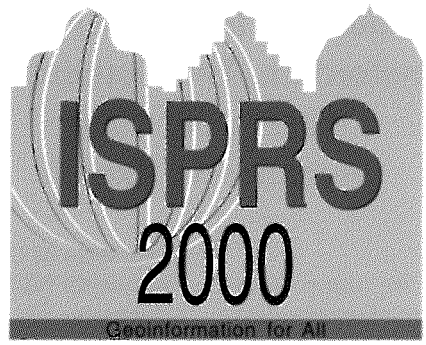


Exhibition

Invitation to Exhibit

'ISPRS daily' - Regular Reporting on Compressed Congress

Impressions of the XIXth ISPRS Congress

Exhibitors Showcases

National & Scientific Exhibition

Amount of M^2

Exhibitors per Country

Exhibitors

Warming Up for ISPRS Amsterdam

XIXth Congress of the International Society for Photogrammetry and Remote Sensing (ISPRS)
Geoinformation for All
Amsterdam, The Netherlands
16-23 July 2000
Invitation to Exhibit

Introduction
Comprehensiveness stands central in the vision of the ISPRS for the next century: the integration of remote sensing and photogrammetry with the added-value of the spatial/geo-information industries, harmonising technology push with user's pull, aiming at end-to-end solutions which may make a balanced contribution to the sustainability of the environment and the well-being of humanity.

With your participation we will make the XIXth ISPRS Congress in 2000 a well-focused and unforgettable milestone event for everyone. I look forward to meeting you personally in Amsterdam.

Klaas Jan Beek
ISPRS Congress Director
The Congress and Exhibition Dates

Congress Dates
Sunday 16th - Sunday 23rd July 2000

Exhibition Dates
Monday 17th - Friday 21st July 2000

Exhibition Profile
The Exhibition is open to all companies and organisations with products and services in the fields of geographic information systems, mapping, photogrammetry, remote sensing, data processing, surveying, imaging, image processing, machine vision, computer graphics and related fields that are of professional interest to the Congress delegates.

Companies and organisations with products and services in the fields outlined below should definitely participate.

Exhibition Visitors
Specialists in the field of photogrammetry and remote sensing have expressed their vital interest in the ISPRS Congress. Congress participants from all over the world, more than 2,000 - 2,500, will have free access to the exhibition. They are all professionals involved with photogrammetry, environmental management, remote sensing, geographical sciences, natural resources, mapping, land information systems or geodesy.
Besides, visitors not participating in the congress will have access to the exhibition for a moderate fee.
Exhibiting companies will receive a number of free Invitation Tickets (related to the stand size) to invite their clients. Details will follow in the Exhibitors Manual in March 2000.

Integration of Congress and Exhibition
Both the ISPRS Congress and Exhibition will be held at the Amsterdam RAI International Exhibition & Congress Centre in Amsterdam, The Netherlands. The Exhibition will be situated in the Delta Hall, next to the majority of meeting rooms and the registration area. Interaction between exhibitors and congress attendees will be stimulated through daily exhibitor showcases (see: Exhibitor Showcase) as well as free coffee and tea, served in the exhibition hall during the breaks between sessions.

Registration of Co-exhibitors
Commercial exhibitors will be allowed to share the stand with their distributors, manufacturers and/or suppliers, provided that prior notice is given to, and written approval obtained from, Rose International. Upon written approval from Rose International, the main exhibitor, i.e. the company applying for the exhibit space and signing the Exhibit Application Form, will be charged with the fee of NLG 1,200 (EURO 545), excluding VAT, for each co-exhibitor. This fee covers 1 exhibitor badge per company, plus free listing in the Exhibition Catalogue. The main exhibitor will be responsible and thus liable for his co-exhibitor(s). Please note that the main exhibitor will be the only contact for Rose International.

Registration of co-exhibitors is possible on the enclosed Exhibit Application Form or with the special form which will be included in the Exhibitors Manual.

Exhibitors' Reception
A ceremonial opening of the exhibition will be part of the plenary opening session of the congress on Monday 17th July, whereas the traditional exhibitors' reception, where all congress attendees meet, will be held in the exhibition hall at the end of that same first day: a friendly way of starting off the week's activities. The exhibitor's contribution to this event is included in the Exhibit Participation Costs.

Exhibitors Manual
More detailed exhibit information and instructions, including order forms for services and supplies (e.g. audio-visual equipment, floral decorations, freight forwarding and storage, furniture, power supply and spotlights, stand catering, telephone/fax etc.) will be included in the Exhibitors Manual, which will be mailed to exhibitors in March 2000.

General Conditions
By completing and signing the Exhibit Application Form, the exhibitor declares him/herself bound by the General Conditions of Rose International. The English version of the General Conditions is printed on the reverse side of the

Manufacturers & Suppliers (hardware, software, materials)

Aerial photography equipment
Animation technology
Biostereometric systems: SEM/ MR/ X-ray
Cameras (digital, analogue)
Computers and workstations
Data compression
Digital and magnetic storage media
Digital/ analogue interface devices
Digitising/ scanning equipment
Enlargers/ copy cameras
Films, drafting and photographics
Geographical information systems
Global positioning systems
Image processing systems
Interactive graphic systems
Interactive survey systems
Laseraltimetry (LIDAR) systems
Maps and charts
Multi media
Navigation systems
Orthophoto and rectification systems
Paper processors
PC-based information systems
Photodigitisers/ scanners
Photogrammetric mapping systems
Photogrammetric workstations
Photographic laboratories
Photographic processing systems
Plotters/ CAD/ CAM
Point transfer devices
Remote sensing ground stations
Remote sensing systems (MSS, TIR, radar)
Robot vision/ machine vision
Satellite mapping and positioning systems
Scientific books/ journals/ manuals
Sensors (MSS, SAR, radiometer)
Stereo and mono revision instruments
Textbooks and trade magazines
Theodolites/total stations/transits/EDM
Video systems
Virtual/ visual reality systems
Visualisation, screen & display

