 meeting, President Trinder made policy statements on the benefits of remote sensing and on economic issues of access to commercial satellite remote sensing data. Secretary General Dowman attended the Science and Technology Sub Committee Meeting in February and reported on ISPRS activities. Council have agreed to support OOSA activities as far as is possible within the constraints of the ISPRS budget.

Group on Earth Observation (GEO)

The Group on Earth Observation was formed in 2003 after the First Earth Observation Summit held in Washington DC. the third summit will be held in Brussels in February 2005 and is expected to formally establish GEO. The objective of GEO is to monitor continuously the state of the Earth, to increase understanding of dynamic Earth processes, to enhance prediction of the Earth system, and to further implement international environmental treaty obligations.

ISPRS has been watching the developments but has not so far participated. It is now clear that GEO will play an important role in bringing together government, space agencies and users to develop strategies and co-ordinate Earth Observation Activities. Council has therefore decided to join GEO and participate in the GEO meeting in February.

JBGIS

The Joint Board of Geo Information Societies comprises ISPRS, IAG, ICA, IMTA, IHO, FIG and the International Steering Committee for Global Mapping. The Board met during the ISPRS Congress in Istanbul. The main purpose of the Board is to share information about programmes and structures and to co-ordinate activities. There was discussion in Istanbul on whether the Board should be proactive in representing the views of the Geo Information community, in particular at the World Summit on Information Society. This issue will be pursued at the next JBGIS meeting.

ISO

ISPRS is a liaison member of several ISO Technical Committees and has a commitment to supporting efforts to establish standards for data format and transfer. ISPRS also supports efforts for interoperability and data transfer through the Open GIS Consortium (OGC). The chair and co-chair of WG II/4 (2000-2004) are involved in ISO TC/211, for projects ISO 19129 "Imagery, gridded data, and coverage framework", ISO 19130 "Sensor and data models for imagery and gridded data", ISO 19115-2 "Metadata – Part 2: Metadata for imagery and gridded data" and ISO 19101-2 "Imagery – reference model". The WG has established links with many other groups working in this area.

From 2004 ISPRS has set up an ad hoc Committee with a remit to co-ordinate WG input to standards, and to encourage ISPRS liaison with ISO. The terms of reference of the committee will be:
- propose persons to serve as Liaison on ISO committees
- propose workshops or sessions at ISPRS meetings
- report to \Council annually on standards activities
- co-ordinate ISPRS inputs to ISO.

Wolfgang Kresse will chair this committee and Hans Knoop will continue as ISPRS representative to ISO, and be a member of the Committee.

COSPAR

ISPRS became a member of COSPAR in 2004, but was unable to attend the COSPAR Plenary because it coincide with the ISPRS Congress. Such clashes will be avoided in the future now that we have better links with COSPAR.

Other Relationships

ISPRS has signed MoUs with SPIE, IEEE-GRSS and the Organization of Islamic Cities and Capitals (OICC) and also has links with other organisations such as Open Geospatial Consortium (OGC), Global Spatial Data Infrastructure (GSDI), Digital Globe. International Society of Biomechanics (ISB) and North African Center of Remote Sensing (CRTEAN), in order to keep in touch with regional activities and to co-ordinate programmes where appropriate. Council will be reviewing ISPRS activities with other organisations and ensuring that we have appropriate representation.

Concluding Remarks

It can be seen that ISPRS is active in many international organisations. This is essential if we are to influence developments in photogrammetry, remote sensing and the spatial information sciences. We have been able to play a part in the part in international gatherings such as UNISPACEIII and the World Summit on Sustainable Development and in the future are looking to play a role in the group On Earth Observation and the World Summit on Information Society.

ICORSE

The International Committee on Remote Sensing of Environment (ICORSE) was established in 1998 to provide guidance to the International Symposium on Remote Sensing of Environment (ISRSE), the longest-running symposium of its type in the world. ICORSE is comprised of experts in the field of remote sensing who represent most of the world's national space agencies. In January of 2000, ICORSE signed a Letter of Intent with the International Society of Photogrammetry and Remote Sensing (ISPRS) to strengthen cooperation and coordination. In July of 2000, the General Assembly of ISPRS approved (1) the adoption of ISRSE as a ISPRS-sanctioned event, and (2) the installation of ICRSE as a committee reporting to the ISPRS Council. In this new role, in addition to its role in providing policy and programmatic guidance to ISRSE, ICORSE serves as a standing advisory committee to the ISPRS Council.

The 31st ISRSE will be held in St. Petersburg, Russia, June 20-25, 2005 and the main ICORSE activity has been planning for the Symposium. Secretary General Ian Dowman met with members of ICORSE prior to the first panning meeting in April and President Trinder visited St Petersburg and met the Congress Director in. In December TCPVII, John van Genderen and TCPVIII Ammatzia Peled attended a planning meeting in St Petersburg.

5. Treasurer's Report

2004 was a good year for ISPRS. Of course the highlight for the year was the XXth Congress in Istanbul. It was a tremendous success financially, bringing in more than $56,000 (USD) of revenue to support Society activities. Since then, several new Sustaining Members have joined the Society; and, a new category for Sustaining Members, called *Educational Members* has been approved by the General Assembly. The Treasurer and Secretary General will solicit participation in this category early in 2005.

The transition between 2000-2004 and 2004-2008 Treasurers was very smooth. It was simplified by the excellent work of both Ammatzia and Rachel Peled who created an integrated and automated accounting system for banking operations, tracking income and expenses, and for preparing invoices and a variety of financial reports. This allowed the XXIst Congress Treasurer to assume day-to-day responsibilities from the very beginning of the new period. All banking regulations and signature authorities required by UBS-Zurich were completed by late September.

Several issues face the Society in 2005. Foremost 5. Treasurer's Report:
is the declining value of the US Dollar. Council's goal early in the New Year is to consult with UBS-Zurich to protect ISPRS investments from this decline. It is important to maintain a conservative stance with regard to the USD, and all other investments, while at the same time ensuring diversification among the investments. The downward trend with the USD may be short-lived. If not, the longer term trend will be a significant driver for the near- and mid-term investment strategy.

Perhaps the most significant new item in the Society's investment portfolio is the ISPRS Foundation. This Foundation received more than $50,000 in volunteer contributions from individual and industrial sources since Istanbul. This is considered as "seed" money to build a more powerful capability to: (a) support international education and training; (b) collaborate in special projects in Ordinary Member countries; and, (c) to increase participation by students and scientists in international workshops and conferences. In other words, when fully operational, the ISPRS Foundation will benefit all ISPRS members in a variety of ways. To facilitate the process of accumulating a comfortable threshold of operating capital, Council is in discussion with the Foundation Board of Trustees to transfer funds from among current UBS investment accounts.

As indicated in the 2003 Annual Report, there is a growing number of Ordinary Members who are in membership arrears. Last July the General Assembly approved expulsion of several members who were many years in arrears. The aim of the XXIst Council is to reverse this trend to not only maintain, but to expand the roster of Ordinary Members. This category has a huge impact on the ability of ISPRS to represent ISPRS professions in activities of: (a) the International Council of Science (ICSU); (b) organizations in the United Nations that support individual member countries; (c) intergovernmental organizations like CEOS and GEO; and (d) many regional and national programs. Council urges members to contribute their fees as early as possible to maintain the flow of funds for these activities that synergize national programs and involve our professional colleagues at home and abroad.

The financial future of ISPRS looks promising, but ensuring success will demand close attention to an ever-growing array of global financial and market trends. Our Society is maturing financially to become a solid representative of our professions in the international arena.

Stan Morain, Treasurer

Technical Commission Reports

TECHNICAL COMMISSION I
IMAGE DATA ACQUISITION - SENSORS AND PLATFORMS

Outgoing President: Stanley Morain
Outgoing Secretary: Amy Budge

Incoming President: Alain Baudoin
Incoming Secretary: Nicolas Paparoditis

Report of outgoing president

During the quadrennium 2000-2004 the major achievements in launch operations for systems having better that 36 meter spatial resolution are summarised in Table 1. While most of the launches were government systems, four were in the commercial arena.

A major feature of Table 1 shows that Algeria, Nigeria, Turkey, Thailand, and the UK have, or will soon enter the group of space-faring nations with DMC systems. Satellite data acquisition expanded throughout the Congress quadrennium, as did the number of national efforts to launch general purpose and niche-specific satellites for routine Earth observations and global change research.

Major trends are emerging for the Commission. Integration of sensor systems and platforms is one trend. Another lies in inter-comparing image and calibration data derived over the same geographic sites from several sensors, both for calibration and validation, and for fusing data needed for complex modelling applications. Integration is interpreted to mean either one or both sensor calibration and data fusion; the two often are intertwined in technical discussions.

Table 1 Land Imaging Satellites Launched 2000-2004 <36m Res (Courtesy: William Stoney, MitreTech, Inc.)

Satellite	*Country*	*Owner*	*Launch*	*Res*
EROS-A1	Israel	Com	12/05/00	1.8
Ziyuan-2A	China	Gov	9/01/00	9.0
EO-1	USA	Gov	12/07/00	10.0
QuickBird2	USA	Com	10/18/01	0.6
IRS TES	India	Gov	10/22/01	1.0
Proba	ESA	Gov	10/22/01	18.0
SPOT 5	France	Gov	5/04/02	2.5
Ziyuan-2B	China	Gov	10/27/02	3.0
ENVISAT	ESA	Gov	3/01/02	30.0
AlSat-1	Algeria	Gov	11/28/02	32.0
OrbView 3	USA	Com	6/26/03	1.0
IRS ResSat-1	India	Gov	10/17-03	6.0
BilSat	Turkey	Gov	9/27/03	10.0
CBERS-2	Chi/Bra	Gov	10/21/03	20.0
NigeriaSat-1	Nigeria	Gov	9/27/03	32.0
DMC UK	UK	Gov	9/27/03	32.0
EROS B1	*Israel*	*Com*	*12/15/04*	*0.9*
KOMSAT-2	*Korea*	*Gov*	*11/15/04*	*1.0*
RocSat-2	*Taiwan*	*Gov*	*4/30/04*	*2.0*
ALOS	*Japan*	*Gov*	*6/01/04*	*2.5*
IRS Cartosat1	*India*	*Gov*	*7/01/04*	*2.5*
ThaiPhat	*Thailand*	*Gov*	*12/01/04*	*36.0*

Note: Launches for 2004 are scheduled but tentative.

As the number of wide-angle and narrow-field-of-view image types expands, the need for fusing image data from different systems will demand improved accountability to ensure their proper application. It will not be enough that calibration coefficients between image data sets are understood, but also that users appreciate the geometry and radiometry of sensors operating across the electromagnetic spectrum. Among the image and data types that have exploded onto the technical scene are LiDAR and SAR (including Shuttle Radar Topography Mission—SRTM). One can expect these types of data to become common analytical tools in the 2004-2008 quadrennium.

Pre-launch radiometric and geometric calibration of sensors combined with post-launch calibration and inter-sensor calibration not only imply but demand a global network of instrumented ground calibration test sites. In 2004, the majority of such sites are located in arid zone, dry lakebeds. With the variety of new satellite sensors that include sounders as well as imagers, and with growing international interest in global environmental and climate change monitoring, it is necessary to establish many more instrumented stations throughout the climate zones and ecosystems of the world. This is not a new idea, but one that has yet to be systematically implemented. The Ordinary Members of ISPRS are encouraged to consider their possible role in contributing a site to this network, which would significantly enhance data and image interpretability in their specific locations.

Commission-I is actively collaborating with two CEOS Working Groups (WGCV and WGISS) to provide relevant ISPRS input to sensor and inter-sensor calibration efforts. Mobilising interested Ordinary Members to assist post-launch calibration programs would be a powerful contribution to the scientific value of satellite-acquired Earth data. An enabling technology that will be extremely useful in this endeavour is development of wireless, ground based, mobile mapping, multi-sensor systems that are able to capture and record data from remote sites outside the transmitting and receiving areas of land-line

communications. This technology will surely alter remote sensing applications by allowing environmental data to be fed automatically into hydrological, meteorological, geophysical, and ecosystem models.

Lastly, as nanotechnology progresses, the remote sensing community can expect new sectors of platform and sensor systems to evolve based on unoccupied aerial vehicles and robots. Platform and sensor miniaturisation will allow remote sensing to venture into environmentally hostile places like volcanoes, and forest fires, and into hazardous situations like toxic spills or nuclear accidents.

In summary, the work of Commission-I must expand to keep pace not only with aerial and satellite and sensor design, data acquisition and calibration, and image quality assessment, but also with associated new sensor systems that acquire data and imagery in remote localities. Fully integrated systems are the wave of the future.

Outlook by incoming president

The 11 items of the Terms of Reference define the scope of Commission I which is in some way the heart of ISPRS. Without sensors and platforms there will be no data to process, no method to optimize, no application to develop. But without image processing, databases and applications, sensors and platforms will appear useless: The seven other Commissions are the other vital organs of ISPRS and thus close links between Commission I and other Commissions are necessary.

The Terms of Reference of TC I

a) Design and realization of digital aerial and spaceborne missions for Earth observation;
b) Design, construction, characterization, and installation of imaging and non-imaging sensors (including Optical, IR, SAR, IFSAR, LIDAR, etc.)
c) Standardization of definitions and measurements of sensor parameters;
d) Integration of imaging and non-imaging sensors with other relevant systems;
e) Geometric and radiometric properties, quality standards, and factors affecting data quality;
f) Test, calibration and evaluation of sensors (including laboratory, in-flight, inter-calibration and test fields);
g) Integrated platform guidance, navigation, positioning and orientation;
h) Data reception and pre-processing;
i) On-board preprocessing of data and autonomous systems;
j) Systems and media for recording sensor data, auxiliary data (time, position, attitude, etc.) and film scanners;
k) Image and non-image data transfer standards.

The Resolutions related to TC I

Ten resolutions related to Commission I have been adopted during the Congress in Istanbul. The most important recommendations, for each resolution, are the following:

1) An inventory and performance investigations of Unpiloted Aerial Vehicles should be undertaken;
2) Sensor Calibration should be more understandable by the users and methods (and not only calibration parameters) should be described;
3) Algorithms for geometric handling of space images should be compared;
4) Multi-temporal data acquisition strategies should be designed in future systems and intelligent on-board mission planning, data processing should be studied;
5) Accuracy and cost effectiveness of dedicated sensors for DTM generation should be studied and international test sites should be identified;
6) Improved methods for integration of attitude and position information with data processing should be developed;
7) A handbook of Internet websites related to sensors and platforms, including robots and UAVs should be created on the ISPRS website;
8) Robots and their sensors should be reviewed and evaluated;
9) Benefits of small satellites should be studied and experiences from developing countries should be shared in an ISPRS forum;
10) Mobile mapping systems should be evaluated and the evaluation made available to the global community.

The rationale for TC I organisation

The new Technical Commission I for the next four year period has been organised to fulfil the Terms of Reference and the Resolutions adopted by the General Assembly in Istanbul, looking for a continuity with Working Groups of the previous period but also introducing new topics as recommended in the Resolutions.

Different approaches have been applied to architecture the Commission into Working Groups: the topics identified in the Terms of Reference, the types of sensors and the types of platforms, stressing on what has been found the most important for each WG.

Some topics should be considered for all sensors and all platforms together: Three Working Groups are in this situation:

- WG I/1 on Standards, Calibration and Validation is addressing Resolution 2, one of its main concern being inter calibration between different sensors encouraging the use of common test sites.

- WG I/3 on Multi-Platforms Sensing and Sensor Networks, which should investigate potential performances and use of ground, airborne and spaceborne sensors networks.

- ICWG I/V on Autonomous Vehicle Navigation, including robots and UAVs. For different applications, research on the combination and configuration of different sensors should be conducted to make the navigation system optimal in terms of performance, safety, and cost.

Then specific issues related to active sensors will be addressed in one dedicated Working Group:
- WG I/2 on SAR and LiDAR Systems. For this WG where the use of SAR and LiDAR is already mature, new improvements as polarimetric InSAR or fusion with optical images should be evaluated.

As optical sensors are still the most diversified subjects of interest, four Working Groups will address this domain, with only one related to airborne platform:
- WG I/4 (Airborne digital photogrammetric sensor systems). The development of digital cameras is very fast and the advantages of such sensors are known but there is still a need for improving their performances while developing commonly accepted procedures for calibration and testing the multiple design concepts available.

Three Working Groups are related to satellites:
- WG I/5 on Geometric Modelling of optical spaceborne sensors and DEM generation. The quality and accuracy of ortho-images and maps derived from space imagery as well as those of DEM depend not only on sensor performances but mainly on geometric modelling which should be evaluated and compared.

- WG I/6 on Small Satellites. More and more countries are developing their own Earth Observation capacities with small satellites, very often for similar missions (mapping and risk management) and there is a real interest for these countries to share their experience and to assess the benefits of such small satellites compared to other sources of data.

- WG I/7 on Intelligent Earth Sensing. New techniques are now envisaged to improve the systems performances in terms of information quality, relevance and time constraints, giving these systems some capability to react and take decision. These capabilities should be identified and evaluated for the ISPRS community.

Working groups of technical commission I for 2004-2008

WG I/1 STANDARDS, CALIBRATION AND VALIDATION

Chair: Roland Gachet (France)
Co-Chair: Veljko Jovanovic (USA)

WG I/1 Terms of Reference
- Techniques for laboratory calibration of sensors.
- In-flight radiometric and geometric calibration and validation of sensor systems.
- Establishment and utilization of existing and planned Cal/Val test sites.
- Sensor system parameter standards in relation with appropriate ISO Technical Commissions and projects.
- Managing the Joint ISPRS/CEOS Task Force on Calibration and Validation.
- Integrated activities between Cal/Val experts and data users.
- Overview of sensor-specific at-surface optical properties and temperature products.
- Collaboration with WG VII/1 on Cal/Val issues linked with definitions and measurements of Spectral Signatures.

WG I/2 SAR AND LIDAR SYSTEMS

Chair: Charles Toth (USA)
Co-Chair: Bryan Mercer (Canada)

WG I/2 Terms of Reference
- Calibration and validation, specifications and formats of SAR and LiDAR data.
- Evaluation and assessment of systems for processing SAR and LiDAR data.
- Systems for generation and editing of DEMs from InSAR and LiDAR.
- Multi-frequency SAR, polarimetric InSAR, multi-pulse and full waveform LiDAR, array sensor systems.
- Systems for integration of InSAR, LIDAR and optical systems.
- Data quality and performance validation of SAR and LiDAR systems.
- Liaison with external groups such as CEOS, IEEE-GRSS, ASPRS LiDAR Committee and EuroSDR.

WG I/3 MULTI-PLATFORM SENSING AND SENSOR NETWORKS

Chair: Vincent Tao (Canada)
Co-Chair: Ismael Colomina (Spain)

WG I/3 Terms of Reference
- Study of capabilities of multi-platform sensing and sensor networks.
- Theory, technology and application in support of integrated multi-platform sensing and sensor networks and sensor web.
- Integration of imaging and non imaging sensors for sensor networks.
- Interoperable communication and networking of in-situ and remote sensors.
- Sensor data and parameters transfer standards, through participation in ISO TC 172 and OGC.

WG I/4 AIRBORNE DIGITAL PHOTOGRAMMETRIC SENSORS SYSTEMS

Chair: Jon Mills (UK)
Co-Chair: Jean-Philippe Souchon (France)
Co-Chair: Michael Cramer (Germany)

WG I/4 Terms of Reference
- Collaborate with EuroSDR in the development of com-

monly accepted procedures for the calibration and testing of airborne digital photogrammetric sensor systems.
- Radiometric/geometric evaluation and cost/benefit performance of photogrammetric products resulting from airborne digital sensor systems.
- Develop workflow guidelines for suitable deployment and application of airborne digital photogrammetric sensor systems and their integration with other imaging and non-imaging sensors.
- Liase with IC WG I/V on the development and evaluation of light payload digital photogrammetric sensor systems specific to unpiloted aerial vehicles (UAVs).
- Compile a comprehensive on-line searchable database of airborne digital photogrammetric sensor systems.