Service providers (private, public)

Aerial imagery (digital, analog)
Aerial surveys
Aerotriangulation
AM/FM
Architectural and archaeological surveys
Cadastral surveys
Cartographic drafting
Close-range photogrammetry
Consulting
Data archiving
Data management
Data processing
DTM production
Environmental monitoring
Field surveying
Geocoding services
Geodetic surveys
Geophysical surveys
GPS surveys
Image processing
Imagery enhancement
Industrial photogrammetry
Land resource surveys
Mapping and charting
Mapping/GIS on Internet
Medical imaging
Multisensor remote sensing
Orthophotography
Photogrammetric processing
Photogrammetric surveying
Photointerpretation
Radar technology
Remote sensing
Reproduction, photos, maps
Satellite imagery
Satellite meteorology
Spatial data processing
Terrain models
Terrestrial photogrammetry
Topographic and thematic mapping
Virtual/ visual reality
Volumetric surveys

enclosed Exhibit Application Form. Translations in German, French or Dutch are available on request.

Hotel Accommodation

Exhibitors will have the opportunity to book hotel accommodation for their staff and guests at a very early stage. Details will be announced immediately after the Exhibit Application Form and corresponding payment have been received.

Design Stands - Construction Requirements

Commercial exhibitors wishing to bring their own stands are requested to observe the following basic regulations.

Stands should be constructed with walls on all sides bordering upon other stands. These walls must take up the full depth and/or width of the stand and must be 2.50 m high. For island stands, the general building height of 2.50 m is applicable. For higher construction, written approval is required from Rose International.

A copy of the stand design, showing exact measurements and height, must be presented to Rose International for approval before 1st May, 2000.

More information on construction requirements, e.g. raised platforms, ceilings etc., will be given in the Exhibitors Manual. If more specific information is required at an early stage, please contact Rose International.

Minimum Stand Size

a) Commercial Exhibits:
The minimum stand size is 12 m^2.

b+c) Scientific and National exhibits:
The minimum stand size is 4 m^2.

Exhibitor Badges

Exhibitor Badges give free access to the exhibit areas and

also allow free coffee/tea during congress breaks, as well as admission to the Welcome Reception on Sunday, 16th July and to the Exhibitors' Reception on Monday evening, 17th July.

a) Commercial Exhibits
Each exhibiting company receives two complementary Exhibitor Badges for the first 12 m² of stand space and 1 additional badge for each following 12 m² or part thereof.

b) + c) Scientific and National exhibits
Each exhibiting organisation receives 1 complimentary Exhibitor Badge for the first 4 m² of exhibit space and 1 additional badge for each following 8 m² or part thereof.

Badges in excess of the free allowances will be available at NLG 45 (EURO 20), excluding VAT.

Exhibitors Showcase
Commercial exhibitors will be able to present the latest products and technologies at the Exhibitors Showcase in a lecture hall close to the exhibition.

Exhibitor contribution for a 45 minutes presentation: NLG 575 (EURO 260), excluding VAT.

Further details, including available AV equipment, timeslots and the Showcase Application Form, will be given in the Exhibitors Manual in March 2000.

Sponsoring Programme
Those companies interested in the sponsorship opportunities and commercial satellites of the congress, please contact Klaas-Jan Beek, Congress Director:

ITC, Department of Geoinformatics
P.O. Box 6
7500 AA Enschede
The Netherlands
Telephone: +31 53 487 43 58
Fax: +31 53 487 43 35
E-mail: isprs@itc.nl
Website: http://www.itc.nl/~isprs

Currency, VAT, Bank and Credit Card Charges
All prices are quoted and payable in NLG or EURO and are excluding VAT. On the Exhibit Application Form please indicate whether you wish to be invoiced in NLG or EURO by ticking one of the two boxes. All bank charges should be paid at source, i.e. by the exhibitor. For Credit Card Payments, a surcharge of 6% will be added to the total amount due.

The ISPRS
The International Society for Photogrammetry and Remote Sensing (ISPRS) is the world-wide society of professionals from research, applications and industry sectors, With a tradition dating back to 1910, it is devoted to the development of international co-operation for the advancement of photogrammetry, remote sensing, spatial information systems (GIS, SIS, LIS) and related vision sciences and their applications. Within it's fields of interest ISPRS conducts and promotes high quality research and regular forums for the dissemination of information on new developments, presents regular publications of activities and results and promotes and facilitates education and training programmes. ISPRS represents professionals associated with research, applications and commercial development of equipment and software systems within it's fields of interest world-wide.

Exhibition Timetable (preliminary)
- 15th - 16 Julyth 2000 Saturday & Sunday
  Build-up of stands
- 16th July 2000 Sunday
  Move-in of exhibits
- 17th - 21st July 2000 Monday - Friday
  Exhibition open daily
- 21st July 2000 Friday
  Break-down after lunch
  Exact time schedule will be announced in the Exhibitors Manual (March 2000).

Exhibit Participation Costs
The ISPRS Exhibition identifies three different types of exhibits:

a) Commercial Exhibits: commercial companies
b) Scientific Exhibits: not-for-profit scientific organisations and training centres
c) National Exhibits: ordinary and regional ISPRS members

Exhibit space includes a standard stand construction package.