WG I/5 GEOMETRIC MODELLING OF OPTICAL SPACEBORNE SENSORS AND DEM GENERATION

Chair: Dr. Karsten Jacobsen (Germany)
Co-Chair: Dr. Peter Reinartz (Germany)
Co-Chair: Daniela Poli (Switzerland)

WG I/5 Terms of Reference

- Comparison of existing and evolving algorithms for geometrical modelling of space images under operational conditions including direct georeferencing capabilities and special conditions for 2- and 3- line sensors.
- Extrapolation of the previous comparisons (outside the area of the control points), analysis and report for each space imaging system.
- Intensified and detailed study on the accuracy and cost effectiveness of various DEM data acquisition techniques.
- Identification and cataloguing of international test sites for inter-comparison and evaluation of different DEM acquisition methods based on space information.
- Geometric quality requirements for advanced optical systems derived DEM.

WG I/6 SMALL SATELLITES

Chair: Ugur Murat Leloglu (Turkey)
Co-Chair: Jean-Noël Rolland (France) TBC

WG I/6 Terms of Reference

- User requirements for designing and realizing small satellite missions, including constellations, for Earth observation.
- Inventory of small satellite missions for Earth observation and system performances.
- Assessment of the benefits of small satellites compared to other sources of information.
- Implementation of a forum for industrial and developing countries to share their results, experiences and recommendations.
- Cooperation with WG VI/3 for technology transfer to developing countries.

WG I/7 INTELLIGENT EARTH SENSING

Chair: Guoqing Zhou (USA)
Co-Chair: Winfried Halle (Germany)

WG I/7 Terms of Reference

- Intelligent and autonomous sensor and platform control.
- On-board data processing.
- Event-driven sensing and observing.
- Intelligent/smart sensors.
- Intelligent technology application for Earth observing.
- Future trends in the development of sensors and platform.

IC WG I/V AUTONOMOUS VEHICLE NAVIGATION

Chair: Ron Li (USA)
Co-Chair: Jurgen Everaerts (Belgium)

IC WG I/V Terms of Reference

- Design and development of autonomous vehicle navigation technologies including: GPS, INS, dead reckoning, active and passive image/signal based positioning and navigation.
- Development and integration of vehicle navigation sensors and sensor networks.
- Research and development of algorithms that support autonomous navigation.
- Development and applications of robot navigation systems, driver assistance systems for land vehicles, and Unmanned Aerial Vehicles (UAV).
- Demonstration of state of the art autonomous navigation systems in working environments.

IC WG V/I INTEGRATED SYSTEMS FOR MOBILE MAPPING

Chair: Naser El-Sheimy (Canada)
Co-Chair: Antonio Vettore (Italy)

IC WG V/I Terms of Reference

- Integrated Navigation systems for direct georeferencing.
- Integration with other data sources, in particular laser scanners data.
- Data fusion of land and airborne mobile mapping systems.
- Emerging intelligent processing techniques.
- Future trends in the development of ISMM and Mobile Mapping Systems (MMS).
- New areas of ISMM applications.

TECHNICAL COMMISSION II
THEORY AND CONCEPTS OF SPATIO-TEMPORAL DATA HANDLING AND INFORMATION

Outgoing President: Chen Jun
Outgoing Secretary: Jie Jiang
Incoming President: Wolfgang Kainz
Incoming Secretary: Alexander Pucher

Report of outgoing president

Accomplishments of the Commission

The year 2004 was marked by the major event of the ISPRS Congress in Istanbul in July. The first half of the year was mainly spent by the Commission Working Groups to prepare the sessions for the Congress. Since the Commission structure was changed at the Istanbul Congress this report summarizes the achievements at the Congress and presents the new Working Group structure after the Congress.

Working Group Activities until the Congress (July 2004)

IC WG II/IV - SYSTEMS FOR AUTOMATED GEO-SPATIAL DATA PRODUCTION AND UPDATING FROM IMAGERY

Chair: Christian Heipke
Co-Chair: Ammatzia Peled

The IC WG II/IV dealt with all aspects of automated updating of geo-spatial databases from images and other collateral sources in the GIS environment. During the Congress IC WG II/IV organized five technical sessions, two poster sessions and one workshop, the latter in conjunction with the International Cartographic Association (ICA). Major topics included an overview of the state-of-the-art of digital aerial cameras to collect suitable input, automated feature extraction algorithms and systems, and database-driven approaches for the updating process.

The highlights of the presentations were three invited papers delivered by Helmut Mayer (University of the Federal Armed Forces, Munich), Peggy Agouris (University of Maine), and Peter Woodsford (Laserscan, Cambridge/UK and EuroSDR). These three papers demonstrated progress made over the last four years, e. g. the appearance of commercial systems for semi-automated feature extraction, and the increasingly close cooperation between photogrammetry and GIS. They also pointed out the major remaining challenges, namely the development of better automatic algorithms for efficient updating from images by including the user in the updating loop, more advanced statistical modeling and self diagnostics for automatic algorithms, and the exploitation of images directly within a GIS, exploiting the topological data structures for achieving better database consistency.

WG II/1 – REAL-TIME MAPPING TECHNOLOGIES

Chair: Rongxing Li
Co-Chair: Norbert Haala

The 4th International Symposium on Mobile Mapping Technology (MMT 2004) was held March 29-31, 2004 in Kunming, China. This event was sponsored jointly by the working groups from ISPRS, FIG and IAG, including ISPRS Commision I, WG II/1, WG II/2, WG IV/2 and WG V/5, FIG WG 5.3 and IAG WG SC4.1.

WG II/2 - SYSTEMS FOR SAR AND LIDAR PROCESSING

Chair: Brian Mercer
Co-Chair: Charles Toth

The activities of WG II/2 started with a Technical Session on 'Systems for SAR and Lidar Processing'. Four of five scheduled papers were presented. An invited paper by Ian Dowman introduced the session with an excellent overview of the technologies. Subsequent presentations included two Lidar and an airborne InSAR paper. In the poster session, only nine of twenty-three posters were presented. Of these, seven were SAR-related, in topics ranging from speckle reduction in images to deformation measurements from differential InSAR to stereo measurements from spotlight SAR.

WG II/3 - INTEGRATED SYSTEMS FOR INFORMATION SERVICES

Chair: Poul Frederiksen
Co-Chair: Chongjun Yang

The Web and now also the Grid are the keys that facilitate the information services on the Internet or Intranet. Information services are used in many different fields such as archaeology, updating of geo-databases, data acquisition, and dissemination of imagery and increasingly within individual organizations and between different organizations for administrative and technical purposes. Grid computing is enabling resource sharing and coordinated actions in a dynamic and multi-institutional virtual organization. The Grid and Web communities are converging through the Web Service Resource Framework (WRSF).

The three major components of geospatial services – the

data services, the value-added services and the broker services – have been dealt with from different points of view and in relation to various applications and projects. Two international bodies set the scene for Web services: the World Wide Web Consortium and the Organization for the Advancement of Structured Information Standards. The Global Grid Forum sets the Grid service standard.

It is obvious that the future will bring many independent geospatial data and service providers. Service chaining where output from one service will be input to the next service are already seen. Standards for this concept are found in the OGC specifications (WMS, WCF, WFS etc.) and are demonstrated in various services.

WG II/4 - IMAGE DATA STANDARDS

Chair: Wolfgang Kresse
Co-Chair: Liping Di

The technical session on 'Image data standards' gave an insight into the status of work already done in the area of standardization of geo-spatial production, management and dissemination including the techniques and process required for these activities. It was pointed out that while standards on vector-GIS are almost completed (with comprehensive vector geometry standards and more general vector visualization standards) the standards on raster-GIS are still being developed.

WG II/5 - DESIGN AND OPERATION OF SPATIAL DECISION SUPPORT SYSTEMS

Chair: Wolfgang Kainz
Co-Chair: Qiming Zhou

The working group dealt with the development of concepts, implementation techniques and tools of spatial decision support systems as well as with the integration of different data types for problem solving and decision-making support. During the Congress the WG organized two technical sessions and one poster session.

The major achievements at the Congress were the demonstration that novel approaches to spatial decision making such as rough sets and the integration of raster and vector improve the possibilities of spatial decision support systems and are effectively applied in real world problems.

WG II/6 - SPATIAL ANALYSIS AND VISUALIZATION SYSTEMS

Chair: Zhilin Li
Co-Chair: Geoffrey Shea

Three sessions have been organized, two oral and one poster session. In total, 21 papers were presented. It can be observed that the movement in spatial analysis is to exploratory analysis and relational analysis. In visualization, the movement is to the integration of image data and 3-D models. Spatial analysis and geo-visualization meet on the web to form web-based exploratory analysis.

Outlook by incoming president

New Working Group Structure

The second half of the year was spent in forming the Commission Working Groups and to identify the WG officers. The following table shows the Working Group structure of the Commission after the decisions taken by the General Assembly in Istanbul. We have seven Working Groups and one Inter-Commission Working group with Commission IV.

The Working Groups and their officers have been approved by Council in the joint meeting with the Technical Commission Presidents in Chiang Mai, Thailand, in November 2004. The Working Groups are preparing their activities for 2005.

Number	Name	Chair	Co-Chair
II/1	Spatio-Temporal Modeling	Donna PEUQUET, USA	TANG Xinming, China
II/2	Spatial Reasoning, Analysis, and Data Mining	LIU Yaolin, China	Abdülvahit TORUN, Turkey
II/3	Multiple Representations of Image and Vector Data	Monika SESTER, Germany	Lars HARRIE, Sweden
II/4	Spatial Planning and Decision Support Systems	Ali SHARIFI, The Netherlands	Nik Nasruddin MAHMOOD, Malaysia
II/5	Communication and Visualization of Spatial Data	William CARTWRIGHT, Australia	Hiroyuki YOSHIDA, Japan
II/6	System Integration and Interoperability	Marinos KAVOURAS, Greece	Stephan WINTER, Australia
II/7	Quality of Spatio-Temporal Data and Models	SHI Wenzhong, Hong Kong, China	Robert JEANSOULIN, France
ICWG II/IV	Dynamic and Multi-Dimensional Systems and Applications	Christopher GOLD, United Kingdom	LI Zhilin, Hong Kong, China

Commission Terms of Reference

- Fundamentals of spatial database design, spatial data structures, spatial analysis and geostatistics, spatial querying, spatial reasoning, spatial and temporal modeling
- Aggregation, generalization, abstraction and rendering of image and vector data
- Spatial decision support systems
- Processing, analysis and modeling of multi-dimensional geospatial data
- System integration and modeling aspects for data and geoinformation processing
- Interoperability of heterogeneous spatial information systems
- Semantic and geometric integration of heterogeneous spatial information
- Communication and visualization of spatial data
- Data mining, filtering, retrieval and dissemination
- Spatial data quality and spatial model quality

General Resolutions pertaining to Commission II

General Resolution G.3 Automating 3D Object Generation and Database Updates

The Congress:

Noting

- the innovations in computer vision;
- the advances in film-less digital sensing from the air, the ground and from space.

Recognizing

- the growing need for 3D content in global, regional and local GIS databases;
- the requirements to have such contents available in an updated form.

Recommends that

- fully automated algorithms for generating 3D objects from imagery be studied and developed;
- fully automated methods be studied and developed for updating current 2D and 3D GIS content using digital imagery acquired from aerial, terrestrial and space systems.

Resolutions pertaining to Commission II

Resolution II.1 Spatial-Temporal Concepts and Databases

The Congress:

Noting

- that today's methods and solutions for handling spatial-temporal database related issues are still very limited;
- that spatial-temporal infrastructure is a new area to be investigated in the near future;
- that the fundamental concepts for and the practical feasibility of developing spatial-temporal databases and infrastructures are challenging areas.

Recognizing

- that there is a very strong demand on spatial-temporal databases for GIS applications, especially in those areas related to temporal features and monitoring of dynamic changes;
- that the needs for spatial-temporal databases and infrastructures are increasing to cope with rapid developments of new and faster spatial data acquisition technologies, such as LIDAR and high resolution satellite images.

Recommends that

- research be continued for the development, access and management of spatial-temporal databases and the mapping from one database to another to solve semantic interoperability and schematic and semantic heterogeneity;
- research be continued in the areas of spatial-temporal analysis and geostatistics;
- research be continued on the modelling of data uncertainty and quality including the determination of risk indicators;
- spatial-temporal and dynamic GIS applications be developed.

Resolution II.2 Multi-Dimensional & Multi-Resolution Spatial Information

The Congress:

Noting

- an increasing availability of high resolution (in space and time) data from different sources;
- an increasing availability of and demand for 3D-data;
- the need for providing data in different resolutions;
- the heterogeneity of data sources in structure, semantics and geometry.

Recognizing

- that current methods to model and analyze data of different dimension, scale, and temporal resolutions are inadequate for advancing the use and dissemination of spatial information.

Recommends that

- research for development of structures for managing multi-scale and multi-representation data be strengthened;
- methods for generating multiple resolutions of data by generalization and abstraction be developed;
- research be conducted for semantic and geometric data integration and harmonization;
- spatial ontologies and their concepts be developed;
- research on 3D data structures (including topology and level of detail) and 3D-analysis tools be continued.

Resolution II.3 Design and Operation of Spatial Decision Support Systems

The Congress:

Noting

- the increasing need for up-to-date geospatial information and support for decision makers on local, regional, national and international levels.

Recognizing
- that the integration of image and vector data in spatial decision support systems can provide the means to achieve this decision support.

Recommends that
- efforts be undertaken to develop and enhance methodologies needed to improve the integration of field and object data in spatial decision support systems;
- studies be conducted to assess and predict the statistical fitness for use of combining image, vector, and collateral data used for decision processes.

Resolution II.4 Raster-Based Spatial Analysis on the Web

The Congress:

Noting
- the increasing demand for spatial analysis tools for a variety of applications;

Recognizing
- raster-based spatial analysis methodology will be the key to the future development of GIS;
- more comprehensive spatial analysis systems need to be established.

Recommends that
- raster-based spatial analysis with integration of web-based visualization systems be strengthened;
- the role of scale in spatial analysis be researched.

Resolution II.5 Dynamic and Multi-Dimensional GIS

The Congress:

Noting
- the increasing demand to extend 2-D traditional GIS processing systems to 3D;
- the need to incorporate GIS with dynamic data and/or with changes in temporal data.

Recognizing
- that dynamic and multi-dimensional GIS is becoming one of the key issues of digital Earth movement;
- the efforts of ISPRS WGs in promoting the academic research and industrial development on dynamic and multi-dimensional GIS during 2000-2004.

Recommends that
- the series of international workshops on dynamic and multi-dimensional GIS be continued; studies be continued on dynamic and multi-dimensional GIS.

Working groups of technical commission II for 2004-2008

WG II/1: SPATIO-TEMPORAL MODELING

Chair: Donna Peuquet (USA)
Co-Chair: Tang Xinming (China)

Terms of Reference
- spatial and space-time data models and structures
- mobile non-point object modeling
- spatio-temporal relationships
- space-time topology

WG II/2: SPATIAL REASONING, ANALYSIS, AND DATA MINING

Chair: Liu Yaolin (China)
Co-Chair: Abdülvahit Torun (Turkey)

Terms of Reference
- Spatial reasoning processes
- information discovery in spatial databases
- Spatial analysis and statistics
- Spatial data mining

WG II/3: MULTIPLE REPRESENTATIONS OF IMAGE AND VECTOR DATA

Chair: Monika Sester (Germany)
Co-Chair: Lars Harrie (Sweden)

Terms of Reference
- Generalization and data abstraction of vector, raster and surface data, as well as related to semantics
  - cartographic and model generalization
  - generalization and simplification of digital surface data
  - semantic abstraction levels
- Object representations for MRDB (Multiple Resolution / Representation Data Bases)
  - data in various levels of resolution
  - data in various thematic presentations
  - link structures between individual objects of different representations
- Matching of image and vector data via different scales and themes
  - automatic determination of appropriate abstraction level, where data sets are comparable
  - matching taking semantics and geometry into account

Development of multi-scale and multiple representations analysis tools, i.e. analysis operations that make use of the MRDB-structures.

WG II/4: SPATIAL PLANNING AND DECISION SUPPORT SYSTEMS

Chair: Ali Sharifi (The Netherlands)
Co-Chair: Nik Nasruddin Mahmood (Malaysia)

Terms of Reference
- Theory, concepts design and development of Spatial Planning Support Systems (SPSS)
  - Modeling Spatial planning processes
  - Suitability assessment, site selection, location/allocation and resource allocation problems
  - Integration of bio-physical and socioeconomic models

- Design and development of Planning/Spatial Support Systems (PSS, SPSS)
- Theory, concepts, design and development of Spatial Decision Support Systems (SDSS)
  - Theory concepts and application of Spatial Multiple Criteria Decision Analysis (SMCDA) in single and group environment
  - Theories and concepts of decision supports using vague information
  - Theory and application of knowledge-based systems
  - Design and development of Spatial Decision Support Systems, (SDSS)
  - Design and development of Collaborative Spatial Decision Support Systems, (CSDSS)
- Theory, concepts, design and development of Integrated Planning and Decision Support Systems (IPDSS)

WG II/5: COMMUNICATION AND VISUALIZATION OF SPATIAL DATA

Chair: William Cartwright (Australia)
Co-Chair:

Terms of Reference
- Communication of spatial information
- Geovisualization (including the Web)
- Novel methods and tools for uncertain data

WG II/6: SYSTEM INTEGRATION AND INTEROPERABILITY

Chair: Marinos Kavouras (Greece)
Co-Chair: Stephan Winter (Australia)

Terms of Reference
- Ontologies and geosemantics
- Semantic and geospatial data(base) interoperability
- Geo-spatiotemporal knowledge representation

WG II/7: QUALITY OF SPATIO-TEMPORAL DATA AND MODELS

Chair: Shi Wenzhong (Hong Kong)
Co-Chair: Robert Jeansoulin (France)

Terms of Reference
- Quality control for spatio-temporal data
- Uncertainty propagation in spatial analysis
- Presentation of quality information by metadata in GIS
- Quality of spatio-temporal models
- Models for quality of spatio-temporal data

IC WG II/IV: DYNAMIC AND MULTI-DIMENSIONAL SYSTEMS AND APPLICATIONS

Chair: Christopher Gold (UK)
Co-Chair: Li Zhilin (Hong Kong)

Terms of Reference
- Continue the series of ISPRS workshops on Dynamic and Multi-dimensional GIS (DMGIS)
- Research on the development of dynamic GIS, especially for marine environment
- Research on the development of multi-dimensional GIS (e.g. true 3-Dimensional GIS)
- Develop methodology and algorithms for dynamic operations in GIS
- Research on the design and development of databases for dynamic and multi-dimensional GIS.
- Enhance the collaboration of with the communities of "Spatial Data Handing" and "Computational Geometry".

TECHNICAL COMMISSION III
PHOTOGRAMMETRIC COMPUTER VISION

Outgoing President: Franz Leberl
Outgoing Secretary: Rainer Kalliany
Incoming President: Wolfgang Förstner
Incoming Secretary: Karl-Heiko Ellenbeck

Prologue

This report summarizes the events of ISPRS Commission III during the year 2004. As the ISPRS Congress in Istanbul divided the year in two halves, this report contains a commented summary of the outgoing president Prof. F. Leberl over the whole period and the result of the initiation of the work of the new Working Groups since the congress as core of the activities of the Commission in the next four years period. We want to thank Franz Leberl for his enthusiastic dedication, his determination in establishing the doubly blind review process at conferences and the strong promotion of the links to the neighbouring disciplines.

1. Main Conclusions of the Outgoing President

1.1 The Motto

The outgoing president set out in 2000 based on his own self-defined motto: "Towards photogrammetric computer vision". It is thus gratifying to a new name and new terms

of reference for the Commission could be developed that reflect this basic orientation towards computer science:

Commission III: Photogrammetric Computer Vision and Image Analysis

a) Algorithms for geometric analysis of image data regardless of scale;
b) Geometric analyses of IR, SAR, IFSAR and LIDAR;
c) Automated feature and attribute extraction techniques and methodologies from multi-sensor, multi-resolution, multi-spectral, hyper-spectral, and multi-temporal imagery;
d) Fundamental research into image understanding for object detection, recognition, identification and reconstruction;
e) DEM generation and integration of three-dimensional modelling concepts into image analysis processes;
f) Integration of spatial information systems and object models for object recognition;
g) Sensor pose determination (including auxiliary information);
h) Projective and multi-view geometry;
i) Image sequence analysis;
j) Algorithms for including features in the orientation processes;
k) Spatial, spectral and temporal properties of natural and human-formed objects;

New terms of reference for Commission III, developed during the period 2000-2004

1.2 Academic Endeavour

Commission III deals more with academic topics than other ISPRS commissions. Commission III is the element of ISPRS that is most affected by the evolution of the new academic discipline of computer science where computer vision and graphics have become core topics and core subjects in virtually every university's computer science curriculum.

1.3 An Active Community

The Commission was very active in the last period: There were more papers (180) and attendees (353) at its Inter-Congress Symposium in 2002 in Graz, Austria than ever before. The proceedings of the congress contain 213 papers related to Commission III confirming the high activity.

1.4 Double-Blind Reviews?

In 2002 F. Leberl introduced academically oriented peer review procedures and double blind reviews of full papers for acceptance, which was very successful and unanimously praised when implemented at the Symposium of the Commission. It is intended to continue such an academically oriented conference organization, both for the mid-term symposium in 2006 in Bonn, as well as for the Commission III related papers at the congress 2008 in Beijing.

1.5 Computer Science Exposure

As computer vision and computer graphics move to centre stage in the computer sciences, ISPRS and its Commission III will continue to attract players form those disciplines. Though this was less successfully implemented in the period of 2000-2004 it still is one of the main goals to integrate the activities of these neighbouring fields.

1.6 Highlights in 2000-2004?

Obviously there was a lot of work done and has been presented in Istanbul on terrain surface modelling from aerial laser scanning. Another very active topic has been and continues to be the automated image analysis directed towards the extraction of GIS data base content from digital images. Less active was the work done on automatically determining camera and platform orientation by triangulation, direct geo positioning or combinations thereof.

1.7 Highly Successful Tutorials

One interesting key-number to describe the vitality of the Commission is the attendance at Tutorials. Three of them were held at the occasion of the Symposium in 2002, and they were all oversubscribed!. Also the tutorials here in Istanbul were very successful, considering that of the six Tutorials; fully three were in the context of Commission III. This demonstrates the degree to which people need Commission III.

1.8 The effect of new sensors

Somewhat disappointing was the level at which the advent of new sensing technologies got reflected in the Commission's work. New digital aerial cameras have been introduced that can change the prevalent and traditional thinking in photogrammetry, yet the papers do not reflect this opportunity. In robotics, a range of imaging sensors is becoming popular with very intriguing geometries, such as catadioptric cameras, and yet this does not live in the Commission yet.

1.9 Towards Photogrammetric Computer Vision and Image Analysis

We do not have an accepted definition of when computer vision (or graphics) are „photogrammetric". In the computer science field, „photogrammetry" is seen as a narrow intersection of the Geo-application with image-based measurements using special cameras. I suggest that we counter this view by defining „Photogrammetric Computer Vision" as that branch of computer science that deals with 3D object models at a verifiable accuracy from sensor data streams. This should be promoted as an international „motto". We started in 2000 with a motto for the residency, and continued in 2002 by labelling our Commission III Symposium as „PCV'02 – Photogrammetric Computer Vision".

2. The start of the new Commission

Th goal of the work in Commission III is to design, develop and evaluate mathematical models and methods for automatic
- orientation and calibration of images,
- surface reconstruction,
- fusion of multi-modal data,
- processing and interpretation of laser range data,
- interpretation of images and
- image sequence analysis

with emphasis on
- integration of geometry, statistics and semantics,
- modeling of spatial objects and temporal events,
- modeling context,
- scale behaviour of appearance models,
- use of graphical models, especially Markov random fields and Bayesian networks.

The work should intensify the links with the computer vision and pattern recognition community, especially by integrating key players into the working groups. Following the good tradition of photogrammetric research, benchmarking is one of the main practical ways to promote the field and at the same time bring together researchers of different fields.

In the meantime six working groups have been established. Four of the six working groups chairs or co-chairs have their background in the area of computer vision. In an open discussion the goals were setup. All working groups plan, partly announce a workshop in 2005, establish a doubly blind review process. Most of them are placed in conjunction with conferences for computer vision or pattern recognition.

WORKING GROUP III/1: AUTOMATIC CALIBRATION AND ORIENTATION OF OPTICAL SENSORS

Chair: Camillo Ressl (Austria)
Co-Chair: Peter Sturm (France)
Co-Chair: Ilkka Niini (Finland)

The major goal of WG III/1 is to promote within ISPRS more or less fully automatic methods for calibration and orientation without requiring markers. Current state-of-the-art methods are to be tested with respect to general applicability and robustness. Thereby, a further refinement and robustification of these methods is to be fostered.

WG III/1 will therefore provide various test data sets for image calibration/orientation tasks and invite researchers to evaluate their algorithms against known ground truth data with respect to general applicability and robustness.

WORKING GROUP III/2: SURFACE RECONSTRUCTION

Chair: Olaf Hellwich (German)
Co-Chair: Daniel Scharstein (USA)

WG III/2 wants to promote more or less fully automatic methods for surface reconstruction. Current state-of-the-art methods with respect to general applicability, reliability and performance are to be tested.

WG III/2 will therefore provide various synthetic and real test data sets for surface reconstruction tasks and invite researchers to evaluate their algorithms against known ground truth data.

WG III/1 'Automatic Calibration and Orientation of Optical Sensors' and WG III/2 'Surface Reconstruction' plan the joint 'BenCOS Workshop': Towards Benchmarking Automated Calibration, Orientation and Surface Reconstruction from Images' in conjunction with the International Conference on Computer Vision, 15./16. October, 2005, in Beijing.

WORKING GROUP III/3: PROCESSING OF POINT CLOUDS FROM LASER SCANNERS AND OTHER SENSORS

Chair: George Vosselman (The Netherlands)
Co-Chair: Claus Brenner (Germany)
Co-Chair: Juha Hyyppä (Finland)

The goal of WG III/3 is to analyse point clouds from laser range finders, but also from multiple view image matching as basis for surface and object reconstruction as well as interpretation. Special problems to be addressed are segmentation and filtering, generation of digital surface models and digital elevation models, earth surface characterization, and automated as well as semi-automated extraction of objects from multiple sources (close range and aerial scans, RGB, NIR and others) There is a close cooperation with the WG V/3 on 'Surface and object reconstruction from terrestrial laser scanners'.

WG III/3 organizes the ISPRS Workshop 'Laser scanning 2005', 12.-14. September, 2005 in Enschede, The Netherlands.

WORKING GROUP III/4: AUTOMATIC IMAGE INTERPRETATION FOR CITY-MODELLING

Chair: Franz Rottensteiner (Australia)
Co-Chair: Theo Moons (Belgium)
Co-Chair: Norbert Haala (Germany)

The aim of WG III/4 is to develop and analyse various methods for automatically and efficiently generating high resolution 3D-city models, integrating all types of topographic features, especially buildings and vegetation. Problems

addressed are the interpretation of the aerial, space borne and terrestrial image, laser, and (In)SAR data possibly together with information from traditional cartographic products, CAD models, and urban GIS, automatic as well as semi-automatic generation of urban models with level-of-detail (LOD) and inferred attribution including analysis of the trade-off between geometry and radiometry / texture for visualization and the assessment of efficiency and quality of techniques for extraction of buildings and vegetation and their dependence on the quality of the input data.

WORKING GROUP III/5: MODELS AND ALGORITHMS FOR ROAD EXTRACTION AND TRAFFIC MONITORING

Chair: Uwe Stilla, Germany
Co-Chair: Chunsun Zhang (Australia)

The goal of WG III/5 is to develop, implement, and test models and strategies for automated 2 1/2 D and 3 D road extraction from optical, radar, and laser data. Particular areas of interest are the modelling of to model road crossings for data interpretation, the extraction of road attributes, to develop and test algorithms for detection and velocity estimation of methods for micro- and macro-scale traffic monitoring.

The WG III/4 'Automatic Image Interpretation for City-Modelling' and WG III/5 'Models and Algorithms for Road Extraction and Traffic Monitoring' organize a joint ISPRS / DAGM Workshop on "Object Extraction for 3D City Models, Road Databases and Traffic Monitoring" (CMRT05) 29.-30. August 2005 in Vienna, Austria.

INTER COMMISSION WORKING GROUP III/1: IMAGE SEQUENCE

Chair: Marc Pollefeys (USA)
Co-Chair: David Nister (USA)

ICWG III/6 promotes research in the following topics: tracking single and multiple objects, ego-motion determination for navigation, object and event reconstruction from single and multiple video streams, camera and camera network calibration from video sequences including cameras with non-standard geometry, object identification from video sequences.

The WG co-organize the Workshop on 'Omnidirectional Vision, Camera Networks and Non-Classical Cameras', October 2005, co-located with the International Conference on Computer Vision in Beijing.

The midterm symposium 'Photogrammetric Computer Vision 2006' is scheduled to take place in Bonn in the week 18.-22. September 2006.

TECHNICAL COMMISSION IV
GEO-DATABASES AND DIGITAL MAPPING

Outgoing President: Costas Armenakis
Outgoing Secretary: Florin Savopol
Incoming President: Shailesh Nayak
Incoming Secretary: Subhan Khan Pathan

Terms of References

- Development, access and management of spatio-temporal databases;
- Spatial data infrastructures;
- Image-based geo-spatial databases;
- Data libraries, data clearinghouses, data warehouses, distributed archives and access to remote data sources, including metadata and digital data standards;
- Web based access, retrieval and dissemination of spatial data, including web-based location-based services;
- Integration of spatial information systems and image analysis for database-driven change detection, data capture and updating;
- Dynamic spatial information systems, spatial data revision and versioning;
- Interfacing 3D models with facility management systems;
- Database generation for digital topographic and thematic mapping (including Ortho-images and digital terrain models);
- Digital landscape modelling and visualization, and large scale urban models;
- Global environmental databases and mapping;
- Extraterrestrial mapping and spatial information systems;
- Analysis of systems and their components for automated and semi-automated digital mapping and geo-information systems;
- Analysis of industry needs and design of systems for production and update of Geo-information.

1. State of Science and Technology

Since the beginning of civilisation, spatial information has been the most effective means of depicting events over space and time. With the advent of orbital remote sensing data and the organisation of spatial databases around a Geographical Information Systems (GIS), combined with

the Global Positioning System (GPS), the process of systematic spatial information acquisition has now become much easier. Over the last two decades, the combination of computer technology, communication technology, database technology, digital cartography, etc. has seen the emergence of Geo-databases, Digital Mapping and Distributed Access systems.

The advancement in availability of multi-sensor, multi-spectral, multi-resolution data from varied sensors and pattern recognition and image processing techniques for extraction of thematic information have provided unique spatial information about natural resources and the environment. While full automated processes are still to come, significant levels of automation have been introduced in database generation and mapping based on GIS-driven processes and image processing techniques. We expect that these algorithms and developments will soon be integrated into the commercial software of the geospatial information systems. The availability of such information has catalyzed the development of databases, analytical and predictive modelling through GIS and Decision Support System (DSS). Such models are also being developed based on neural networks, fuzzy logic and hybrid soft computing techniques. The advances in geo-grid computing for facilitating analysis of large databases along with Web-GIS are crucial.

Establishment of Spatial Data Infrastructure (SDI) is a prime activity in a number of countries, as part of a National Information Infrastructure (NII). The value of NII would be to aid as a decision-making tool and more in the context of assisting planning for various developmental activities. There is a need of the standards to be evolved for content, framework, data access and metadata. An ideal front end to access, manipulate data in its native format and to provide the ability to view data from different formats and projections in one view need to be developed.

The need for adequate mapping of temporal and three-dimensional aspects of the image data has increased, as the computing power available to meet these needs. Therefore, it requires interdisciplinary approach involving image analysis, photogrammetry, GIS, and expert systems. It is also envisaged to focus on integration and fusion of different data to create a new data product by fusing information from incongruent sources or to derive a better understanding of relationships between observations using correlative analysis or visual fusion of disparate data.

High-resolution satellite sensors and the new airborne digital cameras enhanced the mapping techniques and operations and have created new mapping opportunities. Image fusion and multi-sensor approaches not only have improved the data quality and reliability but also offer new types of information. There is a need to evaluate various 3D models for the purpose of generating accurate landscape modeling, their visualization and derivation of various terrain parameters such as contours, slope, drainage, watershed boundaries and morphological structures. The availability of high-resolution orbital imagery has renewed interest in the development towards ortho-image generation, mapping and updation of features. In this regard, the automatic extraction of information from high-resolution imagery needs to be focused.

In the recent years the web-mapping technology has matured and moved towards 3D web applications, sensor web environments, web-based services, and distributing (grid) geo-computing. The spatial component is nowhere much more visible that in the location-based services, mobile mapping and mobile GIS.

A number of global databases are available to meet the needs for protection of environment. Therefore, there is a need to address problems related to the level of detail of quality specifications, fuzzy boundaries, and specifications of completeness, concept of fitness-for-use compared with the issue of compliance-with-specifications, linguistic aspects of geographic information, conceptualisation and formalization of uncertainty in the geometric and thematic description of spatial objects. It has become necessary to characterize and evaluate global databases and to promote their integration with various types of resource databases for their sustainability.

The data supplied by planetary missions (Nojomi, Spirit-MER 'A' and Opportunity-MER 'B' and The Moon Mission of India) will open a new chapter in mapping of extra-terrestrial systems and creating spatial databases. The High Resolution Stereo Camera (HRSC) on board the "Mars Express" provides multi-spectral image data with a spatial resolution up to 10 m as well as continuous stereo coverage revolutionizes the data acquisition on the Martian surface. Thus, there is a need to address the reference system (Ellipsoid), Digital Terrain Models, scale of mapping, projection, map sheet layout, sheet designation and name, nomenclature on extra terrestrial bodies etc. for the successful creation of spatial databases related to extra-terrestrial systems.

The spatial databases, information marketplace, client/server and Internet computing are the three major areas, which are transforming the geo-information based industries in the world. The ability to manage spatial data types natively in an object-relational database is a major challenge for the geo information management industry. Therefore, the industry should concentrate how best it can provide the low-cost public information, value added data products to the users, cost effective tools for sharing the database, etc., which will surely influence the market development and industry growth in geo-information management.

"Near real-time mapping", "automation", "issue-based mapping", "web-based spatial services" and a "spatially

aware society and applications" are some of the up-coming challenges for Commission IV.

2. Accomplishments of Commission IV

Since the 2000 ISPRS Congress in Amsterdam, the interest and work in the field of spatial information sciences have significantly grown. As a result, two new Commissions have been formed by ISPRS to respond to these new challenges in the themes of Commission IV. The Theory and Concepts of Spatio-Temporal Data Handling and Information will be addressed by the new Commission II, while the themes of Geodatabases and Digital Mapping by the new Commission IV. The proposed resolutions reflect the new working areas for the new Commissions.

During the first half of 2004 the activities of Commission IV were concentrated in the preparation of the technical program of the XXth ISPRS Congress in Istanbul.

Commission IV has planned during its tenure to address science, technology and applications with a view to promote excellence in the fields of geo-databases generation and digital mapping from air and space-borne sensors, spatial data infrastructures (SDI), image databases and information systems, visualization and web based GIS, digital landscape modeling, global databases, extra terrestrial geo-information systems, geo information systems and industries. The Commission has finalized the working groups on the above-mentioned themes and has planned to carry out its activities with nine working groups and two IC WG II/IV and VII/IV. In finalizing the terms of reference, the main emphasis has been put on the ToRs of the Commission, Congress Resolutions and status of science and technology of each theme.

The following workshops have been organized.

WG IV/2: Federated Databases and Interoperability co-organised the 4th International Symposium on Mobile Mapping Technology "MMT 2003" (organized by Com. I, WG II/1, II/2, IV/2,V/5), 29-31 March 2004, Kunming, China.

Dr. Monika Sester, Chair of WG IV/3: Data Generalization and Data Mining became a member of the Board of the ICA Commission on Generalization, while members of the WG were planning to participate in the ICA workshop in Leicester in August 2004.

WG IV/6: Landscape Modelling and Visualization organized one special ASPRS/ISPRS WG IV/6 session at the Annual ASPRS Conference, 23-28 May 2004, Denver, Colorado, USA.

ISPRS TC IV is proposing to organise an International Symposium on "GEOSPATIAL DATABASES FOR SUSTAINABLE DEVELOPMENT" between October 9-13, October, 2006 at Goa, India and will be preceded by two parallel tutorials on "Geospatial databases for optimal utilisation of natural resources".

During this symposium, the Inter-Commission sessions with ISPRS TC II and TC VII have also been planned.

3. Working Group Activities

WG IV/1: SPATIAL DATA INFRASTRUCTURES (SDI)

Chair: Jie Jiang, China
Co-Chair: Gabor Remety-Fulopp, Hungary
Secretary: Gang Han, China

Terms of References

- Development and management of multi-scale national, regional and global databases;
- Data harmonisation and synergy approaches of multi-scale vector data and imagery;
- Integration of spatial data with socio-economic and environmental data for various geographic information services;
- Standards for content, access, evolution and update of data framework;
- Development of comprehensive metadata, quality evaluation procedures and their standardization;
- Cooperation and Liaison with GSDI, WGISS, ICA, OGC and ISO.

State of Science and Technology

Spatial data infrastructure (SDI) is generally defined as the technologies, policies, and people necessary to promote sharing of geospatial data throughout all levels of government, the private and non-profit sectors, and the academic community. The goal of SDI is to reduce duplication of effort among agencies, improve quality and reduce costs related to geographic information, to make geographic data more accessible to the public, to increase the benefits of using available data, and to establish key partnerships with states, counties, cities, tribal nations, academia and the private sector to increase data availability.

The development of SDI was initiated in national level, and then expend to regional and global level. Since last few years, people have also paid attention to city level SDI. Currently the development of SDI is t various stages of development in different countries and regions.

Policies/Standards, data sources and data service network are the 3 key issues in SDI. By now lots of datasets have been formulated in different level of SDI and efforts are also being made towards defining the metadata standards and data exchange standards. With the further development of SDI, increasing attention is paid to the application

and operation of SDI. More efforts should be undertaken to study application-related issues of SDI, such as integration & harmonisation of multi-scale vector data and image data, standards on data content, and multi-level data management and updating.

Accomplishments of Working Group
The terms of reference and planning of activities have been finalized. The planning for the workshop has bee initiated. First circular has been issued. The Website has been developed.

News
2005: 1st workshop, 14-16 October, in Hangzhou, China (cooperate with ISO,ICA,GSDI and other ISPRS WGs).

2007: 2nd workshop in Hungary.

WG IV/2: IMAGE-BASED GEO-SPATIAL INFORMATION MANAGEMENT

Chair: Peggy Agouris, USA
Co-Chair: Matt Duckham, Australia
Secretary: Arie Croitoru, USA

Terms of Reference
- Characteristics of Image- and Video-Based Spatial and Temporal Databases;
- Content-Based Indexing, Querying, Data Mining, and Information Retrieval in Image- and Video-Based Geospatial Databases;
- Spatio-Temporal Imagery Database Management and Organization;
- Managing Uncertainty and Redundancy in Large Collections of Imagery;
- Geospatial Information Management in Sensor Networks;
- Automated Semantic Annotation of Imagery, and Image-Derived Multimedia Metadata;
- Imagery-Enriched Virtual Reality Models as GeoSpatial Databases;
- Collaboration with TC II and the relevant Special Interest Groups (e.g. SIGMOD, SIGIR, SIGKDD) of the Association for Computing Machinery (ACM).

State of Science and Technology
At the turn of the 21st century the demand for geo-spatial information is higher than ever before. This increasing demand stems from great advancements made in fields that traditionally relied on geo-spatial information (such as car navigation or environmental monitoring). It is further intensified by a growing appreciation of the value of geo-spatial information in other fields in which utilizing geo-spatial information has not been common practice, like location based services and web-based GIS. In conjunction with these trends, users now demand detailed, accurate and timely information anytime, anywhere. For such users, geo-spatial information has become a valuable commodity.

One of the primary sources of timely and accurate geo-spatial information that has the capacity to accommodate such demand is imagery. In the past, it was aerial and satellite imagery that provided an extremely flexible and detailed data source from which a wide range of highly accurate datasets could be generated. Through the photogrammetric and remote sensing processing of images, extensive areas could be accurately mapped, thus allowing for more frequent updating and monitoring.