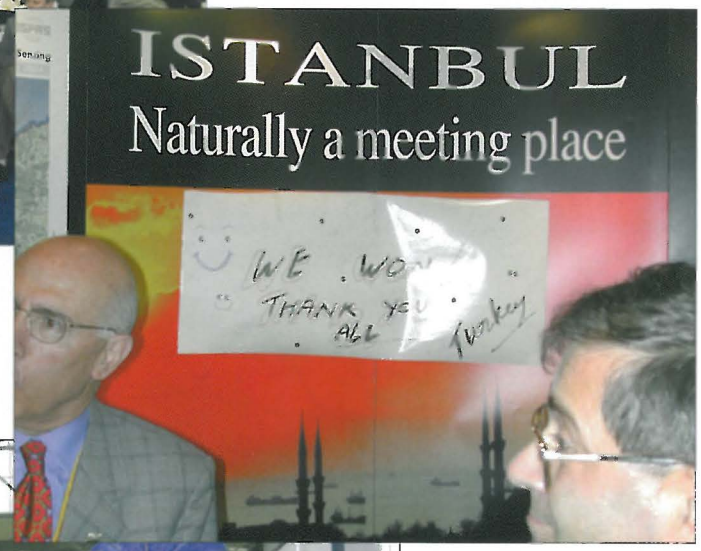
The stand rental is:

a) Commercial Exhibits
NLG 825 (EURO 375) per m²
Application + first payment received before 1st February, 2000
NLG 925 (EURO 420) per m² After 1st February, 2000
ISPRS Sustaining Members receive a 10% discount on the above rates
NLG 1,200 (EURO 545) Handling fee per exhibitor, not related to stand size

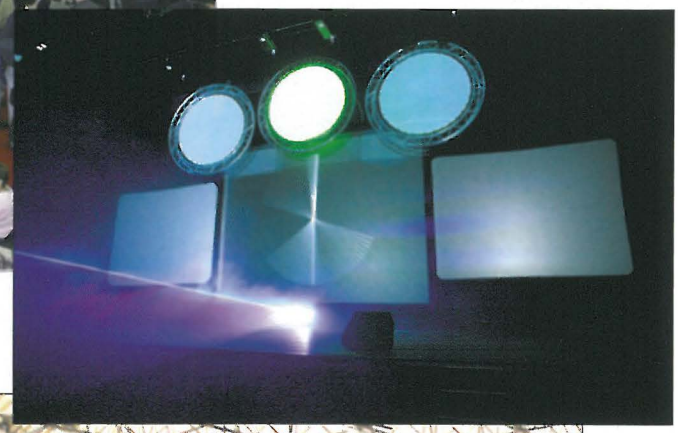
b) Scientific Exhibits
NLG 85 (EURO 40) per m² For the first 4 m²
Additional space: NLG 350 (EURO 160) per m²
Application + first payment received before 1st February, 2000
NLG 425 (EURO 195) per m²
After 1st February, 2000
NLG 600 (EURO 275) Handling fee per exhibitor, not related to stand size

c) National Exhibits
NLG 85 (EURO 40) per m² For the first 4 m²
Additional space: NLG 230 (EURO 105) per m²
Application + first payment received before 1st February, 2000
NLG 260 (EURO 120) per m²
After 1st February, 2000
NLG 600 (EURO 275) Handling fee per exhibitor, not related to stand size

Included in Exhibit Participation Costs for all Exhibits:
- Contribution to the Exhibitors' Reception in the exhibition area on Monday 17th July, 2000
- Coffee and tea during congress breaks
- Exhibitor badges
- Catalogue entry


ISTANBUL
Naturally a meeting place


ERDAS
ESRI



Congress venue RAI, Amsterdam

ing different data sources and merging them with existing topographic and elevation databases.

Wide Spectrum of Sensors

The huge need for geo-information has also resulted in the emergence of a wide spectrum of airborne and space-borne sensors. Direct recording of airborne imagery in digital format for high accuracy applications has long been awaited. Today, it seems that we have finally arrived at this point. The leading photogrammetric companies, Z/I Imaging and LH Systems, have both put much effort into developing high accuracy digital cameras. The design principles of the two resulting cameras are quite different. Recent issues of GIM International provide much information about these cameras, together with the pros and cons of the two underlying design principles. In many technical sessions the capabilities of these new sensors were discussed. Other new types of sensors that affect the appearance of the profession are:

- High-resolution satellite imagery
- LIDARs, enabling, amongst other things, automatic DEM generation
- SAR imagery
- InSAR for DEM generation

In addition, the direct geo-referencing of data produced by airborne sensors by using integrated GPS and INS equipment is an important achievement of the last decade. One of the leading companies in this field, Applanix, demonstrated its activities. With the broad variety of initiatives at the acquisition end of the photogrammetric process, we are stepping into an era in which sensor technology is clearly moving into its zenith.

Exhibition

Entering the exhibition hall, it was not directly obvious that photogrammetric products were on display. Any type of show in the field of information and communication technology could have covered the floor. This is not at all a negative indication. On the contrary, the way has been paved for photogrammetry and remote sensing to become

In 2004, Istanbul will be the venue of the meeting and the new congress director is Prof. Dr. M. Orhan Altan

ISPRS
The International Society for Photogrammetry and Remote Sensing (ISPRS) is a non-governmental organisation devoted to the development of international co-operation for the advancement of photogrammetry and remote sensing and their applications. Officially, ISPRS is composed of member organisations representing 102 nations, 8 regional associations and 50 sustaining member companies and institutes. The activities are conducted by 7 Commissions. Each Commission has Working Groups, totalling 45 in all.