This situation is changing rapidly. Aerial and satellite imagery are now accompanied by a wide range of sensors of various types. A growing number of imagery satellites are now orbiting the earth, constantly observing and collecting imagery and related data. A number of these satellites already provide sub-meter resolution imagery that is widely available. On the surface, a rapidly increasing number of terrestrial digital imaging and video sensors are being deployed and integrated with other widely popular mobile electronic devices. Users are now equipped with state-of-the-art wireless mobile computing devices, and can now capture, view, process and deliver information in near-real time.

This unprecedented wealth of imagery data and image-based geo-spatial information, in conjunction with the emergence of more sophisticated users, has brought with it significant challenges, which are reflected in our Working Group's Terms of Reference.

Accomplishments of Working Group
The terms of reference and planning of activities have been finalized. The workshop has been organized with WG IV/3.

News
2005: 1st Collaborative Workshop on High Resolution Earth Imaging for Geospatial Information with WG IV/3 in Hannover, Germany, May 17-20.

2007: 2ndWorkshop in Winter in Australia or Fall in the US (location/exact dates to be decided). Preliminary talks with WG II/6 (System Integration and Interoperability) for a joint workshop in Melbourne initiated.

WG IV/3: AUTOMATED GEO-SPATIAL DATA ACQUISITION AND MAPPING

Chair: Christian Heipke, Germany
Co-Chair: Peter Woodsford, UK
Secretary: Markus Gerke, Germany

Terms of References
- Evaluation and development of semi-automated and automated algorithms for update, change detection and quality control;
- Facilitation of the integration of these algorithms into digital photogrammetric and GIS workstations;

- Adaptation of update processes to increasingly complex data models;
- Development of advanced techniques for implementing "near-real-time" mapping;
- Collaboration with ISPRS TC II and WG IV.1, IV.2, IV-8 with Euro SDR (formerly OEEPE) and ICA Commission on Updating and Versioning.

State of Science and Technology

There are many scientific groups doing research in automatic geo-spatial feature acquisition. One focus is on capturing of 3D objects. The use of sensors like laser scanners is of increasing importance, especially in combination with imaging sensors. The new digital sensors have become of interest for automatic image interpretation and object extraction research. Presently, the appropriate way to incorporate automatic image analysis into operational systems is by semi-automation, which is reflected by recent developments.

Emphasize is clearly shifting from pure data acquisition and linear flow lines to updating existing databases. Therefore, data models now have an important role in updating. Nevertheless, in certain cases there remains a requirement for near-real time mapping.

Quality control and improvement are key concerns. There has been significant progress in managing topological change in geo-spatial databases, although full 3D topology is not yet solved. Positional accuracy improvement as an aspect of update is becoming an outstanding concern. Data models are becoming more complex, for instance update procedures need to maintain unique identifiers.

Digital photogrammetric workstations are increasingly integrated with GIS data management, so covering the complete process from data capture to data management, analysis, visualisation and dissemination. At present they are incorporating database and visualization functionalities, partly in 3D.

Accomplishments of Working Group

The terms of reference of WG has been finalized. The planning for organizing workshop has been initiated.

News

2005: 1st Workshop on High Resolution Earth Imaging for Geo-spatial, Information in collaboration with IV.2, I.1, I.5, Hannover, Germany, May 17-20.

2005: Collaboration for The First International Symposium on Geo-information for Disaster Management (March 21-23, Delft NL), Participating: ISPRS WG IV.8, AGILE, EuroSDR.

2007: 2nd Workshop on High Resolution Earth Imaging for Geo-spatial Information, Hannover (Participating WGs: I.2, I.5, I.6, possibly others (TBD)).

WG IV/4: LANDSCAPE MODELLING AND VISUALISATION

Chair: Jochen Schiewe, Germany
Co-Chair: Marguerite Madden, USA
Secretary: Thomas Jordan, USA

Terms of References

- Assessment of remote sensing data for generating and visualizing landscape and models;
- Integration of multi-source and multi-scale data in local and regional landscape modelling and visualization applications;
- Application of dynamic models for integrating multi-temporal landscape data sets;
- Application and assessment of advanced visualization, virtual reality and multimedia methods for 2-D, 3-D and 4-D mapping tasks in stand-alone or web-based environment.

State of Science and Technology

Landscape Modelling and Visualization are central tasks for characterizing the current environmental conditions, assessing trends and predicting future states. Hence, the results are crucial information for decision makers working for a sustainable environment from various view points and at different scales.

With both, advancements in sensing and visualization technology on one hand, and increasing user demands with respect to semantical and geometrical accuracy, near real-time access to the information and the various displaying formats on the other hand, manifold research has to continue in these areas, which will be accompanied and forced by this Working Group. In particular, the focus will be on:

- efficient and enhanced landscape data and information representation for decision support;
- continued efforts be made to accurately and comprehensively model the landscape through visualization and landscape metric computation;
- advancements in telepresence, virtual, and augmented reality technology be integrated with remote sensing to develop full sensory experience of virtual environments;
- the usability of photorealistic rendering vs. non-photorealistic rendering.

Accomplishments of Working Group

The ToRs of the working group has been finalized. The planning for the workshop has been initiated.

News

2005: 1st Workshop in conjunction with the Annual conference of the American Society for Photogrammetry and Remote Sensing (ASPRS) GIS Division, to be held March 7-11, 2005 in Baltimore, Maryland.

2007: 2nd Joint Workshop with other WGs of ISPRS (like IV-6), time and location (in Germany) still to be determined.

WG IV/5: WEB-BASED GEO-INFORMATION SERVICES AND APPLICATIONS

Chair: Mukund Rao, India
Co-Chair: Songnian Li, Canada

Terms of References
- Web-based geo-spatial data processing, services and applications;
- Web-based geo-spatial technology integration;
- Adaptation of GRID computing technology for Web services;
- Development of adaptive visualizations of spatial information;
- Applications of web-based 3D GIS and collaborative geographic visualization;
- Application modelling and development of web geo-spatial data processing and services;
- Cooperation with related commissions and/or working groups, ICA (Internet and Mapping Commission), WGISS, etc.

State of Science and Technology
In the recent years the web-mapping technology has matured and moved towards 3D web applications, sensor web environments, web-based services, and distributing (grid) geo-computing.

Accomplishments of Working Group
The terms of references have been finalized.

News
2005: 1st workshop In conjunction with the 13th International Conference on GeoInformatics, to be held in Toronto, June or August 2005.

2007: 2nd Workshop on Web-GIS – Technologies, Applications and Services in India (place to be determined).

WG IV/6: LOCATION BASED SERVICES

Chair: Michael Hahn, Germany
Co-Chair: Stephan Nebiker, Switzerland

Terms of References
- Concepts and data models for LBS, including data structures, formats, compression techniques, 3D LBS and streaming issues;
- Processes for real time integration, generalization, updating and visualization of spatial information supporting mobile applications;
- LBS system architectures, interoperability, communication technologies and networks
- Advances in mobile positioning, location management, tracking, billing, logistics and emergency services;
- Development of personalized mobile services and intelligent agents;
- Service content, acquisition and update of non-spatial and spatial content, content management and integration of user content , location enabling and location aware services, info mobility services;
- Presentation and user-interaction issues of LBS, usability, mobile interface design, cartographic and multimedia aspects;
- Value added services, new applications fields and legal aspects of LBS;
- Cooperation with related working groups of ICA; IAG, and others (tbd);

State of Science and Technology
New generalization approaches were developed for small display devices and 3D building representation. Content (pictorial)-based retrieval is becoming and additional feature in image databases and complements the textual-type of queries. The spatial component is nowhere much more visible that in the location-based services, mobile mapping and mobile GIS.

Accomplishments of Working Group
The terms of reference have been finalized.

News
2005: Participation with the WG at the ICA International Cartographic conference in A Coruna, Spain, July 9-16, 2005.

Special session in collaboration at the with the Open Mobile Alliance (OMA) Meeting December 12-16, 2005, Location: TBD.

Joint Workshop with FIG commission 3 Working Group 3.2 SIM infrastructure) – Under discussion.

Joint Workshop on "Mobile Society and Location Based Services" in Germany or Great Britain October 2005 or March 2006.

2007: Joint Workshop with other WGs of ISPRS (WG IV-4, others), of ICA and FIG time and location (in Germany or Switzerland) TBD.

WG IV/7: EXTRATERRESTRIAL MAPPING

Chair: Jürgen Oberst, Germany
Co-Chair: Paul Schenk, USA
Secretary: Marita Wählisch, Germany

Terms of References
- R&D for advanced techniques in data acquisition, processing, and analysis pertaining to the mapping of celestial bodies
- Definition or evaluation of reference systems, coordinate systems, map sheet definitions, etc. and their standardization
- Development of spatial information systems to support extraterrestrial exploration and science
- Web based delivery of extraterrestrial map products and GIS data

- Cooperation with related working groups viz. IAU, NASA, ESA, ISRO, JAXA and other space organisations and liaisons with the ICA Commission on Planetary Cartography

State of Science and Technology
The past decade has seen a number of successful and spectacular planetary exploration missions. NASA orbiters and landers are exploring Mars. Cassini is beginning its orbital tour through the Saturnian System and has returned first image data from the satellites of this giant outer planet. Messenger, launched earlier this year, is headed for Mercury. On the European side, Mars Express and its onboard High Resolution Stereo Camera (HRSC) are mapping the surface of Mars from orbit in 3-D; Smart-1 is approaching the Moon.

With the public showing renewed interest in space- and planetary exploration, space agencies worldwide have expressed ambitious plans for new planetary missions. NASA is continuing its strong Mars Exploration Program and has just announced a major initiative for a return to the Moon. Likewise, ESA is planning to launch missions to Venus (Venus Express) and Mercury (BepiColombo). Japan will send the Lunar-A and the Selene spacecraft to the Moon. Likewise, India and China are preparing their own lunar orbiter missions.

With this large number of planetary missions coming at a quick pace and returning an ever increasing volume of data, there is an emerging need for advanced methods, techniques, and spatial systems to support space exploration with high-resolution, high-precision mapping data.

In this next 4-year term the working group will continue their active involvement in the planning, preparation, and execution of future lunar and planetary missions in order to maximize the utility of data obtained for supporting future space exploration. The group will promote research in developing improved and advanced techniques for mapping of celestial bodies. In addition, the group will foster the development of spatial information systems to support extraterrestrial exploration and science.

One more direct goal of the working group is to improve the communication and information exchange among the working group members, which are not all professional cartographers, but come from a wide spectrum of research fields, such as geology, geophysics, and geodesy. We will establish a working group web page for information exchange and organize a number of group workshops, at least once a year. The working group will closely cooperate with the ICA Commission on Planetary Cartography, the IAU/IAG working group on cartographic coordinates and rotational elements, the Mars Geodesy and Cartography Working Group, and, of course, the many scientists from the general planetary science community.

Accomplishments of Working Group
The terms of reference have been finalized.

News
2005: Working group meeting: possible meeting opportunities:
- following the Lunar and Planetary Science Conference, Houston, TX.
- special session at the EGU (European Geosciences Union) Meeting, Vienna
- special session at the AOGS (Asia Oceania Geosccience Society) Meeting, Singapore

2006: Extra-Terrestrial mapping / Working group meeting, preferably together with project team meetings, e.g. of MarsExpress, Berlin.

2007: Working group meeting, preferably in the form of a special session at large geosciences meetings (see above).

WG IV/8: SPATIAL DATA INTEGRATION FOR EMERGENCY SERVICES~

Chair: Sisi Zlatanova, The Netherlands
Co-Chair: Jonathan Li, Canada
Secretary: Andrea Fabbri, The Netherlands

Terms of References
- Integration of 3D GIS and intelligent image analysis systems for emergency management in urban environments;
- Application of low-cost and real-time digital imaging and mobile mapping technologies for emergency response;
- Application of 3D data structures, algorithms, and standards for emergency data management and exchange;
- Geo-ontology and semantics for emergency response;
- Innovative knowledge-based systems for browsing and analysis in distributed environments;
- 3D visualization of scenes and situations (including indoor) on different mobile front-ends;
- Analysis of emergency management needs for production and updating of spatial information.

State of Science and Technology
Resent disaster occurrences have tragically demonstrated, the whole disaster management sector is under pressure for better, more sophisticated and appropriate means for facing man-made and natural risks. This effort has a high priority in the political agenda in many governments all over the world. Amongst all, the key issues in disaster management are the need to ensure interoperability of emergency services, provision of appropriate information and to ensure that citizens receive high-quality care.

High pressure for new technologies is observed in the Response Phase. Time constrains, stress, equipment with limited capacity are only few of the factors having impact on the rescue operations. Furthermore an efficient collaboration and understanding is needed between different groups of teams such as the Health Sector, Police and Fire Brigade and civil protection, beyond their specific services that are already coordinated with other organizations.

Spatial information plays a key role in the achievement of these goals. What is the current status? Most information available is designed, stored, and managed by organizations that normally have distinct mandates. In normal circumstances these organizations operate largely independent of each other. They are only partly designed to work in a multidisciplinary environment, and their systems reflect this status with known limitations to their interoperability. The experience suggests that the real barriers are not lack of data or insufficient technical capabilities. The bottlenecks are in most cases difficulties in making data available, providing the most appropriate data and making systems cooperate. Often automation is provided but in a specific domain carrying out dedicated tasks and unable to deliver intelligence to multi-user groups.

The goal of this Working Group is to contribute to the investigation of user requirements, research, development and testing new technologies for intelligent use of spatial information in the Response Phase of risk and disaster management.

Accomplishments of Working Group
The ToRs have been finalized. The planning for the international symposium has been initiated. The website has been organized.

News
2005: The 1st International Symposium on Geo-Information on Disaster Management, 21-23 March 2005, Delft, The Netherlands.

2007: The 2nd International Symposium on International Symposium on Geo-Information on Disaster Management, June 2007, Toronto, Canada.

WG IV/9: MAPPING FROM HIGH RESOLUTION SPACE-BORNE AND AIR-BORNE DATA

Chair: David Holland, UK
Co-Chair: Pradeep Srivastava, India
Secretary: R Nandakumar, India

Terms of References
- To investigate the update of topographic vector datasets; digital terrain models; ortho-images and thematic (land-cover) datasets from high-resolution imagery.
- To investigate how synergy may be achieved between the various high resolution and other sensors, for topographic and thematic mapping.
- To determine methodologies for the integration of mapping data with high resolution images, to aid in the extraction of terrain information.
- In collaboration with ISPRS Working Groups I/4 (airborne digital photogrammetric sensor systems), I/5 and III/4 and to evaluate the information content and accuracy of the new high-resolution sensors.
- To contribute to work on standardising the description of raster and vector contents of digital maps.

State of Science and Technology
"Mapping from high resolution data" is a very active area of both research and application. High-resolution digital imagery, from both satellite and airborne sensors, is increasingly being used to capture and update topographic and thematic geospatial information throughout the world. One of the main areas of research is the automation of the data capture processes - from the detection of changes to the extraction of 2D and 3D objects. A second area of interest is the integration of data from multiple sensors and the fusion between sensor-data and pre-existing vector (mapping) data. Another active area of research is the callibration of digital sensors, and the assessment of the geometric accuracy of the resulting data. The working group will collaborate with other ISPRS WGs to consolidate research in these areas.

Accomplishments of Working Group
The ToRs have been finalized.

News
2005: Collaboration with "High-Resolution Earth Imaging for Geospatial Information", May 17-20 2005.

Workshop on "Mapping from Space-borne Imagery" in late 2005/early 2006 in India.

2007: Digital sensor calibration and applications, in collaboration with WG I/4.

TECHNICAL COMMISSION V
CLOSE-RANGE SENSING: ANALYSIS AND APPLICATIONS

Outgoing President: Petros Patias
Outgoing Secretary: Alexandra Koussoulakou
Incoming President: Hans-Gerd Maas
Incoming Secretary: Danilo Schneider

Report of outgoing president
The Commission's V thematic interests were extensively covered at the ISPRS Congress in Istanbul. Specifically, the papers which have been presented in a total of 16 Oral and 7 Poster sessions (see figure 1).

Terms of Reference for Commission V
- Investigation of systems and algorithms for real-time imaging
- Development, evaluation and promotion of vision metrology technology with special con-sideration of

WG	Number of papers
I	40
2	22
3	17
4	69
5	8
6	21
IC V/III	18
Total	**195**

Figure 1.

CAD/CAAD and spatial information systems
- Integration of three-dimensional modeling concepts into image analysis processes
- Integration of multiple sensors and data fusion for advanced object extraction
- Design and development of image sequence analysis procedures
- Development of vision-based techniques for visualization, virtual environments and animation
- Support and promotion of a variety of existing and potential applications, such as industrial, heritage, mobile mapping, medical, biomechanics and robotics

WG V/1 AUTOMATION FOR VISION METROLOGY SYSTEMS AND INDUSTRIAL APPLICATIONS

Chair: Stuart Robson (UK)
Co-Chair: Thomas Luhmann (Germany)

Terms of Reference
- Development of off-line and on-line systems, digital imaging systems and solutions for metrology and robot vision
- Development of algorithms and procedures for automated sensor orientation and system calibration
- Mathematical models and algorithms for vision metrology with emphasis in automation
- System performance evaluation in theoretical and practical aspects in collaboration with WG III/8
- Sensor fusion and the integration of disparate data types
- Target and feature recognition in multi-image correspondence
- Range image acquisition, localisation and segmentation
- New sensors and areas of application for vision metrology
- Cooperation with CMSC

Accomplishments of the WG during 2004
A Panoramic Photogrammetry Workshop has being organised for the 19-21 February 2004 in Dresden by Prof Hans-Gerd Maas, Prof Ralf Reulke and Prof Thomas Luhmann.

The WG has reviewed the Congress papers and assisted in Technical Sessions.

WG V/2 SCENE MODELING AND VIRTUAL REALITY

Chair: Sabry El-Hakim (Canada)
Co-Chair: George Karras (Greece)

Terms of Reference
- Creation of accurate and realistic looking virtual reality (VR) models from real scenes and objects
- Knowledge-assisted 3D scene understanding and reconstruction for VR applications
- Integration of computer graphics and VR technology with close-range vision techniques
- Improvement of performance aspects, such as speed and automation, of all procedures of 3D- scene reconstruction
- Design strategies for multi-sensor data collection and integration for complex scenes and environments
- Identifying new VR applications requiring high precision 3-D models created with photogrammetric techniques
- Increasing the collaboration between ISPRS and computer graphics, computer vision, and computational geometry groups

Accomplishments of Working Group during 2004
The WG has reviewed the Congress papers and assisted in Technical Sessions.

WG V/3: MEDICAL IMAGE ANALYSIS AND HUMAN MOTION

Chair: Frank van den Heuvel (The Netherlands)
Co-Chair: Hans-Peter Meinzer (Germany)

Terms of Reference
- Development of real-time medical imaging systems
- Use of photogrammetric and computer vision techniques for data analysis in medical imagery
- Dynamic analysis of human motion
- 3D medical imaging for anthropometry and expression analysis
- 3D representation and visualization and medical VR, including support to tele-medicine
- Fostering cooperation between ISPRS and the communities of medical/biomedical engineering, sports science and human/apparel engineering

Accomplishments of Working Group during 2004
Contact has been established with the technical group "3-D Analysis of Human Movement" (http://www.utc.edu/Human-Movement/) of the International Society of Biomechanics.

A tutorial titled "Medical Imaging meets Photogrammetry" is organized for the ISPRS congress in Istanbul, Turkey. The tutorial is expected to bring together experts from the medical and the photogrammetric field. (http://www.isprs 2004-istanbul.com/tutorials/tutorials/tutorials.htm

The WG has reviewed the Congress papers and assisted in Technical Sessions.

WG V/4: IMAGE ANALYSIS AND SPATIAL INFORMATION SYSTEMS FOR APPLICATIONS IN CULTURAL HERITAGE

Chair: Hirofumi Chikatsu (Japan)
Co-Chair: Gabriele Fangi(Italy)

Terms of Reference

- Development and integration of close-range vision techniques and spatial information systems for recording, 3D reconstruction, modeling and visualization of structures and items of Cultural Heritage
- Incorporation of innovative technologies and development of new products
- Development of low-cost and rapid techniques in documentation and monitoring of the cultural heritage
- Development of standard procedures and products in cooperation with related disciplines
- Use of Internet and VR techniques to facilitate promotion of cultural heritage
- Close cooperation with national and international groups (eg. CIPA), as well as ISPRS WGs VII / 4 and VII / 5.

Accomplishments of Working Group during 2004

The WG has co-organized with CIPA the "International Workshop on vision techniques applied to the rehabilitation of city centers", Lisbon, Portugal, Oct. 25-27, 2004.

The WG has reviewed the Congress papers and assisted in Technical Sessions.

WG V/5: IMAGE- QUICK RESPONSE AND DISTRIBUTED COMPUTING FOR CLOSE RANGE APPLICATIONS

Chair: Anthony Stefanidis (USA)
Co-Chair: Vincent Tao (Canada)

Terms of Reference

- Methodologies and applications of integrating close range and air-/space-borne imagery.
- Integration of office-to-field solutions for data collection, remote data access, and mobile management
- Integration of indoor and outdoor 3-D models in urban and industrial areas
- Distributed multimedia geospatial databases incorporating close range imagery and other types of geospatial information
- Wireless field computing applications for geodata acquisition and processing

Accomplishments of Working Group during 2004

Prof. V. Tao organized the 4th Int. Symposium on "Mobile Mapping Technology", Kunming, China, March 29-31, 2004.

The WG has reviewed the Congress papers and assisted in Technical Sessions.

WG V/6 : VISUALIZATION AND ANIMATION

Chair: Armin Gruen (Switzerland)
Co-Chair: Shunji Murai (Japan)

Terms of Reference

- Development of image-based techniques for integration of live figures and environment generation tasks into the animation process and procedures
- Study of methods and techniques to support the interaction of real and virtual objects
- Encouragement of collaboration with the computer animation community for the exchange of knowledge, techniques and applications
- Promotion of application-specific photogrammetric technology through cooperation with related ISPRS Working Groups and through presentations at technical meetings of the animation community

Accomplishments of Working Group during 2004

The WG has reviewed the Congress papers and assisted in Technical Sessions.

The WG has organized the "The International workshop on processing and visualization using high-resolution imagery", Pitanulok, Thailand, Nov. 18-20, 2004.

IC WGV/III: IMAGE SEQUENCE ANALYSIS

Chair: Marc Pollefeys (Belgium)
Co-Chair: Guoqing Zhou (USA)

Terms of Reference

- Algorithms and processes in image sequence analysis, temporal analysis, time-constrained solutions and dynamic analysis and tracking.
- Integration of image data with navigation sensor data and multi-sensor information.
- Devices for image sequence acquisition and storage.
- Systems and applications in robot vision, machine vision, medical imaging, autonomous navigation, motion analysis, deformation analysis and data capture for VR.

Accomplishments of Working Group during 2004

The WG has reviewed the Congress papers and assisted in Technical Sessions.

Outlook by incoming president

State of Science and Technology of Commission Topics

The focus of research and development of ISPRS Commission V has propagated into a wide range of new application fields during the past years. Commission V has also seen a large number of successful research projects passing into practical application and opening new fields of activity for photogrammetrists. A central issue in many developments is the integration of sensor technology with

fully automated data processing schemes to generate highly automated online or real-time photogrammetric measurement systems. Commission V has always been successful in attracting 'non-photogrammetrists' - noting that this term is undefined and that everybody extracting quantitative information from imagery is a photogrammetrist per definition.

While Commission V activities were formerly mainly focused on applications such as cultural heritage recording and documentation, many promising new application fields are found in industrial design, production and quality control processes. Sophisticated image engineering approaches were developed to support the reliability of image analysis procedures and to achieve success rates beyond 99.9% in fully automatic multi-ocular photogrammetric 3D measurement systems. Active systems based on cameras combined with projection techniques allow for 3D surface measurements at data rates beyond one million points per second. In addition, they allow for the realization of powerful illumination algorithms in vision systems used for example in reverse engineering. These techniques have opened immense new markets for photogrammetry, which have only rudimentarily been exhausted by now.

Laserscanners have been used in industrial measurement systems for more than two decades. The advent of terrestrial laserscanners with a range of several hundred meters and a data rate in the order of 10 kHz has added a new dimension to cultural heritage recording in recent years. Laserscanners also depict a rather powerful instrument for new market sectors such as facility management. Laserscanners and laserscanner data processing can be considered a bridge between photogrammetry and traditional engineering geodesy, with the instrument design resembling the one of geodetic instruments and point cloud processing principles derived from photogrammetric image processing and image analysis techniques. Laserscanner and high resolution camera sensor data fusion depict a topical research issue in this field. Besides conventional central perspective digital cameras and laserscanners, diverse unconventional sensor types are becoming popular. Many of these can be summarized in the category of omni-directional vision systems.

Photogrammetry delivers many contributions to the development of virtual reality products, with applications fields ranging from cultural heritage to animation and movie production. In addition to the generation of high quality textured 3D object models, multi-ocular image sequence processing introduces the 4th dimension, allowing for manifold applications in 3D motion analysis. Image sequence analysis and sensor fusion also play a major role in the development of mobile mapping systems and in autonomous vehicle navigation tasks. Beyond this, the fusion of sensorics, photogrammetric data processing, CAD, GIS and VR techniques has recently opened new research and application fields in augmented reality.

Besides industrial applications, medical imaging can be considered an application field with a strong growth potential, where photogrammetric techniques can deliver valuable contributions. New application fields can also be seen in biometry, where photogrammetric techniques are used in applications ranging from forestry to raster electron microscopy.

Accomplishments of Commission during the current year

Germany applied for ISPRS Commission V for the period 2004 - 2008 with Hans-Gerd Maas as commission president, Danilo Schneider as secretary and Dresden as 2006 symposium venue. The bid was confirmed by the general assembly during the ISPRS congress in Istanbul. Based on the state of science and technology and the task of the commission defined by the resolutions, the following commission scope was defined:

- Photogrammetric techniques in industrial design, production and quality control processes.
- CAD/CAM-based techniques, image engineering.
- Systems, techniques and applications in cultural heritage recording and documentation.
- 3D object tracking, motion analysis and deformation measurement techniques.
- 3D/4D data acquisition for virtual reality and computer animation.
- Industrial and autonomous robotics.
- Terrestrial laserscanning.
- Integrated point cloud and image acquisition and processing techniques.
- Sensor and data fusion techniques.
- Medical and biometric applications.
- Automation of photogrammetric data processing, optimisation of precision and reliability.
- Promotion of photogrammetric techniques, opening of new application fields.

After the Istanbul congress the Commission V working groups were re-initialized to cover the commission terms of reference. Only slight changes in the general working group structure had to be applied to cover the scope of the commission. The following working groups were established and confirmed:

- WG V/1: Industrial vision metrology systems and applications (Luhmann, van den Heuvel)
- WG V/2: Cultural heritage documentation (Grussenmeyer, Hanke)
- WG V/3: Terrestrial laserscanning (Pfeifer, Lichti)
- WG V/4: Virtual reality and computer animation (El-Hakim, Remondino)
- WG V/5: Development in image sensor technology (Reulke, Zheltov)
- WG V/6: Medical Image analysis, human motion and body measurement (Patias)

- IC WG V/I: Integrated systems for mobile mapping (El-Sheimy, Vettore)
- IC WG I/V: Autonomous vehicle navigation (Li, Everaerts)
- IC WG III/V: Image sequence analysis (Pollefeys, Nister)

Working Group Activities During the current year

After their establishment and confirmation, the working groups started planning their activities. Most working groups will have a workshop in 2005, mostly co-organized together with other ISPRS working groups or with neighbouring societies. By now, the following conferences and workshops organized or co-organized by Commission V WGs have been announced:

- V/1: Sessions at 7th International Conference on Optical 3-D Measurement Techniques, Vienna (Austria), 3.-5. October 2005
- V/2: Co-Organizing XX. Symposium of CIPA, Torino (Italy), 27.09.-1.10.2005
- V/3: Co-Organizing Laserscanning 2005, Enschede (The Netherlands), 12.-14. September 2005
- V/4: 3D Virtual Reconstruction and Visualization of Complex Architectures (3D-Arch' 2005), Mestre-Venice (Italy), 22.-24. August 2005
- V/5: Panoramic Photogrammetry Workshop, Berlin (Germany), 24.-25. February 2005
- IC V/I: 5th International Symposium on Mobile Mapping Technology (MMT 2006), Padua (Italy), 8.-11. May 2006

TECHNICAL COMMISSION VI
EDUCATION AND OUTREACH

Outgoing President: Tania Maria Sausen
Outgoing Secretary: João Ávila

Incoming President: Kohei Cho
Incoming Secretary: Mitsunori Yoshimura

Report of Outgoing President

The Commission was involved in the following activities of the ISPRS Congress 2004 which was held in Istanbul, Turkey. The activities included 4 Technical Sessions (TS), 2 Poster Sessions (PS), one presentation in a plenary session, Business Meetings, the CATCON 3 competition, decision of Best Poster Awards. The 4 TS had a very good participation, with 40-120 persons per session and a total of 300 participants. 19 papers (2 of which invited) were presented, and lively discussions were followed. The CATCON 3 competition was organized by WG VI/2. 9 software packages and 2 demonstration packages were presented. About 100 persons visited the competition. Three prizes were awarded to non commercial software and a special Gold Prize Award to the firm Intermap for a tutorial on InSAR. (The preparation of Congress report was supported by E. Baltsavias of ETH Zurich)

After the ISPRS Congress, the 4th Workshop on Remote Sensing Education for the Mercosul Area was held at the Universidade do Vale do Rio dos Sinos - UNISINOS, UNITEC - Pólo de Informática in São Leopoldo city, Porto Alegre state, Brazil on August 11-13, 2004.

The workshop theme was "A new challenge in Education: preparing the citizen of the 21st century" and provided the opportunity to join specialists from the Mercosul countries, representing a big concentration of experience and knowledge in the remote sensing education area and space information systems.

This century represents a new challenge for educators and students in terms of technological breakthroughs, new methodologies and ways of teaching. This workshop emphasized education under a new global perspective and experiences.

This event was organized by the SELPER International – Latin American Society for Remote Sensing Specialists – Teaching and Research Committee; the SELPER Brazil Chapter; the National Institute for Space Research – INPE; the Universidade do Vale do Rio dos Sinos – UNISINOS and the International Society for Photogrammetry and Remote Sensing - ISPRS – Technical Commission 6 – Education and Communication.

It was sponsored by the China–Brazil Earth Resources Satellite - CBERS Programme; the Brazilian Space Agency – AEB; the Comisión Nacional de Actividades Espaciales – CONAE, Argentina and three Brazilian financial agencies CAPES, FAPESP and FAPERGS.

Outlook by Incoming President

The technology advancement is rapidly expanding the way of education. Many universities are now developing e-Learning materials and organizing e-Learning courses. Video on Demand (VOD) is allowing students to take lectures at any time, any place. With the use of Internet, distance learning has become much interactive and less expensive. Various kinds of educational materials are freely accessible on the Internet. Considering various aspects of education, the Commission VI for 2004-2008 has set up total of 5 working groups and one special interest group to promote and clarify the role of ISPRS in the field of education.

Without certain pedagogy, e-Learning does not work properly. Even in the age of e-Learning, face-to-face education is fundamental and most important. The accreditation is also an important issue to be discussed considering various frameworks of education. In WG VI/1, we plan to discuss about the frameworks and methodologies of education.

WG VI/2 will concentrate on e-learning, and will try to collect, evaluate and disseminate information on e-Learning in timely manner.

WG VI/3 is for international cooperation and capacity building. In this WG, we have set up a new position, regional coordinators (RC), for coordinating regional needs and events with ISPRS activities. The ISPRS Council has decided to concentrate more in Africa and in other regions where education are much expected. The Special Interest Group(SIG) on Technology Transfer will be organizing workshops or seminors every year mainly in developing countries for technology transfer.

In WG VI/4, we plan to collect and evaluate the educational resources on the Internet and set up a kind of portal site for introducing proper educational material on the Internet.

In order to promote student activities within ISPRS, WG VI/5 was set up. Under this WG, students will be organizing their own group call Student Consortium (SC). WG VI/5 will act as the interface of SC to ISPRS. We believe that this new mechanizum may activate the student activities within ISPRS.

Working Groups of Technical Commission VI for 2004-2008

WG VI/1 EDUCATIONAL FRAMEWORKS AND METHODOLOGIES

Chair: Henrik Haggren(Finland)
Co-Chair: Alain Duperet(France)
Co-Chair: Anders Boberg(Sweden)

Terms of Reference

- Investigation, evaluation, and clarification of national and international frameworks of education in terms of legislation and accreditation.
- Assessment of methodologies for optimizing various ways of education including school education, life-long education, re-education of senior engineers, and international exchange in education.
- Promotion of scientific publications in our fields and collection and dissemination of respective bibliographic information.
- Development of connections with international organizations such as FIG, ICA, UN for investigating and evaluating the international frameworks on education.

WG VI/2 E-LEARNING

Chair: Gerhard Konig, Germany
Co-Chair: Mark R. Shortis, Australia
Secretary: Christiane Katterfeld, Germany
CATCON Coordinator: Shashikant Sharma, India

Terms of Reference

- Collection, analysis, dissemination and promotion of material, software and data (hardcopy and/or softcopy) for e-learning including computer assisted teaching and distance learning.
- Investigation of the role of e-Learning in modern education and training such as material, methodologies and tools.
- Assessment and evaluation of highly interactive multimedia materials and their use in tertiary level courses in remote sensing, photogrammetry and SIS.
- Organization of the software contest CATCON for promotion and dissemination of free educational software.

WG VI/3 INTERNATIONAL COOPERATION AND CAPACITY BUILDING

Chair: Xiaoyong Chen(Thailand)
Co-Chair: Sjaak J.J. Beerens(Netherlands)
Regional Coordinators:
South America: Osmar Gustavo Wohl Coelho(Brazil)
South Africa: Ulrike Rivett(South Africa)
Mid Africa: Olajide Kufoniyi(Nigeria)
Southern Asia: Karl Hamsen(India)
CEOS contact point:Yukio Haruyama(Japan)

Terms of Reference

- Development of connections with international organizations such as CEOS for wider promotion of education in the field of photogrammetry, remote sensing and SIS.
- Development of matrices of joint activities on capacity building, including technology transfer and training, with ISPRS Regional Members and other international organizations such as UN, especially for developing countries.
- Identification of channels for international cooperation in technology transfer and training and stimulation of international and regional organizations to support and fund activities promoted by ISPRS (in co-operation with the Council).
- Assessment of restrictions to international collaboration in capacity building resulting from national and regional legal educational frameworks (in terms of accreditation and certification) and ways to address them.
- Collaboration with WG I/6 on technology transfer related to small satellites

IC WGV/III: IMAGE SEQUENCE ANALYSIS

Chair: Timothy Foresman(USA)
Co-Chair: Venkatesh Raghavan(Japan)
Secretary: Koki Iwao(Japan)

Terms of Reference
- Identification, collection, evaluation and dissemination of information on Internet resources, and datasets which are useful for education in the field of remote sensing, photogrammetry and spatial information sciences.
- Identification, promotion, and organization (in cooperation with educational and research institutions) of educational material (courses, tutorials, glossaries etc.) in electronic form.
- Assessment and evaluation of the ISPRS web site for further enhancement.

IC WGV/III: IMAGE SEQUENCE ANALYSIS
Chair: Rahmi Nurhan Celik(Turkey)
Co-Chair: Zhu Qing(China)
Secretary: Zaide Duran(Turkey)
Student Coordinators: Jaakko Järvinen(Finland)
Esra Erten(Turkey)
Sultan Kocaman(Switzerland)

Terms of Reference
- Promotion and support of international student activities including the ISPRS Student Consortium.
- Encouragement of active participation of students, especially undergraduate students, in ISPRS events and promotion of reduced fees and stipend for their participation.
- Collection and maintenance of a database on persons who are involved in the promotion of the profession to students, including the members of ISPRS Student Consortium and educators.

IC WGV/III: IMAGE SEQUENCE ANALYSIS
Chair: Armin Gruen(Switzerland)
Co-Chair: Shunji Murai(Japan)
Secretary: Lal Samarakoon(Thailand)

Terms of Reference
- Transfer of knowledge and technology by initiating and organizing seminars, tutorials and workshops with special consideration of the needs of developing countries.
- Development of teaching material for mobile, caravan-type teaching and training projects.
- Initiation and support of e-learning and remote teaching activities with focus on integration of high-tech elements in teaching and training.
- Support of events with strong participation of young scientists and students.
- Solicitation of support from potential sponsors (system manufacturers, government agencies, NGO/ NPOs, foundations etc.) for the projects and activities.

TECHNICAL COMMISSION VII
THEMATIC PROCESSING MODELLING, AND ANALYSIS OF REMOTELY SENSED DATA

Outgoing President: Rangnath Navalgund
Outgoing Secretary: Shailesh Nayak
Incoming President: John van Genderen
Incoming Secretary: Andrew K. Skidmore

Report of the outgoing President:

Role of earth observation and allied technologies such as GIS, GPS in addressing sustainable development issues of the planet, which we inhabit, is increasingly being emphasized. Alarming trends in land degradation, depletion of forest resources, loss of biodiversity, non-availability of safe drinking water, degrading coastal ecosystems, increasing vulnerability of large population to disaster situations coupled with ever increasing demographic pressure is making it imperative to adopt methods of conservation and optimal utilisation of natural resources and greater understanding of various ecosystem processes. In this context, advances in remote sensing and GIS techniques are increasingly being used, as reflected in the various deliberations of the workshops and symposium organised by the Technical Commission VII and its Working Groups during the period 2000-2004.

During the period January to July 2004, the Commission was engaged in various activities related to the Istanbul Congress. The Commission VII organized, in all, twenty-six sessions at the Istanbul Congress. It included ten technical (oral) sessions and seven poster sessions related to scientific themes of its Working Groups and five theme sessions and a poster session on special topics related to hyperspectral sensing, advanced classifiers, applications of high spatial resolution data and integrated coastal zone management. In addition, two special sessions on ocean colour and sustainable development under the aegis of the International Committee on Remote Sensing of Environment (ICORSE) and one technical session on the theme of the Commission were are also organized. About two hundred and twenty-five scientific papers were presented together in oral and poster sessions. The papers covered a wide spectrum of topics pertaining to spectral signature research and advanced classifiers, and applications of earth observation data related to sustainable agriculture and ecosystem, forestry, water resources, geo-sciences, global change, human settlement analysis, etc., besides disaster monitoring, mitigation and damage assessment. Methods of integration of data in GIS environment and inter-comparison and

calibration of data across different sensors/platforms and validation received due attention.

The deliberations in the technical sessions showed that data availability from recent satellites such as Landsat 7, Hyperion, MODIS, QUICKBIRD, IKONOS-II, IRS-P6, SPOT-5, CBERS-II, ENVISAT, etc. are opening new vistas in earth resources applications. These space based EO data are being complemented with the data available from airborne hyperspectral, multispectral, SAR and LIDAR instruments. Integration of complementary datasets from different spacecrafts, multiple sensors and at different levels of processing have become important. Some of the directions for future work include development of better algorithms for retrieval of biophysical/geophysical parameters from advanced hyperspectral/microwave sensors, especially with the use of polarimetric signatures of SAR. Major advances in data handling and pre-processing techniques in areas such as radiometric correction, spectral calibration and directional (BRDF) processing were highlighted. Advanced data processing techniques such as wavelet transformation, spectral unmixing, and object-based classification were presented along with case studies. Spatial modeling tools with a goal to generate decision support systems at various scales were discussed. Derivation of sustainability indicators amenable to remote sensing and establishing efficacy of space inputs for cropping systems research and precision farming were dealt with. The advance techniques used towards human impact analysis showed closeness between the technology and its use for local governance. Development of integrated monitoring systems, especially in the fields of coastal ecosystem, ocean colour, land use/ land cover, water resources (both underground and surface) and forests are essential to ensure environmental protection and sustainability.

The sessions on disaster monitoring and mitigation addressed new techniques in hazard assessment, geohazards and climate and environmental hazards and also International capacity building programs. Need for better forecast/ early warning systems for disasters such as landslides, floods, forest fires, volcanoes, oil spills, snow avalanches and earthquakes and integrated global observation systems was emphasized. Creation of appropriate global data sets and global change models is the need of the hour. Assimilation of satellite- data derived parameters for improving weather forecasts, ocean state forecasting, polar research are some of the areas needing attention.

Continued growing interest in the scientific activities of the commission was manifested through the volume of the proceedings of the Commission, it being the largest.