Computational Intensive Task

The history of photogrammetry began over a century ago. The extraction of information from imagery is a computational, intensive and non-trivial task. The central aim, during its long history, has always been to reduce human involvement by automating parts of the complex process. In the past, one circumvented labour-intensive transformations by constructing sophisticated optical mechanical analogue 'computers'. With the advent of digital computers transformations are done computationally, enabling flexible work flows. Today, most photogrammetric processes have become fully digital, which is enabled by storage of the image contents in the form of pixels. For the distribution of imagery and even software, the Internet increasingly becomes an important transport medium.

Automation

Today, the processes are fairly well automated up to the level of constructing DEMs and the creation of geo-referenced stereo-images and orthophotos. This development enables the easy use of these value-added products by GIS users. Automatic processing also means that vendors are able to charge a modest price. This is, of course, very beneficial for all those customers who have a need for these products. This development will undoubtedly mean that the user group for photogrammetric image products will rapidly grow in the near future. In this respect the choice of the theme 'Geo-information for all' has to be considered to be a hit.

Fusing and Merging

Although much research has been devoted to the automatic extraction of features such as roads and buildings, the automation rate of this part of the mapping process is low. Many of the papers on this subject presented during the Congress demonstrated that work on the (semi-) automatic extraction of features is still very much alive, although the claims have become, compared to the past, quite rightly modest. The approach involving searching for sophisticated algorithms, which operate on just one type of image source, moves increasingly in the direction of fus-

Impression of the exhibition

caused a significant delay butwas the only major problem that occurred during the production process. The printing people, not amused, still managed to deliver 'the daily' right on time! GITC, unhappy with the conjunction of drawbacks, offered all printers, in gratitude for their pains and to compensate, a stone jar of Frisian Bitter 'Beerenburg' (to be enjoyed after 'the daily' had been finished).

Overnight Printing
Since the printers were using direct-to-plate techniques, the electronic files of the page layouts could be used in order to make the offset plates. Printing was done on high speed, full-colour offset print units. This way, the printing process took only a couple of hours. The printed matter dried, 'the daily' was folded and cut and the edition was picked up early in the morning.

Contents
People almost directly found their way in 'the daily', the various columns being conveniently and consistently arranged.
The exhibitors were well taken care of. 'Exhibitor showcase' never failed to be present and was usually found on page 3, with 'Exhibitor news' subsequently on page 4. Accounts of assembly meetings and interviews in 'In the spotlight of the congress' were to be found on page 5.
Page 6 welcomed writers like Ian Dowman, Christian Heipke, Monika Sester and Wolfgang Förster, with their columns on the performance of various ISPRS-working groups, photogrammetric subjects, developments in GIS or business news. Also 'The Programme of the day' never missed one issue and could be found almost without looking on page 6. The front page sported the well-illustrated leading article, whereas the back page demonstrated the 'Possibilities of Visual Information' in dazzling images at 1-4 metre resolution.
'Printing on demand' with offers (for a song), lured people to the press-room with their orders. Issue number 4 even made ten pages!

And Finally
Speaking about a song, 'The Geomaticists Song', performed as the 'Entertainment Intermezzo' part of the Opening Ceremony, brought mirth and hilarity to the hall. This 'plagiarisation of 'The Major General's Song' from the Pirates of Penzance by Gilbert and Sullivan with words by Don Proctor and Ian Dowman with help from Keith Atkinson well nigh brought the roof down! By way of epilogue, hereafter, but for brevity's sake from each couplet only the first and the last two lines:
I am the very model of an ancient photogrammetrist
I write all my own programs, I don't need a system analyst.
In fact in matters analogue and also analytical
I was the ideal manager for most work geomatical.
I am the very model of a modern geomaticist
In close range applications I consider I'm a specialist.
You need a doctor, engineer, biologist and phycisist
To make the very model of a modern geomaticist.
I am the very model of a modern data processor
I work with plotters digital and image analysers.
If I could only be described as practitioner or theorist
You'd say I was the model of a proper geomaticist.

Suffice it to say that 'the daily' came up to expectations with also the Council considering it the adequate and therefore most appropriate medium of communication!

Impressions of the XIXth ISPRS Congress

Sensor Technology Approaches Zenith Point

by Mathias Lemmens, Editor of GIM International

From 16th-23rd July the XIXth ISPRS was held in the Amsterdam RAI, The Netherlands. The theme of the congress was 'Geo-Information for all'. The Congress showed that the field of photogrammetry and remote sensing is a very vivid one. Photogrammetry is mainly about automation. Up to the level of the generation of DEMs, and the creation of geo-referenced stereo-models and ortho-images, the complex photogrammetric process is now fairly well automated. However, automation of the remaining parts of the chain still has a long way to go. Among the broad variety of subjects, sensor technology was particularly in the spotlight. The newly developed digital cameras from the leading photogrammetric companies, LH Systems and Z/I Imaging, were definitely eye-catchers, both on the exhibition floor as well as during oral presentations.

What are photogrammetry and remote sensing all about? Basically, they are concerned with the extraction of accurate and reliable geometric and thematic information from imagery. Within the field of geomatics, this information concerns geo-spatial features, while the imagery is recorded by airborne and spaceborne sensors.