Considering the vast scope of activities of the Commission VII and also to attract enhanced participation of global earth observation professionals, two new Commissions viz., Commission VII on Thematic Processing, Modelling and Analysis of Remotely Sensed data, and Commission VIII on RS Applications and Policies are constituted for the period 2004 - 2008. Resolutions for the two commissions were brought forward, discussed and adopted at the Congress.

Outlook by Incoming president

It has been 20 years since The Netherlands hosted Technical Commission VII. Since then, the advances in computer technology have resulted in many new methods becoming available for processing modeling and analyzing remotely sensed data.

The Netherlands membership of ISPRS is represented by GIN (Geo-Information Netherlands) which is the co-ordinating society in The Netherlands for all aspects of geo-information. It has over 5000 members.

At the ISPRS Congress held in Istanbul, Turkey in July 2004, it was agreed to split the former Technical Commission VII called " Resource and Environmental Monitoring" into two Technical Commissions, namely: Technical Commission VII: "Thematic Processing, modelling and analysis of remotely sensed data", and: Technical Commission VIII: "Remote Sensing Applications and Policies".

Thus the new Technical Commission VII will focus on the science and methodology aspects of remote sensing whilst Technical Commission VIII deals with the applications and policies related to earth observation. In this way, ISPRS hopes to involve more international remote sensing researchers into remote sensing organizations and events. The new Terms of Reference of Technical Commissions are:

a) Relationship between spectral, radiometric and temporal properties of objects and surfaces, their physical and chemical properties and their variations;
b) Image classification and analysis methodologies;
c) Analysis of characteristics of multi-spectral, hyperspectral, multi-sensor, microwave and multi-temporal image data for extraction of attribute information;
d) Methodologies of computer-assisted interpretation and analysis of remotely sensed data;
e) Validation of data and information using laboratory and in-situ methodologies
f) Improving atmospheric modeling for radiometric correction;
g) Multi-source data fusion and integration techniques;
h) Modeling of satellite data derived parameters;
i) Global databases and determination of indicators of change for global modeling, monitoring and sustainable development;
j) Integration of remote sensing and GIS techniques;
k) Aerosol and particulate detection and identification.

At the ISPRS congress, the following Resolutions relating to this Technical Commission were adopted. These formed the basis for the setting up of the various Working Groups.

Resolution VII.1: Spectral Signature Research
Recommends that
- research on spectral signatures, especially in the areas of hyper-spectral and microwave sensing, be continued;
- cooperation be continued with institutions maintaining databases on spectral signatures;
- collaboration with the International Symposium on Spectral Sensing Research (ISSSR) and other international conferences on Physical Measurements and Spectral Signatures in Remote Sensing be strengthened and coordinated with ISPRS Symposia and Workshops;
- research be undertaken in modeling of physical processes, especially the use of spectral signatures as input.

Resolution VII.2 Image Classification and Analysis Methodologies
Recommends that
- multi-sensor data acquisition techniques and fusion concepts at the feature and decision levels for landscape modelling tasks be studied and developed;
- extraction tools and classifiers for high spatial and spectral resolution data be further developed;
- expert systems for remote sensing data classification be developed;
- classifiers for high spatial, spectral, and temporal resolution data which can be easily available to and comprehensible by common users be developed;
- classification/analysis methodologies for microwave data with respect to multi-angle, multi-polarization and multi-frequency developments be addressed;
- data integration and fusion techniques be developed.

Resolution VII.3 Analysis of Characteristics of Multi-Spectral, Hyperspectral, Multi-Sensor, Microwave and Multi-Temporal Image Data for Extraction of Attribute Information
Recommends that
- improved physical and analytical algorithms/techniques for extraction of geophysical and biophysical parameters be developed;
- enhanced methods for thematic data extraction using advanced data sources be developed;
- standards for these procedures, assigning accuracy thresholds, be developed.

Resolution VII.4 Validation of Data and Information Using Laboratory and In-Situ Methodologies
Recommends that
- standards be developed for validation procedures;
- measurement networks and protocols be created;
- international cooperation be promoted for collection of validation data from various regions;
- developments of methodologies be addressed for the upscaling of in-situ measurements and the downscaling of remote sensing measurements;
- cooperation with CEOS CalVal Working Group, the Global Monitoring for Environment and Security (GMES), and other similar groups be established.

Resolution VII.5 Improving Atmosphere Modeling for Radiometric Correction
Recommends that
- software/models for image based atmospheric correction that meet required levels of accuracy be developed;
- ISPRS help promote the creation of aerosol measurement networks, their characterization and cooperation with institutions engaged in creating aerosol databases.

Resolution VII.6 Generation and Use of Global Databases
Recommends that
- the development of methodologies for generation and quality evaluation of global databases for global studies in cooperation with Commission IV and the International Geosphere Biosphere Program (IGBP) be continued;
- algorithms for monitoring aspects of global change such as land use, land cover, and land change be developed;
- evolving strategies be developed for assimilating remotely sensed data into global models.

Resolution VII.7 Sustainable Development and Sustainability Indicators
Recommends that
- remote sensing based information and systems be promoted for use in attaining food and water security;
- algorithms, models, and sustainability indicators be developed for predicting changes in different eco-systems such as agro-ecosystems, forests, and coastal zones;
- efforts be made to enhance international cooperation by identifying and generating common environmental sustainability indicators amenable to remote sensing.

As a result of these resolutions the following Working Groups were established, and new Terms of Reference drawn up, to meet the approved Resolutions.

WG VII.1: FUNDAMENTAL PHYSICS AND MODELING

Chair: Michael Schaepman (The Netherlands)
Co-Chair: Shunlin Liang (USA)
Co-Chair: Mathias Kneubuehler (Switzerland)

Terms of Reference
- Study the relationship of spectral, directional, temporal, and polarimetric properties of objects, as well as their physical and chemical properties and variations.
- Research on advanced quantitative, physical based retrieval of biophysical and biochemical parameters.
- Research of methods based on full spectral signatures using assimilation, inversion, and neural networks.
- Study spectrodirectional ('the combination of multiple view angles with imaginary spectrometers') data acquisition potential and subsequent retrieval methods.

The Working Group VII.1 has already organized two events for 2005, namely:
- 4th EARSeL Workshop on Imaging Spectroscopy, Chairman: B. Zagaiewski (PL), Warsaw University, 27 – 29 April 2005, Warsaw, Poland
- 9th International Symposium on Physical Measurements and Signatures in Remote Sensing, Chairman: S. Liang (USA), 17-19 October 2005, Beijing, China.

More details on these, and all other TC VII events can be found in The ISPRS Events Calendar.

WG VII.2: INFORMATION EXTRACTION FROM SAR DATA

Chair: Michel Inggs (South Africa)
Co-Chair: Rudiger Gens (USA)
Co-Chair: Wang Changlin (P.R. China)

Terms of Reference
- Processing airborne and spaceborne SAR data
- Polarimetric SAR processing
- Interferometric SAR processing (INSAR, Differential Insar, Permanent/caterer Insar.)
- Bi-static SAR processing
- SAR signal processing, noise reduction

WG VII.3: INFORMATION EXCTRACTION FROM HYPERSPECTRAL DATA

Chair: Freek van der Meer (The Netherlands)
Co-Chair: Walter Debruyn (Belgium)
Co-Chair: Megan Lewis (Australia)

Terms of Reference
- Develop inter-operability of hyperspectral systems
- Develop methodologies for upscaling of in-situ measurements and downscaling of remote sensing measurements.
- Develop calibration / validation procedures for hyperspectral data.
- Study empirical Vs. physical models
- Ensure close collaboration with WG VII.1

WG VII.4: ADVANCED CLASSIFICATION TECHNIQUES

Chair: Roman Arbiol (Spain)
Co-Chair: Zhang Yun (Canada)
Co-Chair: Marie-José Lefevre-Fonollosa (France)

Terms of Reference
- Image classification and analysis methodologies. New algorithms for the extraction of thematic information and the assessment of thematic quality. Look for synergism between classification approaches. Pixel wise classification, context analysis, texture analysis.
- Advanced and practical methodologies of Computer Assisted Interpretation (CAI) and Analysis of remotely sensed data. This should include expert systems and knowledge based tools to help the human interpretation of images.
- Enhanced methodologies for thematic data extraction using emerging sensor data sources, Multiple view sensors, thermal sensors.

They have planned a joint event with IGARS at the Remote Sensing and Data Fusion Symposium to be held 14 – 16 March in the USA.

WG VII.5: PROCESSING OF MULTI TEMPORAL DATA AND CHANGE DETECTION

Chair: Gong Jianya (China)
Co-Chair: Ben Gorte (The Netherlands)
Co-Chair: Else Swinnen (Belgium)

Terms of Reference
- Analysis of characteristics of multi temporal image data for extraction of attribute information.
- Methodologies of computer assisted interpretation and analysis of multi temporal image data
- Time series analysis and modeling based on multi temporal image data
- Temporal pattern recognition and modeling methodologies
- Methodologies for global monitoring, modeling and prediction
- Algorithm and methodology development for tracking moving objects
- Data integration and change detection for map updating

They have already organized an international image processing conference, together with SPIE which will be held in Wuhan, China from 31 October – 2 November 2005.

WG VII.6: REMOTE SENSING DATA FUSION

Chair: Zhang Jixian (P.R. China)
Co-Chair: Jie Shan (USA)
Co-Chair: Katarzyna Dabrowski-Zielinska (Poland)

Terms of Reference
- Automatic registration of images with different sensor, different resolution, and different acquisition mode.
- Concept study and methodology development of data fusion at feature and decision levels.
- Multi-source data fusion and integration methodologies, especially optical and radar data fusion.
- Application of data fusion to object recognition, classification and change detection, etc.

This WG has organized a major event in Beijing for 27 – 29 August of this year, at an international conference, with one of the main themes being " multi-source data fusion and integration". Over 200 participants are expected. (See ISPRS Events Calendar).

WG VII.7: INNOVATIVE PROBLEM SOLVING METHODOLOGIES FOR LESS DEVELOPED COUNTRIES

Chair: Olajide Kufoniyi (Nigeria)
Co-Chair: Norman Kerle (The Netherlands)

Terms of Reference:

- Convert theoretical methodologies and models into practical operational ones suitable for Less Developed Countries
- Develop integrated methods for Remote Sensing and in-situ data collection for data-sparce regions.
- Develop appropriate image processing methods using simple computer technology.
- Develop appropriate methodologies for multi source, multi resolution (temporal, radiometrical) and spatial data fusion for new mapping and map updating in LDC.
- Develop algorithms for improvement and calibration of airborne videography for geometrically less significant applications, for thematic map updating in LDC
- Assess the relevance of Remote Sensing methods developed by other Working Groups to Less Developed Countries
- Liaise closely with TCVI WG on Transfer and Technology, with other TC's on methodology development, and with regional ISPRS members such as SELPER, AARSE, EARSeL and AARS.

This WG is in the process of organizing a joint meeting with the 26th Asian Conference on Remote Sensing, to be held in Hanoi, Vietnam from 7 to 11 November 2005.

INTER COMMISSION WG DERIVATION OF GLOBAL DATA, ENVIRONMENTAL CHANGE AND SUSTAINABILITY INDICATORS. (COMMISSION VII/IV)

Chair: Chris Schmullius (Germany)
Co-Chair: Hiromichi Fukui (Japan)
Co-Chair: Tsolmon (Mongolia)

In addition to these seven Working Groups set up by TC7, one Inter-Commission Working Group has been established as well, to cover Resolutions VII.6 and VII.7. This Inter-Commission Working Group on "Derivation of global data, environmental managed", by TC 7.

Terms of Reference

- Develop methodologies for generation and quality evaluation of global databases for global studies.
- Develop algorithms for monitoring aspects of global change such as land use, land cover, land changes
- Evolve strategies for assimilating remotely sensed data into global models.
- Stocktaking and compilation of existing and planned Global DB and identification of significant gaps and overlaps.
- Development of environmental infrastructures for access and use as one of use case of Global DB
- Standardization, harmonization and integration of Global DB on national, regional and global levels and their promotion.
- Development User Access the innovative user access interface for browsing an analysis through increase interoperability on distributed network, e.g. open global standard, 3D Geo-browser and Grid computing
- Develop algorithms, models and sustainability indicators for predicting changes in different eco-systems.
- Methodologies for global monitoring, modeling and prediction
- Enhance international cooperation by identifying and generating common environmental sustainability indicators amenable to remote sensing with organizations such as ISCGM, WGISS, ICA, Digital Earth, IGBP.

Mid-term Symposium

The ISPRS Mid-term symposium for Technical Commission VII will be held at the ITC in Enschede, The Netherlands from 8-12 May 2006.
The theme of the symposium will be: "From fundamental physics to operationalization", to cover all the various aspects of TC 7's activities.

The upcoming quadrennial period 2004 – 2008 is going to be very challenging for this new-look Technical Commission VII, both scientifically and technically. Although many of the Working Group officers do not have much previous experience of working in the ISPRS environment, they will bring many new ideas and approaches to the work and mission of ISPRS. We are looking forward to a very productive four-year-period, the results of which will be presented at the next ISPRS congress to be held in Beijing, China, in July 2008, just prior to the next Olympic games to be held there in August 2008.

TECHNICAL COMMISSION VIII
REMOTE SENSING APPLICATIONS AND POLICIES

President: Ammaztia Peled
Secretary: Basheer Haj-Yehia

The creation of a new ISPRS commission on remote sensing applications and policies, is the epitome of the long process of discussions and many debates on restructuring the society. It is the manifestation of the will of our society to play and hold a higher tone on remote sensing issues. Maturing the early steps of multi-spectral data pro-

cessing, ISPRS has determined to express our knowledge and experience with digital photogrammetry and image understanding in time domain, where our strength lies, by implementing our methodologies for analyzing and processing multi- and hyper-spectral data on one hand and to fuse and incorporate these data into our multi-source data basis for our mapping and other operations, on the other hand. A second vision in structuring commission VIII was to outreach and branch out to the end users of the remote sensing data and methodologies.

All these were the guidelines for structuring the new commission, producing twelve working groups and incorporating experts from the application fields that were covered by the thirteen resolutions adopted by the XX ISPRS General Assembly last July in Istanbul, Turkey. The commission Terms of reference, the working groups themes and TORs and the leaders of the WGs, all focus on four main issues: Sustainability, Ecological and Environmental considerations, Human Impact, Data and information for decision-making and monitoring. These four issues are the main Terms of Reference of the commission that should serve as guidelines for the Working Groups activities as well. In addition, as a general guideline, all working groups are geared to collaborate with other international, regional and national organizations and special interest groups of the same and relevant goals, as well as other working groups within our society. This was already proven suceesful as during the short time elapsed from the beginning of the 2004-2008 term, several working groups has excelled in this cooperation with EARSeL (two workshops planned for 2005), ICORSE (four ISPRS special sessions are planned for the 31st ISRSE Conference in St Petersburg, June 2005), and with the International Geo-Union initiative (four representatives of ISPRS to the five themes are Commission VIII WG chairs and Co-chairs and the ISPRS theme for this initiative, Polar Research, will be lead by Beata Cshato, Chair of WG VIII/8 on Polar and Alpine Research). Thus, though the youngest commission, it seems this new "experiment" will serve well to further advance and promote ISPRS activities and mission.

Working Groups of Technical Commission VIII for 2004-2008

WG VIII/1 HUMAN SETTLEMENTS AND IMPACT ANALYSIS

Chair: Derya Maktav (Turkey)
Co-Chair: Carsten Juergens (Germany)
Secretary: Peter Winkler (Hungary)

Terms of Reference

- Application of improved interpretation and mapping methods for urban, sub-urban and peri-urban land-use in transition to help for better urban planning using aerial and high spatial resolution spaceborne data.
- Remote observations for monitoring urban environment and implementation of change detection algorithms for the study of urbanization structure and development processes.
- Use of RS & GIS for infrastructure development for rural and urban settlements.
- Study impact of urbanization, industrial growth and mega engineering structures on ecological and social environment, urban sustainability; tracking of disease vectors.
- Documentation, conservation and management of natural heritage and cultural landscapes in co-operation with UNESCO/ICOMOS/CIPA.
- Interface with IHDP.

WG VII.5: PROCESSING OF MULTI TEMPORAL DATA AND CHANGE DETECTION

Chair: Piero Boccardo (Italy)
Co-Chair: VeerubhotlaBhanumurthy (India)
Co-Chair: Amelia (Amy) M. Budge (USA)

Terms of Reference

- Generation of vulnerability and hazard zone maps for different type of disasters such as forest fire, cyclone, floods, drought, volcanoes, earthquake, land slides etc and Identification & assessment of potential risk zones.
- Integrate remotely sensed observation and communication strategies with enhanced predictive modelling capabilities for disaster detection, early warning, monitoring, damage assessment and Public Health in co-operation with CEOS, IGOS and other national, regional and international organizations and efforts.
- Development of disaster management plans for pre-, during and post disaster situations and enhance support for early warning systems and emergency events mitigation and management decision-making and.
- Foster the creation of more effective information systems to support disaster management activities; quick damage assessment; relief and rescue operations; and all environmentally-induced events that affect public health.
- Organize workshops and seminars for applying remote sensing data products to public health and other environmentally-induced events that may affect humankind.

WG VII.5: PROCESSING OF MULTI TEMPORAL DATA AND CHANGE DETECTION

Chair: Juergen Fischer (Germany)
Co-Chair: Larry DiGirolamo (USA)
Co-Chair: Gabriela Seiz (Switzerland)
Secretary: Rene Preusker (Germany)

Terms of Reference

- Summarize an overview of existing and planned observational systems, with focus on cloud and aerosol properties.
- Identify gaps in existing observational capacity for retrieving cloud and aerosol properties.
- Contribute to the definition of a system of space, air and in-situ observations and to refinements of models in col-

laboration with the World Meteorological Organization (WMO).
- Identify multi-sensor techniques for retrieving cloud and aerosol properties.
- Identify the needs of numerical weather and climate models for remotely sensed cloud and aerosol properties.
- Implement, enhance and define methods and techniques for better extraction and processing the information content of satellite data for weather and climate research.

VIII/4 MANAGEMENT OF TROPICAL ENVIRONMENTS RESEARCH

Chair: Laurent Polidori (French Guaiana)
Co-Chair: Pedro Walfir Souza Filho (Brazil)
Regional Coordinator: Thongchai Charuppat (Thailand)
Secretary: Moïse Tsayem Demaze (France)

Terms of Reference
- Identify tropical regions inherent problems related to remote sensing data acquisition and processing (cloudiness, lack of infrastructure...) and propose solutions.
- Review the potential and limitations of remote sensing and develop remote sensing applications for studying and monitoring tropical environments (mangrove, tropical wetlands, suburban areas...) and for specific issues found in tropical areas (epidemiology of vector-borne diseases, deforestation monitoring, topography through rain forest canopy...)
- Implement ground measurements to improve the understanding of sensor responses on tropical ecosystems

WG VIII/5 POLICIES, TREATIES AND DATA ACCESS

Chair: Bhupendra Jasani (United Kingdom)
Co-Chair: Irmgard Niemeyer (Germany)

Terms of Reference
- Use of remotely sensed imagery by commercial satellites for the verification of treaties.
- Study the potential and limits of commercial satellite imagery with regard to transparency, data reliability and continuity of data availability.
- Analayzing present and future trends of national and international remote sensing programmes; remote sensing satellites and security; and policies.
- Coordinate ISPRS contributions to studies of applying remote sensing for international policies and treaties.
- Cooperate with other ISPRS working groups to support international cooperation and policy making for the implementation of optimum constellation of complementary satellites to meet Earth Observation requirements on a long term basis.
- Cooperate with IPAC and coordinate efforts to produce ISPRS white papers on space policies.