In our society we observe an ever-growing need for accurate, timely and detailed (3D) geo-spatial information for a broad variety of applications, amongst others aimed at resolving the complex environmental problems which we human beings have caused by our own, uncontrolled activities. Processing of images that have already passed the geo-referencing stage in an earlier value-added photogrammetric process, form an important aid for the average GIS user, who wants to use the data as a start-up for further (3D) spatial analysis. This need is certainly a strong driving force in the development and expansion of the field of photogrammetry and remote sensing.

real boon. On the whole, indeed, ample time could be saved, skipping the conference entertainment and thus missing all the excitement and the fun to deliver, after a good night's rest, spruce and cheerful, at eight on the dot the fresh circulation to pigeon-holes and other appropriate places. To swarm out into the bright new day, to cover the news, do their interviews and to finally 'drop their lines'. The DTP studio specially built to facilitate production and accommodate the editors, seemed, as it turned out, however, far too cosy. 'Much milling about' by many an (un)invited visitor and a bee-like buzzing caused the editors downright distress. It, moreover, encroached on the sparse supply of oxygen in the already fairly airless confinement. At the same time, it distracted many a gifted author, disturbing his concentration, hampering poetic licence and at the same time jeopardising the required speedy delivery of articles. Soon, however, all reporters adjusted to these minor set-backs! Fortunately, this 'strain' was limited to a mere eight days, owing to the new formula of the 'compressed' character of this conference.

GITC committed itself to the production of seven issues of the ISPRS daily and all other official ISPRS publications. GITC is an international publishing house with almost fifteen years of experience in providing information at the right level. Their collection comprises publications like: GIM International, Hydro International, Professional Surveyor, Surveying World, ISPRS Highlights, Remote Sensing Nieuwsbrief, Engineering Surveying Showcase, Geo Media, The International Hydrographic Review and the EARSeL Newsletter.

Production specifications were:

Total number of issues to be published seven. The print-run would be 2,500, the format folio, the size eight pages, including cover and finally the printing full-colour offset.

The daily Staff

The staff of the 'daily' was composed of:

- Marc Cheves, Editor of Professional Surveying Magazine. The number one Land Surveying and GIS magazine in the USA, owned by GITC bv;
- Stephen Booth, Editor of Surveying World, the quality journal for the geomatics industry in the UK;
- Wim Feringa, Photo Editor (ITC);
- Jan Hein Loedeman, (Wageningen University, GITC);
- Mathias Lemmens, (Delft University, GITC);
- Lucas Janssen, Editor of EARSeL Newsletter and Highlights (ITC, GITC);
- Cees A. Jongepier, Netherlands Remote Sensing Board (BCRS);
- René Oomen, Layout Editor (GITC);
- Trea Hofma, Editorial Co-ordinator (GITC);
- Floris Siteur, Publication Director (GITC);
- Jan Piet Broersma, Marketing Manager (GITC);
- Johan Boesjes, Publisher (GITC);

Preparation

Some weeks before the actual congress took place the editorial schedule for the seven issues had been put together. Authors were invited to write articles and companies were able to supply their latest press releases. Also, at GITC advertising space for 'the dailies' was sold in order to make the operation remunerative.

For efficiency's sake, the first issue of 'the daily' was printed as a regular magazine. This allowed the printers to take their time in producing the first edition to be distributed on the first day of the congress. The second through to the seventh edition were printed overnight. During the day the team of editors, photographers and proof-readers were busy compiling the latest news to be included in 'the daily' concerned. In the afternoon, the layout of 'the daily' was begun and had to be ready by 19.00 hours in order to be digitally sent to the printers. The use of electronic cameras proved to be essential. In some cases it took less than five minutes for the required picture to be delivered. Once the electronic files were sent there could be (some) rest. Though not all were thus rewarded for a hard day's piece of honest work. Some editors were indefatigable and on their way or on the spot, later on wrote up their eye witness reports on many a social event so richly provided by the programme. At six each morning the fresh edition of 'the daily' was picked up at the printers and shipped to Amsterdam RAI to be distributed at various locations.

Problems

Principally during the first night, the bad telephone line connecting the RAI building and the printer facility


ISPRS daily

"Old salt"


ISPRS daily

John Trinder, ISPRS President Elect


ISPRS daily

DinnerShow 2000 Delights Crowd

‘ISPRS daily’ - Regular Reporting on Compressed Congress

by Cees A. Jongepier, Netherlands Remote Sensing Board (BCRS)

Four years ago the ‘Speaking Tube’ was the XVIIIth congress’ successful communication medium. But apparently at a price!

Lucky Strike

The name was a lucky strike! After four years it was still the envy of the next team of editors to rise to the occasion. Yet in retrospect one wonders if not there and then extra effort was required for all and sundry to finally rise to such success? For, does not the sound of a speaking tube tend to bridge only the shorter distance? And (metaphorically), does not the very name suggest a prior mustering of relative strength? For, indeed, does it not require an initial blowing of a whistle, part of the device, to allow the feeble tone to arouse attention? To let the subsequently transmitted message also be enjoyed at the receiving end by those hard of hearing? The ‘Proceedings and Results, Part A, of the XVIIIth ISPRS Congress’ endorses this view, lifting up a tip of the veil revealing further hardships where it reads: ‘Life was very hard for the ISPRS Speaking Tube staff’. At eight in the morning, having finished the distribution of the actual issues, the members had to attend the editing conference’. The same paragraph ends: ‘Normally the work was finished at midnight with the delivery of the digital dataset to the printing shop’. Sadly enough, it all boiled down to a relentless strain which had to be endured all through the ten days it took the congress to draw to an end. But this all eventually and gloriously led to the splendid performance mentioned before. Four years later, building on tradition and the inheritance of the predecessors, the XIXth congress communicated through a medium which was prosaically called the ‘ISPRS daily’. It is obvious that this name had nothing to do with vibrations, let alone sound waves. It, however, demonstrated a self evident rhythm in its own right, at the same time imposing the obligation to be available ‘at the crack of dawn’. Moreover, ‘daily’ has a certain ring and is supposed to be a household word for sterling character.