WG VIII/6 COASTAL MANAGEMENT OCEAN COLOUR AND OCEAN STATE FORECASTING

Chair: Robert Frouin (USA)
Co-Chair: Ichio Asanuma (Japan)
Co-Chair: Samantha Lavender (UK)
Regional Coordinator: Mervyn J. Lynch (Australia)
Regional Coordinator: Costas Armenakis (Canada)

Terms of Reference
- Develop quantitative understanding of coastal processes, i.e., physical dynamics, delivery of land materials, particle dynamics, ecosystem structure, and carbon cycles.
- Study the impact of human activity on the coastal zones, with specific attention on wetlands, estuaries, and coral reefs.
- Monitor harmful algal blooms, including detection, understanding of factors which encourage formation. Development of control and mitigation measures.
- Further the conservation of marine ecosystems and biodiversity, and study wild fisheries and other processes affecting stock recruitment and nursery habitats with development of indicators and monitoring of trends.
- development of analytical algorithms for retrieval of biogeo-chemical parameters, data merging, and for the improvement of coastal products;
- Foster the development of procedures and protocols for Integrated Coastal Zone Management using remote sensing and GIS techniques. Further the work on resolving the vertical datum, linking land and chart datum, for predicting tidal cycles;
- Modelling inter-comparison activities, especially for coupled 3D hydrodynamic and biological models that are needed to study the ocean carbon cycle.
- Support an initiative to demonstrate the value of remotely sensed imagery for accurately predicting site-specific tidal cycles, and other issues, in collaboration with the International Hydrographic Organization (IHO), International Ocean Color Coordinating Group (IOCCG) and the Global Ocean Observation Experiment group;

WG VIII/7 WATER RESOURCES SECURITY AND MANAGEMENT

Chair: K.D. Sharma (India)
Co-Chair: Sanjay K. Jain (India)
Sevretary: Rajesh Goel (India)

Terms of Reference
- Implementation of remotely sensed spectral data to monitor and investigate point and non-point discharge of pollutants into natural and man-made water transportation and storage system; for investigating sedimentation in reservoirs; and for any other contamination of water resources.
- Adoption of remotely sensed spectral data into GIS data bases for monitoring quality and quantity of water resources.
- Further the role of remote sensing and GIS data sources

and spatial processing methods in sustainable development of water resources, water quality studies and planning continued availability.
- Integration of remote sensing and GIS for rainfall runoff modeling.
- Cooperate with ISPRS WG VIII/8, WG VIII/3 and other organizations on applications of remote sensing for snow and glaciers studies and the effect of climate change on water resources.

WG VIII/8 POLAR AND ALPINE RESEARCH

Chair: Beata Csatho (USA)
Co-Chair: Marc A. D'Iorio (Canada)
Co-Chair: Hongxing Liu (USA)
Regional Coordinator: Petri Pellikka 9Finland)
Regional Coordinator: Xiao Cheng (China)

Terms of Reference
- Identifying and conducting remote sensing initiatives supporting the International Polar Year (2007-2008)
- Improving the retrieval of geophysical parameters relevant to the different elements of the cryosphere
- Developing strategies and algorithms for assimilating remotely sensed data in models of polar processes
- Developing long-term records and studying on-going changes in polar and other ice-covered regions. e.g. changes in terrestrial polar ecosystems; ice sheet and glacier mass balance; and sea-ice cover.

WG VIII/9 ARID LANDS, LAND DEGRADATION AND DESERTIFICATION

Chair: Dan Blumberg, (Israel)
Co-Chair: Nagaraja Ravoori (India)

Terms of Reference
- Integrate remote sensing data, in-situ and other measurements into a GIS domain to monitor and facilitate study and research of: Dry and arid lands; spatial and temporal environmental changes in the arid environment; and Processes of land degradation and desertification.
- Conduct quantitative assessments of soil, rocks and organic matter from spectral measurements and contribute to the establishment of desertification indicators such as the SPAC (soil, plant, atmosphere, climate) and other concepts.
- Implementation of remote sensing data and GIS methodologies in support of: Sustainable development in arid lands; Generating alternate scenarios to facilitate monitoring and management of arid and dry lands; and for land resources assessment for fighting land degradation and desertification;
- Interact and cooperate with the International Geomorphological Association, The IGU Commission on Arid Lands (COMLAND) and other Interest groups and International bodies interested in arid lands, land degradation and desertification;

VIII/10 PRECISION FARMING AND SUSTAINABLE FOOD PRODUCTION

Chair: James (Jim) S. Schepers (USA)
Co-Chair: Gavin A. Wood (UK)

Terms of Reference
- Protocols and methodologies to efficiently and economically provide satellite and aircraft based inputs to monitor crop vigor, diseases, and stresses for making spatial and temporal agricultural decisions that affect the security, quality, and profitability agricultural production;
- Integration of environmental parameters of agricultural production into GIS framework that allows for utilization of space-based inputs;
- The use of active sensors to evaluate and monitor biological and physical processes, important in agricultural management;
- Collaborate with industry, farming cooperatives, consultants and other end users to define real-time information needs that will enhance the decision making process and encourage further development of technologies;
- Collaborate with WG VIII/11 to improve analytical techniques and with international precision agriculture groups to sponsor workshops.

WG VIII/11 SUSTAINABLE FOREST AND LANDSCAPE MANAGEMENT

Chair: Barbara Koch (Germany)
Co-Chair: Håkan Olsson (Sweden)
Co-Chair: Alan Blackburn (UK)

Terms of Reference
- Further the automatization of forest information extraction from spectral imagery through improvement of procedures and models for inventorying and monitoring of forest resources, timber stock and biomass
- Study and promotion of forest biodiversity and sustainable management applications in respect to the convention on biodiversity with the amendments made at the Gothenburg and Johannesburg meetings
- Apply remote sensing techniques to support forest management tasks using forests as source for renewable energies
- Further development and implementation of algorithms to extract forest and other landscape information from airborne laser scanners and digital cameras data.
- Join other ISPRS Working Groups in supporting actions to promote space segments focused on applications like forestry and agriculture
- Liaise with International Union of Forest Research Organizations (IUFRO), EARSeL (Forestry Group) EC working group on Future Needs of Research Infrastructures in Environmental Sciences and ICORSE

WG VIII/12 GEOLOGICAL MAPPING, GEOMORPHOLOGY AND GEOMORPHOMETRY

Chair: Benoît Deffontaines (France)
Co-Chair: Eyal Ben-Dor (Israel)

Terms of Reference

- Further the implementation of multispectral and hyperspectral remote sensing and their integration into Spatial Information Systems for: Geological mapping; Establishment of Aged and facies geological and structural data bases; Advanced 3-Dimensional geological mapping.
- Implementation of remote sensing data and spatial technology in support of studies such as: erosion processes (mountainous areas, tropical areas, arid and semi-arid soils); Littoral evaluation (temprate, tropical areas); Neotectonics; Dune stabilization and Motion (process, kinetics); and other geomorphological research.
- Adoption of spectroscopy applications for mineralogical mapping.
- Implementation of algorithms and methodologies to study and define bias-corrected parameters of remotely sensed observations (e.g. BRDF, physical and chemical crust, dust, structural and optical properties, etc.)
- Integrating and implementing remote sensing data into geomorphometry applications to visualize and represent: Digital terrain, surface and elevation models; Drainage networks; Hydrological network components; Neotectonics; Slips; Strikes; Plates; and other static and dynamic geological, topographical and geomorphological phenomena, objects and features.

Committee and Standing Activities

4. CIPA – The ICOMOS & ISPRS Committee on Documentation of Cultural Heritage

I. General

A. Statutes

Describe any changes to the statutes since the last report.

The Statutes were rewritten. Bylaws are now separated and the Statutes shortened. Future updates and changes can be managed much easier. The new versions will be valid from 1st January 2005 onwards. ISPRS and ICOMOS have already approved and signed.. In addition CIPA is permanently upgrading its Operational Guidelines which can be found on CIPA's web site.

As to changes and additions the following are important:

- Institutional membership is now possible.
- President became observer status in the ISPRS General Assembly.
- Duties of officers were stated more precisely.

B. Date of last elections

July 17, 2004, in Istanbul, Turkey.

C. Date of next elections

July 26, 2005 in Torino, Italy.

II. Governance and Membership

A. Committee Officers of the CIPA Executive Board

President

Petros Patias (2003 - 2006)
E-mail: president@cipa.icomos.org

Vice Presidents

Cliff L. Ogleby (2003 - 2006)
E-mail: vicepresident@cipa.icomos.org

Robin Letellier (2003 - 2006)
E-mail: vicepresident@cipa.icomos.org

Secretary General

Klaus Hanke (2003-2006)
E-mail: mailto:secretary_general@cipa.icomos.org

Treasurer

Pierre Grussenmeyer (2002-2006)
E-mail: Pierre.Grussenmeyer@insa-strasbourg.fr

Ordinary Members

a. Society Delegates

Giora Solar (ICOMOS) (2001-2004)
E-mail: gioras@012.net.il

Yukata Takase (ISPRS) (2004-2008)
E-mail: takase@cadcenter.co.jp

b. Society Representatives of ICOMOS

Robin Letellier (1991-2003)

Steve Nickerson (1999-2002)
E-Mail: steve@icomos.org

Cliff L. Ogleby (1999-2002)

Gaetano Palumbo (2001-2004)
E-mail: gpalumbo@wmf.org

Mario Santana Quintero (2004-2007)
E-mail: msantana@3darchdoc.com

c. Society Representatives of ISPRS
Gabriele Fangi (2005 – 2008)
E-mail: fangi@popcsi.unian.it

Pierre Grussenmeyer (2002-2006)

Klaus Han ke (2003 - 2006)

Petros Patias (2003 - 2006)

Peter Waldhäusl (1992-2004)
E-mail: pw@ipf.tuwien.ac.at

Associate Members (ex officio):
Internet Communication Officer (Webmaster)
Michael Doneus (2003-2006) - ICOMOS
E-mail: webmaster@cipa.icomos.org

Nuran Zeren Gulersoy (2001-2005) - ICOMOS
E-mail: gulersoy@itu.edu.tr

Orhan M. Altan (2001 – 2005) - ISPRS

Sergio Dequal (2003-2007) - ISPRS
E-mail: sergio.dequal@polito.it

Marco Dezzi Bardeschi (2003-2007) - ICOMOS
E-mail: marco.dezzi@polimi.it

Associate Members (other)
Antonio Almagro Gorbea (2000-2005) - ICOMOS
E-mail: aalmagro@cica.es

Deren Li (2002-2006)

E-mail: dli@hp827s.wtusm.edu.cn

Honorary Members
John Badekas, Greece
Carl-Wilhelm Clasen, Germany
Ross W.A. Dallas, UK (2004)
Cevat Erder, Turkey (2004)
Mario Fondelli, Italy
Jozef Jachimski, Poland (2004)
Peter Waldhaeusl, Austria (2005)
Elzbieta Wanot, Poland

B. List of National and Committee Delegates
The Board increased to **59** officially nominated and approved members. (Status 22.08.2004).
CIPA has today **54** National and **5** Committee Delegates. From the **54** are **31** from National ICOMOS Committees and only **23** from National ISPRS Member Societies. Together they represent **44** countries. Only **12** countries have nominated delegates from both, ICOMOS and ISPRS. Further nominations, extensions and updates are due until end of the year.

Call for Delegates: National and International ICOMOS Committees are kindly requested to nominate delegates respectively extend delegations so that information can be exchanged and partnerships established with the National ISPRS Members. The ICOMOS delegates are to be nominated for three years (whereas ISPRS has four year cycles) with the possibility of extension up to 12 years. Communication is mainly by email in English language. Specially interested experts are welcome who wish to advise, co-operate with and contribute to the work in the Working Groups of CIPA..

III. ACTIVITIES

A. MEETINGS, SYMPOSIA

1. **The XIXth International CIPA Symposium 30 Sept - 4 Oct 2003 in Antalya, Turkey** on "New Perspectives to Save Cultural Heritage" was held under the auspices of UNESCO. There were about 200 participants from 50 countries. Symposium Directors were Prof. Dr. Orhan M. Altan, Council Member of ISPRS and its Society Delegate in CIPA, and Prof. Dr. Nuran Gülersöy, ITU Istanbul.
   The main topics were Recording, Documentation and Information Management Tools applied to:
   - Archaeological Heritage,
   - Architectural Heritage,
   - Engimeering and Industrial Heritage
   - Urban, Natural and Cultural Landscapes,
   - Moveable Heritage,
   - Heritage Management.

2. Prior to the CIPA Symposium the **Annual Meeting of CIPA** was held in Antalya, Turkey, from September 28 - 30, 2003. 12 Executive Board Members were present (6 ISPRS, 6 ICOMOS Ordinary Members and Associate Members). Two Members were excused, two were not present. One ISPRS Ordinary Member position is still vacant as also one of ICOMOS.
   The new Statutes have been approved. Four new Honorary Members will receive their documents on the occasion of the next Symposium (Ross W. Dallas, Cevat Erder, Jozef Jachimski, Peter Waldhäusl)
   The Executive Board decided about a new structure of working groups:
   A Working Group (WG) is a group of interested people (unlimited number but manageable) willing to work on one of CIPA´s permanent areas of interest as reflected by its Terms of Reference.
   A Task Group is an ad-hoc formed group of people willing to work on an emerging and strictly defined subject. The idea is to condense CIPA's forces and create a critical mass for each WG. Individual interests (e.g. Laser Scanners for recording of museum items, non-professional photography for archaeological documentation, web delivery of virtual museums, etc) will definitely find a home, and after all they will make the activities and

the agenda of each WG broad and interesting to wider audiences.

3. **RecorDIM Roundtable 3** in Leuven, Belgium (see http://extranet.getty.edu/gci/recordim/)
4. **RecorDIM Roundtable 4** in Istanbul, Turkey (see http://extranet.getty.edu/gci/recordim/)
5. **XX. International Congress of ISPRS in Istanbul,** Turkey, 12-23 July 2004, with two special sessions for CIPA and a great number of publications concerning applications of photogrammetry, laser scanning, remote sensing and related sciences to Cultural Heritage. ISPRS created a "Foramitti- Session" to be held at each ISPRS in memory of the great CIPA founder and photogrammetric pioneer Hans Foramitti. The Foramitti sessions are devoted to heritage recording and documentation, to the state of the art, the development of new technology, and applications at present and in the future. VicePresident Letellier reported on the strategic alliances in the framework of the RecorDIM initiative. President Petros Patias commemorated the 35 years anniversary of CIPA and outlined the future program. Vicepresident Cliff Ogleby talked for Gaetano Palumbo, World Monument Fund, on Heritage at Risk and CIPA, and finally on Heritage Documentation in the future, dreams and predictions.-
6. CIPA was testing the efficiency of Regional CIPA Workshops to build up regional awareness, interest and capacity. The **International Workshop on Vision Techniques Applied to Rehabilitation of City Centers**, Lisbon, Portugal, 25-27 Oct 2004 took place and was a great success.. See http://www.visiontec-workshop.org

B. Publications and Website

Publications:

CIPA has its own series of publications, the CIPA International Archives for Documentation of Cultural Heritage. The last Volume XIX is below nr. 2. And next year volume XX will appear in Torino, Italy, on the occasion of the Jubilee Symposium nr. XX.

1. Orhan M. Altan (ed.): Proceedings of ISPRS Commission V, (Petros Patias, President) of the XXth International Congress for Photogrammetry, Remote Sensing and Geoinformation, Istanbul 12-23 July 2004, The ISPRS International Archives of Photogrammetry, Remote Sensing and Spatial Information Systems Vol. XXXV Part 5. 998 pages. Approx. one third of the publications are interesting for cultural heritage recording. ISSN 1682-1750. € 100 plus postage. To be ordered from Oaltan @itu.edu.tr

2. Orhan M. Altan (ed.): *New Perspectives to Save the Cultural Heritage*. Proceedings of the International CIPA Symposium in Antalya, Turkey. International Archives of CIPA Vol XIX, Antalya 2003 and The ISPRS International Archives of Photogrammetry, Remote Sensing and Spatial Information Systems Vol. XXXIV-5/C15 ISSN 1682-1750. € 100 plus postage. To be ordered from Oaltan@itu.edu.tr

3. Petros Patias (Ed.): **"Close Range Imaging, Long Range Vision"**. Proceedings of the Symposium of ISPRS Commission V (2-6 September 2002 in Corfu, Greece). Again one third of all the 115 contributions concern CIPA, specially the area Image Analysis and Spatial Information Systems for Applications in Cultural Heritage. International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences, Vol XXXIV-5/V, 622 pages, ISSN 1682-1750, Thessaloniki, 2002. A4, 750 pp. € 100 plus postage. To be ordered from treasurer@cipa.icomos.org

4. Wolfgang Boehler (Ed.): **Scanning for Cultural Heritage Recording**. Workshop Proceedings of CIPA's Working Group 6 on Integrated Surveying Methods for Heritage Recorders, Corfu, 1-2 September 2002. A4, 160 pp. The volume contains keynote papers on 3D scanning hardware and software and many fine examples of projects where scanners were used for heritage recording purposes. CD included. Aristotle University Thessaloniki, 2002. € 50 plus postage. To be ordered from treasurer@cipa.icomos.org

5. Joerg Albertz (Ed.): **"Surveying and Documentation of Historic Buildings - Monuments - Sites, Traditional and Modern Methods".** Proceedings of the International CIPA Symposium in Potsdam, Germany, 18 - 21 Sept. 2001. International Archives of CIPA Vol XVIII, 656 pages, Berlin 2002. ISSN 0256-1840. € 50 plus postage. To be ordered from treasurer@cipa.icomos.org

6. Klaus Hanke, Pierre Grussenmeyer: **"Current advances in 3D reconstruction and Documentation of Cultural Heritage"**. A Tutorial of CIPA's Working Groups 3 and 4 on Simple Methods for Heritage Recording and on Digital Image Processing and Vision Sciences in Conservation, Corfu, Greece, 2 Sept. 2002. To be ordered from treasurer@cipa.icomos.org

Address of Website
http://cipa.icomos.org

C. Working Groups

A CIPA Working Group is a limited but manageable group of interested people willing to work on one of CIPA's permanent areas of interest. The Working Groups are intended to be stable, and more permanent than Task Groups.
A CIPA Task Group is formed by a group of people willing to work on a specific research need or topic.

In all instances, the scope of the Working Groups will include single objects, assemblages and sites/landscapes, and the Working Groups will address both tangible and intangible aspects of cultural heritage.

Working Group I:
Data Acquisition and Recording Techniques for Cultural Heritage Documentation

TOR: This Working Group will coordinate and initiate activities and research into the acquisition of data and information for the purpose of documenting cultural heritage. The WG is primarily focussed on the collection of data and information.
The WG will address manual measurement, field survey methods, film based and digital photography, video recording, photogrammetric techniques, laser scanning, sonar scanning, aerial photography, satellite imaging, geophysical prospecting techniques and …

Working Group II:
Documentation and Information Management

TOR: This Working Group will coordinate and initiate activities and research into the processing, enhancement and quality control of information in cultural heritage documentation.
The WG will address the use of geographic, management and multimedia information systems, display and visualisation techniques, 2d and 3d modelling techniques and systems, metadata and quality standards, web based applications, …

Working Group III:
Training, Technology Interchange and Communication

TOR: This Working Group will coordinate and initiate activities and research into education and training at fundamental, advanced and professional levels, … including the development of computer assisted teaching and learning
The WG will also coordinate and initiate activities and research in the transfer of techniques and technologies used in cultural heritage documentation between all interested parties. The WG will facilitate communication between CIPA and other International organisations, fellow researchers and the public in general.

D. Programs

1. The most important initiative is called **RecorDIM** for Recording, Documentation and Information Management, coordinated by Vicepresident Robin Letellier. RecorDIM has its own homepage sponsored by the Getty Conservation Institute as a strong and leading partner of the initiative. Others are ICOMOS international, PWGSC Canada, English Heritage, Malta Centre for Restoration, several ICOMOS ISC's, the WMF, National and international Institutions, University Institutes. Each partner contributes to a program which can be summarized by "Bridging the gaps" which have been identified in common workshops and round table discussions. For further details please see the RecorDIM homepage at http://extranet.getty.edu/gci/recordim
2. Preparations for the XX. International Symposium of CIPA 26-30 September 2005 in Torino, Italy. Symposium Director (ISPRS): Sergio Dequal, Politecnico di Torino; Co-Director (ICOMOS): Marco Dezzi Bardeschi, Politecnico di Milano. Theme: **International Cooperation to save the World's Cultural Heritage**.
   Abstract deadline: 1 February 2005.
   Information of authors on acceptance: 1 April 2005
   Full papers: 1 June 2005.
   For further information consult the website: http://www.cipatorino2005.org
3. Parallel/additional to the Symposium in Torino the 5th RecorDIM Roundtable Conference will take place and also
4. the Annual Meeting of the Executive Board.