ISPRS daily

Published daily on ISPRS 2000 Amsterdam – Sunday/Monday 16/17 July 2000 – N° 1

Welcome word of the Organisation

Dear Congress Participants,

Welcome in Amsterdam.

Four years went by very quickly since the Netherlands Society for Earth Observation and Geoinformatics (NSEOG) in Vienna was given the privilege to organize the XXth ISPRS Congress. After being appointed Congress Director, I immediately realised that this was going to give me a lot work. Little did I realise how much satisfaction I was going to derive during these four years from the interaction with so many colleagues world-wide who are part of the ISPRS network and strongly committed to its mandate. We were able to meet in many different places of the world during seminars, symposia and workshops, all the time witnessing a Society of which the representatives of very diverse disciplines are getting closer and closer, both personally and professionally, thanks to the rapidly improving information and communication technologies. I am really looking forward very much to seeing them this week again in Amsterdam.

The question arises with all this networking if we are going to need these big congresses at all in the future? Should we start thinking of electronic meetings? So far most people seem to agree that we need to meet in person , at least the interest for our Congress is not less than the previous one. However we have made some changes in the organization of the Congress, the most important one being the shortening of the length of the Congress from two weeks to one week. A compact Congress has the advantage that everyone will be there at the same time, which is in particular of interest to the exhibitors who usually have only one week to show their new products and services.

Maybe it was because we are witnessing the start of the new millennium, inducing great expectations and renewed ideals, maybe it was because the Congress is in Amsterdam, a city with a rather non-conforming and liberal identity, we felt that this Congress should have a strong sense of social purpose, that is why we choose the Congress Theme ‘Geoinformation for All’. What we wanted to discuss is really: in the near future, do we want to live in one world, or in several, where the benefits of the new information age and of our technologies can not be equally shared for all kinds of reasons which have led to the presently existing inequalities. Can our new information technologies contribute to quick solutions for less developed countries by ‘leapfrogging’ some of the constraints which the richer countries were already able to eliminate at a considerable cost? Supposing that spatialgeo information has a crucial role to play in all kinds of development processes?

I am very glad that we have found a keynote speaker for our Opening Ceremony who is very qualified to comment on these issues from the user requirements point of view: Ismael Serageldin, until very recently Vice President of the World Bank for Special Programmes, in which capacity he chaired the CGIAR the Consultative Group of International Agricultural research, a consortium of 16 International research institutes with a budget of around 360 million US dollars per year to contribute to global food security, in particular the security of the World's poor. Serageldin also chairs the Global Water Partnership and the World Commission on Water for the 21st Century and therefore very much involved with the looming global water crisis.

In addition, we have during the Opening Plenary Session three very qualified speakers from our own environment to comment on the Congress theme, K.Kasturirangan, the director of the Indian Space Research Organization (ISRO), Jack Dangermond, the president of ESRI and He Changchui, head of the remote sensing unit at FAO.

They will look from their professional angles at issues of availability, accessibility, benefit, understandability, usefulness and affordability of geoinformation in the years to come.

By having these presentations during the Plenary Opening Session of our Congress, I am sure that this will encourage a good discussion on the ultimate purposes and application of our sciences in problem solving under different socio-economic conditions, during the following days when we split up in smaller groups of a more specialized nature. To encourage a broader look at the challenges of our professions we have also organized, in cooperation with the Technical Commission Presidents, about 80 Inter-commission Technical Sessions.

I acknowledge in particular the support of Commission V, which of course is not in the first place focussed on geo information but on spatial information for other than geographical applications. Their field is attracting a growing number of professionals from application areas, which are rather new for ISPRS. These involve animation and virtual reality, in addition to the many close range applications of photogrammetry that are emerging, from medicine to archeology.

Finally, I want to express my gratitude for the generous support of our sponsors, public and private, which enabled us to keep the Congress fee at a reasonable level and to support the travel of about eighty people from the developing countries, Central and Eastern Europe. Almost a hundred countries are represented in this XXIth Congress of ISPRS.

I look forward to meeting many of you during the coming week. With also the social programme and the technical tours, it will be a busy week. If after all one week proves to be too short , the next Congress Director is welcome to change it: China, Spain or Turkey?

Klaas Jan Beek, ISPRS Congress Director.

Klaas Jan Beek

Contents

ISPRS daily - XXth Congress - Sunday/Monday 16/17 July

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ISPRS daily

Published daily on ISPRS 2000 Amsterdam – Tuesday 18 July 2000 – N° 2

...and we're off...!

Welcome Reception a Successful Start!

ISPRS daily

Published daily for ISPRS 2000 Amsterdam – Wednesday 19 July 2000 – N° 3

Royal Reception on the Red Carpet

ITC Alumni Invited

Turkey Won!

ISPRS daily

Published daily for ISPRS 2000 Amsterdam – Thursday 20 July 2000 – N° 4

Impressions of the Show

a) In Addition, for Commercial Exhibits:
- Standard stand construction package, including:
- White walls, fitted in aluminium frame, 250 cm high
- Fascia with company name and stand number (in standard lettering)
- One spotlight per 4 m² (electricity and main connection excluded)
- Carpet
- One free Congress Registration per exhibiting company per 12 m².
- List of participants at the congress

b)+c) In Addition, for Scientific and National exhibits
- For the Scientific and National exhibits, pavillions will be created offering display space and display panels for the exhibiting organisations, including carpet and spotlights. Details will follow in the Exhibitors Manual in March 2000.

Organisations participating in the National and Scientific Exhibits are obliged to use the display unit and material as offered by the organisers. It is not possible to bring an own stand unit.