E. Inter-institutional Cooperation

1. The main cooperation is that with ISPRS, the International Society for Photogrammetry, Remote Sensing and Spatial Information Sciences. The cooperation is defined by the CIPA Statutes, controlled by Society Delegates. CIPA has the status of a Permanent ISPRS Committee as well as of an International Scientific ICOMOS Committee. Historically CIPA is also an ICOMOS International Scientific Committee with fruitful cooperation with its other ISCs.
2. For 2002 – 2007 CIPA has a strong cooperation with the Getty Conservation Institute and with ICOMOS international in the framework of the RecorDIM Initiative, coordinated by CIPA Vice-president Robin Letellier. In this framework many cooperations exist.

IV. Financial Support

CIPA has a dozen of Sustaining and Institutional Members which pay a yearly membership fee according to their size. But travels are normally being paid by the delegating institution or university. A further income are the symposia which cover the hotel expenses of the Executive Board and the printing costs of the Proceedings. A small surplus helps to cover mailing costs. A further but very small income results from selling of the proceedings.

8. Journal

Administrative Matters
- A new contract between ISPRS and Elsevier was signed after hard and lengthy negotiations with substantial

improvements. ISPRS got back, since apparently 1965, its rights concerning the ownership of the journal title and the material, the subscriber addresses, and the copyright which up to now belonged to Elsevier. An associate editor was approved to help the editor, mainly in faster processing of the papers, and from 2005 there will be 3 assoc. editors, one for each of the main topics of ISPRS. An electronic paper submission tool has been provided and this will be upgraded from the middle of 2005 to a much more functional and extensive software package. Hardcopy subscriptions for ISPRS members and institutions from developing countries is 45 $. Electronic subscriptions at the same price will be made available from beginning of 2005, giving access to all material from 1995, while e- papers before 1995 to the first issue in 1938 (see 6. below) can be bought with a single payment of 100 USD.

- A new editor was appointed for the period 2005-2008, George Vosselman (ITC) and 3 associate editors: Olaf Hellwich (Tech. Univ. Berlin), Marguerite Madden (Univ. of Georgia, Athens) and Eberhard Guelch (Univ. of Applied Sciences Stuttgart).
- A new, smaller Editorial Advisory Board was approved by Council for the period 2005-2008 with balanced representation of photogrammetry, remote sensing and spatial information sciences. It will be appointed formally soon.
- A new publishing editor of Elsevier, responsible for the Journal, was appointed from middle of October and has started cooperation with the new editor (one meeting this December).

Relations to Council/Publisher

The Editor was invited to ISPRS Council and Joint Council/TCP meetings and presented matters related to the Journal. In particular the role of the technical commissions and working groups with respect to the journal and the preparation of Commission proposals for theme issues of the journal have been discussed during the last Joint Meeting. The editor presented a 4-year report to the General Assembly during the Istanbul Congress and a report at an open meeting on ISPRS publications during the Congress. One meeting with Elsevier and Council members took place during the Congress.

Quality and Timeliness of Papers and Reviews – Processing Speed

The quality of submitted papers has stayed at a similar, unsatisfactory level, as in the previous years. Quality and speed of reviews have not improved and are still very variable regarding both quality and time needed. The number of incoming papers is high compared to the processing time needed for each paper leading to long paper queues. Publication delays and slower processing speed during 2004 were partly due to the Congress, reorganisation of ISPRS, many changes and invested time in administrative matters and involvement of the editor in the new Council.

Impact Factor

The impact factor (computed from citations of articles in the preceeding 2 years), based on ISI's Citation Index, was for 2002 and 2003 0.39 and 0.47, while the number of citations of articles published in all years for 2002 and 2003 were 231 and 301. The number of downloads of full papers has doubled or more from 2002 to 2003 and each of the ISPRS Journal papers (excl. older papers published in Photogrammetria) is accessed ca. 70 times a year, compared to the average of about 30 for all Elsevier journals.

Special and Theme Issues

Two theme issues were published in 2004: Advanced Techniques for Analysis of Geo-spatial Data, edited by W. Shi, Z. Li and Y. Bedard and Integration of Geodata and Imagery for Automated Refinement and Update of Spatial Databases, edited by C. Heipke, K. Pakzad, F. Willrich and A. Peled.

Issues under preparation include: Advances in spatio-temporal analysis and representation, edited by D.J. Peuquet and R. Laurini, and a special issue dedicated to the best young author papers from the Istanbul Congress.

On-line Electronic Journal –WEB Pages of Journal

An agreement was signed with Elsevier for the digitisation of all old issues of Photogrammetria from 1938 to 1964, which were kindly provided by ITC. These issues will be made available to ISPRS members and to institutional subscribers. Since 2003 publication of supplementary material (like video, audio, etc.) is possible in the electronic version of the journal but has been used very little up to now. Publication of colour figures in the electronic version, which in the printed version are in B/W, although possible and gratis has not been used as much as it could. Revised and proof-corrected articles are available on-line before print publication and can be cited using the DOI (Digital Object Identifier).

An update of the journal's WEB page at the ISPRS server was made, but a major redesign of the page is needed. According to the ISPRS Webmaster, the requests of the Journal front page at the ISPRS server the last period were: 2003: 8728, 2004 (Jan-Jul): 5581.

Electronic Paper Submission

A new tool for electronic paper submission, Elsubmit, was used for the first time since January 2004. This relatively simple and partly cumbersome tool enables WEB-based submission of the papers, partial only paper tracking for authors and editors, and electronic submission of the final papers to Elsevier. A much more functional package that enables full electronic and online management and tracking for authors, editors and also reviewers, called Elsevier Editorial System will hopefully be operational for our journal from spring/summer of 2005. The use of this system for some journals has led to significant reduction of time from submission to publishing and better papers and reviews and higher impact factors.

Subscriptions
Although full data for the previous year do not exist, subscriptions followed the trend of the past years with hardcopy subscriptions slightly decreasing, and electronic subscriptions increasing and more than compensating the hardcopy reductions. The journal is from 2003 offered electronically in more flexible subscription types for institutions. A conservative estimate is that several million persons have access to the electronic version of the journal. In spite of cheap subscriptions for ISPRS members (40$) and institutions from developing countries (50$), these subscriptions, especially the latter, did not show any significant increase, making clear that they have to be made more widely known.

Helava Award
The evaluation of the 2000-2003 papers and the selection of the winner were completed, with hard and good work performed by the 5-member jury (M. Madden, W. Foerstner, G. Vosselman, A. Gruen, H. Haggren). The winners were announced in the Journal, Highlights and the WEB pages of Elsevier and ISPRS and a press release was issued. The Award was presented during the Opening Session of the ISPRS Congress to the winners C. Lee (Korea) and J. Bethel (USA). The new Helava Award Jury for the period 2004-2007 has been discussed and almost finalised.

PR and Congress
The Journal has an exhibition booth (together with GITC) in the Istanbul Congress, with new PR flyers, sample copies, other related journals and books, order forms etc. A major aim was to solicit subscriptions of persons who are members of the ISPRS Members and institutions from developing countries.

Outlook
The next period would be very crucial with new editor, 3 assoc. editors and editorial advisory board. The involvement for the first time of 3 associate editors and the expected introduction of the Elsevier Editorial System (EES) form the base for a possible substantial improvement regarding publication speed and reduction of long paper queues. Further aims should be improvement of paper and review quality and a smooth introduction of EES.

E. Baltsavias, Editor-In-Chief

10. Home Page

IThe ISPRS website (http://www.isprs.org), now online since 10 years, has turned out to be one of the most important components of ISPRS communications, providing up-to-date information about the society and linking its various activities. In December 2004 there are about 700 HTML pages with approximately 25,000 lines of information available on the ISPRS website; moreover there are ca 1,000 PDF files, i.e. a total of ca 2 GB of data available. A search engine (provided by Google) is also working inside ISPRS, with the possibility to search for pages inside ISPRS server or inside the WWW.

Most of the recent ISPRS Archives (including the Istanbul Congress Proceedings) are online, in PDF form while a great number of educational links is continuously updated.

The mailing list, activated in October 2002, has more than 600 people subscribed: twice per month the latest news inside the website are communicated as well as new events, links and job opportunities.

The statistics give a reasonable estimate of the use of the ISPRS web server, as it counts only requests for single HTML documents and the requests for images, graphics, icons etc. are not taken into account. Moreover, the statistics refer only to the requests made outside the ETH domain, which excludes all the accesses during maintenance of the documents. In Figure 1 (left) is shown the monthly requests to ISPRS server, in the period January 1995-November 2004. An increasing interest of the community for the ISPRS homepage is evident: the steady increase of the use of the HTML documents over the years and especially after the registration of ISPRS domain (1999) is obvious. The data missing from the figure in the period July-August 2000 is due to the movement of the server from Delft to Zurich.

The pick of November 2004 states approximately 362,000 requests per month to ISPRS server. In 1995 the average of monthly requests was 424, in 1998 the average was 5,780 while at present ISPRS server has more than 280,000 requests per month (see Figure 1, right). The different domain (~country) served at least one by the server were 161 (ca. 67% of the registered country code domains), while the distinct organisations served were more than 15,000.

Another interesting statistic concerns the words and queries used in the search engines to find ISPRS and its related pages: between ca 30,000 search terms, the most used are remote, sensing, photogrammetry and isprs. Considering all the queries, the most requested are 'photogrammetry', 'isprs', 'remote sensing', 'International Archive of Photogrammetry and Remote Sensing', 'isprs journal of photogrammetry and remote sensing' and 'orange book'. The browser most used to find information related to ISPRS is Microsoft Internet Explorer followed by Netscape. The majority of the users (67%) has Windows as operating systems; then Unix (Sun + Linux) and Macintosh. The information (directories) more requested contain the publications (74%), the events calendar and the technical commissions.

Educational Resources on ISPRS Website
ISPRS educational pages tries to collect the wide gamma of educational material, software and online publications

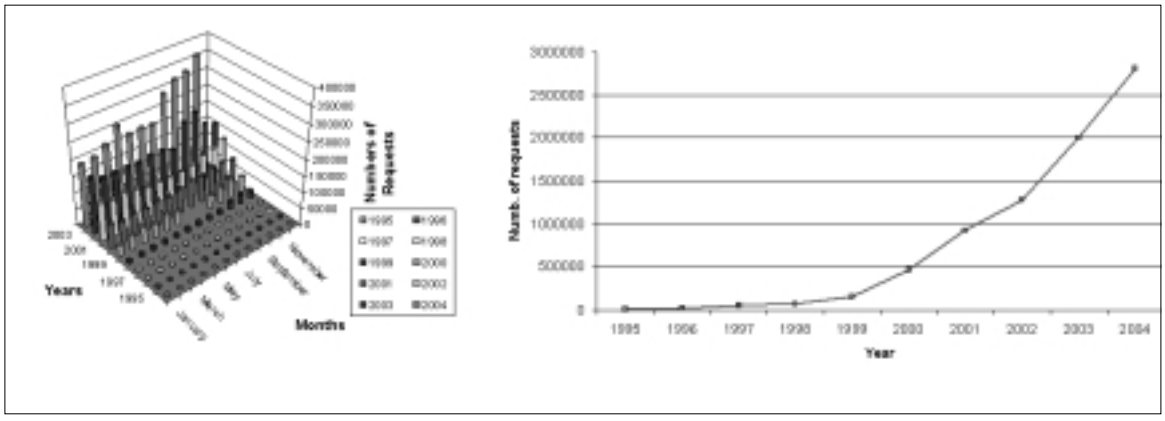


Figure 1: Monthly request to ISPRS server from January 1995 to November 2003 (left). Average request per month to ISPRS server (right).

related to Photogrammetry, Remote Sensing and GIS. This material occupies a great part of ISPRS data and consists of:

- Education-related documents (http://www.isprs.org/links/tutorial.html) like software, tutorials, courses, glossaries and codes related to Photogrammetry, Remote Sensing and GIS.
- ISPRS Archives (http://www.isprs.org/publications/archives.html) with all the recent archives available in PDF format.
- Online proceedings from ISPRS related events, Eurosdr/OEEPE workshops, CIPA, etc. (http://www.isprs.org/publications/related_pub.html).
- Tutorials and keynotes of ISPRS mid-term symposia 2002 (http://www.isprs.org/specials/symposium.html).
- List of job opportunities in the field of to Photogrammetry, Remote Sensing and GIS (http://www.isprs.org/job_opportunities/index.html)
- A collection of data sets in the field of close range and aerial Photogrammetry as well as satellite applications (http://www.isprs.org/data/).

These pages are not a complete list of all the useful documents available on the Internet. Therefore if anyone wants to contribute in these lists, please send links or information to fabio@geod.baug.ethz.ch.

Fabio Remondino, ISPRS Webmaster

11. Events Calendar

Appointment

Professor Tuan-chih Chen has been appointed Events Calendar Editor of ISPRS again by the Council. He continues to be responsible for compiling the Events Calendar which will be published in ISPRS Highlights and placed on the ISPRS web page (http://www.isprs.org/calendar.html) for 2004-2008. Professor Tuan-chih Chen has been Chairperson of WG VI/4 (1996-2000), Internet of ISPRS and in that capacity has drafted the Guidelines for the ISPRS Web Pages. He was the Event Calendar Editor of ISPRS for 2000-2004 successfully and was award Certificate of Recognition by ISPRS President on the 2004 Congress.

Terms of Reference

The ISPRS Events Calendar is published in the quarterly ISPRS bulletin, ISPRS Highlights, and regularly updated on the ISPRS Home Page. The Calendar contains a list of all ISPRS sponsored and co-sponsored workshops, symposia, tutorials and other meetings. It also contains details of all international and national conferences on topics related to the activities of ISPRS, including those in photogrammetry, remote sensing, spatial information systems, geomatics, surveying, mapping, machine vision, image processing and similar areas.

The Editor – ISPRS Events Calendar will be responsible for updating the entries in the Calendar on a regular basis. The tasks are:

- Provision to the ISPRS Highlights publishers in an agreed format, of an updated Calendar for each quarterly edition of ISPRS Highlights, approximately five weeks before the publication dates of March, June, September and December. The commencing date of the entries in the Calendar will be one month after the publication dates.
- Provision to the ISPRS Web Master on an up-to-date basis in an agreed format, updated versions of the Calendar for the ISPRS Home Page.
- Collection of details from ISPRS officers of all ISPRS sponsored and co-sponsored events, including theme of the event, dates, location, contact persons and addresses for publication in the Calendar.
- Collection, from appropriate sources, of details of events on topics related to the areas of activity of ISPRS, including theme of the event, dates, location, contact persons and addresses for publication in the Calendar.

Maintenance of contact with the ISPRS Secretary General on the status of the Events Calendar on a monthly basis.

Procedures

1. Versions
For efficiency, different headings, and to avoid errors in signifying changes, two main versions will be created - one for Highlights and another for the Web Page. The Web Page version is maintained constantly as new entries are received. The Highlights version is created and modified from the final Web Page version created for the months of March, June, September and December.

2. Web Page version
Cut out obsolete entries at least monthly.
Using previous Web Page version, do three find and replace operations on: "NEW", "UPDATED", bold. The bold headings and "Confirmed by Council" or "Cosponsorship" notations are to be retained in bold. At end of this operation there will be a clean version.
Make all new entries in bold. Make updates and signify as "UPDATED", with changed data only in bold. Add ISPRS logo to all ISPRS sponsored events as informed from Secretary General. Secretary General will also inform whether the event has been approved "Confirmed by Council" or is "pending Council approval" or if the event has "Cosponsorship" by ISPRS.
Send updated version to Web Master and Council by e-mail.

3. Council Version
The ISPRS Events Calendar will be sent to all members of ISPRS Council monthly as a general reference. The Council could check the details, and then send their comments or corrections to the Events Calendar Editor, e.g. the confirmation of ISPRS Events and the co-sponsorship of other events.

4. Highlights version
Change header information to show Web Page site.
Using current Web Page version, cut out obsolete entries from the previous quarter and current month.
Send by e-mail to ISPRS Highlights one month before publication month. The disadvantage of this version is that the deadline is 40 days before the issue date, therefore this version is not up-to-date and should be used for rough reference only.

5. List of ISPRS Meetings
This is a calendar extracted from the ISPRS Events Calendar, and contains only a list of all ISPRS sponsored events organised by ISPRS WGs and Commissions, and approved by the ISPRS Council. It will be sent to the ISPRS Secretary General quarterly. This would be useful for sending to other groups for inclusion in their lists of events, too.

6. Contents
Receive inputs from outside sources. Seek events from trade publication calendars and from internet searches of relevant organizations (see links below).
Keep all entries to those having international interest (e.g. international in event title) or from those of ISPRS member organizations (Ordinary, Associate, Regional, Sustaining).
Do not list user groups unless the organization is an ISPRS Sustaining Member, e.g.. Intergraph, ESRI, ERIM, etc. That helps promote organizations to become ISPRS Sustaining Members.
Except for ISPRS events, do not list events which do not have city, country and a phone or e-mail contact address.
Except for ISPRS events and those of the JBSIS (Joint Board of Sister Societies-ICA, IAG, IHO, FIG, IGU), do not list events which have pending dates.
Details- a) Check locations column to verify that the country is in all capital letters; the city is in lower case. b) Check order of dates to ensure earliest dates are first. c) Check that all ISPRS events have a "Confirmed by Council" or "Confirmation pending" notation in the leftmost column. d) Check these items in the event field: make sure ISPRS is before WG; make sure WG is before all WGs in listing; make sure ISPRS WGs are Roman for Commission and Arabic for WG number, e.g.. IV/3; use IC WG for intercommission WGs; put quotation titles on a separate line if space permits; put hyphen before each event if multiple events are in same listing; always seek ways to reduce number of lines; verify www addresses when time permits.
There should always be in the left column for all ISPRS events either "Confirmed by Council" or "approval pending" or "Cosponsorship Confirmed by Council". The "approval pending" gives ISPRS Council and TCPs an indication of what is being proposed and will help them coordinate events and avoid conflicts.

7. General
The purpose for ISPRS is to allow WGs and Commissions to identify open dates or events which they may link up with or avoid conflicting with. This avoidance of conflicting with other events externally and definitely internally is a major responsibility of ISPRS. We publish the calendar to encourage others to do likewise.
The margins of the table are set so that the calendar may be published in Highlights without alteration.
Search for relevant events. Identify events which will be of interest to ISPRS Members and to Members of the JBSIS. It is important to cover events which are on the interdisciplinary boundaries of ISPRS so that all Commissions and WGs are aware of who and how they can interface with related organizations.

Announcement

TO: TECHNICAL COMMISSION PRESIDENTS, WORKING GROUP CHAIRPERSONS, & EVENT ORGANIZERS

Events Calendar Editor greatly appreciates your responses to this announcement

The ISPRS Events Calendar is published in the quarterly ISPRS bulletin, ISPRS Highlights, and frequently updated on

the ISPRS Web Page. The Calendar contains a list of all ISPRS sponsored and co-sponsored congresses, conferences, symposia, workshops, tutorials and other meetings. It also contains details of all international and national events on topics related to the activities of ISPRS, including those in photogrammetry, remote sensing, spatial information systems, geomatics, surveying, mapping, machine vision, image processing and similar areas.

The purpose for ISPRS is to allow Commissions and WGs to identify open dates or events which they may link up with or avoid conflicting with. This avoidance of conflicting with other events externally and definitely internally is a major responsibility of ISPRS. We publish the calendar to encourage other sister societies to do likewise. It is important that we cover events which are on the interdisciplinary boundaries of ISPRS so that our Commissions and WGs are aware of who and how they can interface with related organizations. Please refer to the Appendix 3 of ISPRS Orange Book, too: http://www.isprs.org/documents/orangebook/app3.html

The Events Calendar Editor respectfully asks all TC Presidents, WG Chairpersons and Members to submit the details of their congresses, conferences, symposia, workshops, tutorials and meetings:
1) Date (maybe open or pending, see above),
2) Event,
3) Web site address,
4) City, Country,
5) Contact person, TEL, FAX, & E-mail.

Please email or fax the details to:

Professor Tuan-chih Chen (ISPRS Events Calendar Editor)
13-1, LANE 12, YEN-PING ROAD,
TAOYUAN 330, TAIWAN
TEL. +886-3-362-5089 or +886-918-953-197
FAX: +886-2-2786-4403
E-mail: profchen@ms13.hinet.net
http://www.isprs.org/calendar.html

Thank you very much for your support and your assistance.

Tuan-chih CHEN (China-Taipei)

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