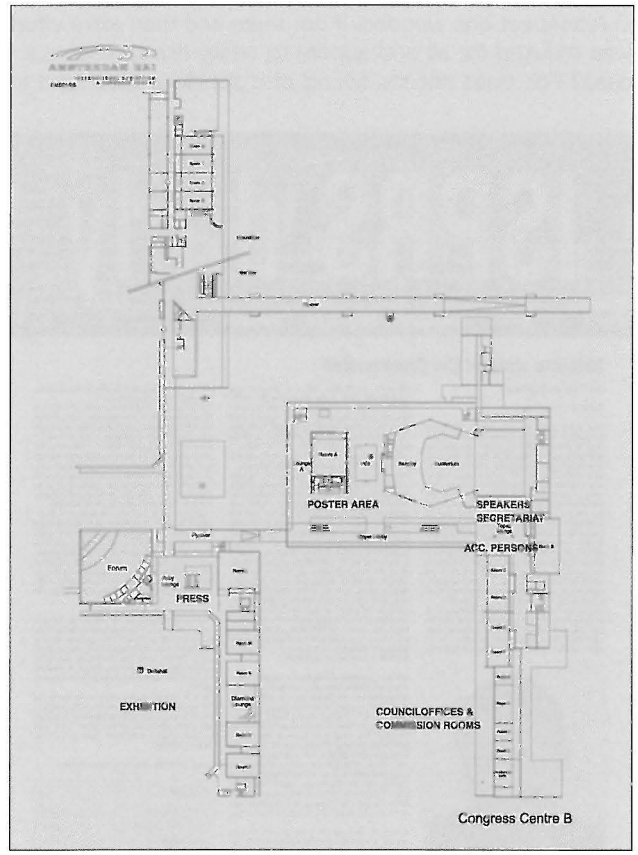
ISPRS Council 1996-2000
President: Lawrence W. Fritz, USA
Secretary-General: John C. Trinder, Australia
Congress Director: Klaas Jan Beek, The Netherlands
1st Vice President: Shunji Murai, Japan
2nd Vice President: Marcio Nogueira Barbosa, Brazil
Treasurer: Heinz Rüther, South Africa

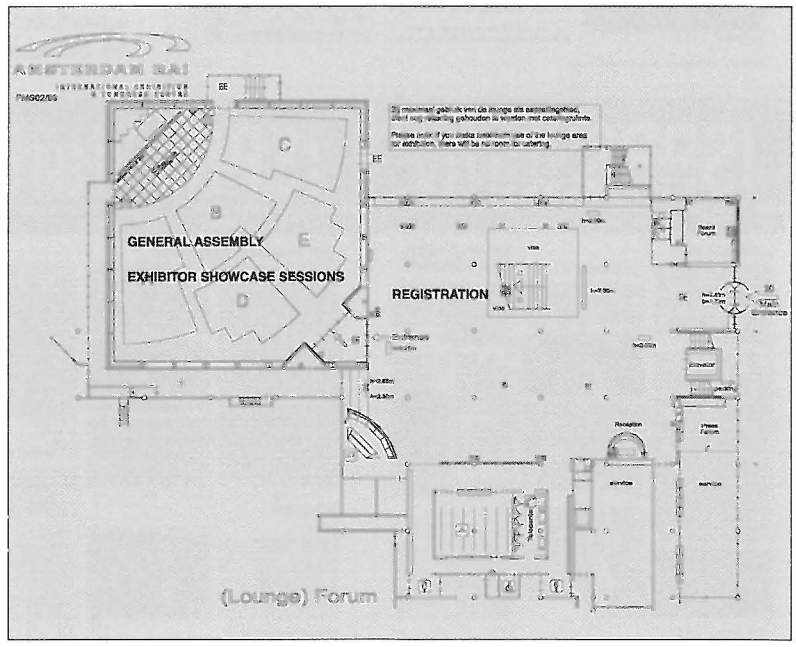
Local Organising Committee - LOC
Congress Director: Klaas Jan Beek
Treasurer: Rob Neleman
Members: Johan Boesjes
Nico Bunnik
Fred Hagman
Cees IJsendoorn
Freek van der Meer
Martien Molenaar
Gerard Nieuwenhuis
Jan Timmerman

Secretariat of the LOC
Saskia Tempelman
ITC, Department of Geoinformatics
P.O. Box 6, 7500 AA Enschede
The Netherlands
Telephone: +31 53 487 43 58
Fax: +31 53 487 43 35
E-mail: isprs@itc.nl
Website: http://www.itc.nl/~isprs

Congress Organiser
Congrex Holland BV
P.O. Box 302, 1000 AH Amsterdam
The Netherlands
Telephone: +31 20 50 40 203
Fax: +31 20 50 40 225
E-mail: isprs@congrex.nl
Contact: Rika Strik

Floor Plan, Space Application and Allocation of Stand Sites
In this brochure you will find the preliminary floor plan indicating the available stand sites. Please mark your preferences on the enclosed Exhibit Application Form.
Exhibit space will be assigned on a "first come, first served" basis, upon receipt of the completed Exhibit Application Form and the corresponding payment due at the date of application. For further conditions of payment please see the Exhibit Application Form.





part of mainstream ICT, expressing the fact that the theme of the Congress 'Geo-information for all' is not an empty phrase but a real actuality.
At the show it was the data acquisition part of the photogrammetric process that was clearly in the spotlight. Near the entrance, both Z/I Imaging and LH Systems demonstrated their newly developed digital cameras. Also the major providers of satellite imagery, including Spot Image, Space Imaging and Orbimage, were present. The diffusion of boundaries between photogrammetry, remote sensing and GIS was made apparent by the presence of one of the largest GIS manufacturers in the world, ESRI. Jack Dangermond, founder and president of ESRI, had come all the way from Redlands, California, to be present at the Congress and to visit the land of his ancestors. Vendors from all over the world demonstrated their software and instrumental tools to extract information from imagery. Besides commercial firms, universities and other non-profit organisations also displayed their activities. The exhibition floor was completely sold out.

Sessions and Posters
In my opinion, it was a good decision by the organisers to restrict the event to just one, although very long, week. Also the limited amount of parallel sessions was a fortuitous choice. Although in this way only a restricted number of oral presentations could be scheduled, the large number of poster sessions, during which one was able to intensively discuss interesting themes with authors, compensated for many of the drawbacks. Both the oral and poster presentations were well attended.

Final Remarks
The proceedings of this congress are distributed both on CD ROM (two CDs) and in paper format, spread over 14 (fourteen!) books. Three competitors battled to be organisers of the next Congress in 2004: Spain, China and Turkey. During a meeting of the General Assembly on Tuesday 17th July, Turkey won the competition. In 2004, Istanbul will be the venue for the meeting and the new congress director is Prof. Dr M. Orhan Altan.

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Exhibitors Showcases

(Extraction from Brochure)

Exhibitor Showcases Schedule – Forum Hall

DAY *Time slots*	MONDAY 17th JULY	TUESDAY 18th JULY	WEDNESDAY 19th JULY	THURSDAY 20th JULY	FRIDAY 21st JULY
13.00 – 13.40	Not available	LH SYSTEMS	Z/I IMAGING	LEICA	ESRI
13.50 – 14.30	CGR	ESRI	Z/I IMAGING	ERDAS	ERDAS
14.40 – 15.20	ERDAS	Not available	ERDAS	Not available	Not available
15.30 – 16.10	Z/I IMAGING	Not available	CGR	Not available	Not available
16.20 – 17.00	LH SYSTEMS	Not available	APPLANIX	Not available	Not available
17.10 - 17.50	Not available	Not available	DELPHI 2	Not available	Not available

Exhibitors Showcases (ES)
Technical Sessions are being made available for presentations by commercial firms engaged in photogrammetry, remote sensing, machine vision, spatial/geographical information systems or related technologies. Exhibitor's Showcase papers will be presented in the Forum hall between 13.00 and 17.50 hours. Sixteen sessions have been registered for presentations by commercial firms taking part in the exhibition. The sessions are chaired by experts nominated by the national committee.

Monday 17th July

13.50 - 14.30 hours
Compagnia Generale Ripreseaeree s.p.a (CGR)
"Innovative Techniques of Terrain Analysis" by Mr. Giovanni Banchini (Commercial Dept.)
In more than thirty years of intense activity and presence in Europe and in Africa, the Compagnia Generale Ripreseaeree has become the leader in Italy in aerial photography, remote sensing and in analytical and digital cartography. In so doing, it has brought to market innovative products such as the digital colour orthophoto coverage of Italy known as the "it2000" program.

14.40 - 15.20 hours
ERDAS
Introducing ERDAS Stereo Analyst: Pioneering the Future of 3D Geographic Imaging, by Mladen Stojic, Photogrammetric Product Manager, US.
Be among the first to see this ground-breaking Windows-based stereo feature extraction system. Stereo Analyst provides automated tools for the accurate collection, interpretation and visualisation of 3D geographic information from stereo imagery. When compared with traditional data collection techniques, Stereo Analyst saves users significant amounts of time and money and enables the collection of true real-world 3D geographic information in one simple step. Designed to run as a stand-alone product, Stereo Analyst can also be easily integrated into ERDAS IMAGINE and ArcView GIS workflows.

15.30 - 16.10 hours
Z/I Imaging
Photoscan 2000 / DMC 2001
Presenters: Klaus Neumann (Product Manager for Scanner) and Helmut Heier (Product Manager for Camera Systems).
Come and see the new PhotoScan 2000, a consistent new development in the successful PhotoScan product line, which has been established as a standard of scanning technology in the photogrammetric market. The DMC2001 is our new Digital Modular Camera (DMC) that offers a modular design for higher geometric resolution and customised performance. This multi-camera system combines high panchromatic resolution with multi-spectral capabilities.The array sensor principle guarantees high resolution imagery through integrated image motion compensation. The DMC2001 easily fits into your current workflow - it will extend your RMK-TOP investment into the digital future.

16.20 - 17.00 hours
LH Sytems
Peter Fricker, product manager for LH Systems' exciting new ADS40 Airborne Digital Sensor, will explain the major features of this dramatic joint development with DLR. By providing three panchromatic views and four multispectral channels, combined with GPS, IMU and rigorous data reduction, the ADS40 is destined to combine the accuracy of photogrammetry with the insight of remote sensing - for the first time.

Tuesday 18th July

13.00 - 13.40 hours
LH Systems
LH Systems innovations doesn't stop at the ADS40. From a dual-camera version of ASCOT, through extensive software developments in the latest releases of SCAN, SOCET SET, ORIMA and PRO600, to a brand-new hand controller for digital photogrammetric workstations, called TopoMouse, LH Systems has introduced enhancements throughout its product range. All these new features are designed to increase customers' productivity and return on investment.

13.50 - 14.30 hours
ESRI
Mr. Jack Dangermond, ESRI, president, USA.
In his presentation 'Sharing data all around the globe', Mr. Dangermond will talk about an ESRI initiative to encourage the sharing of data among GIS users world-wide. New technologies like ArcIMs and ArcInfo 8 from ESRI make this possible and the Internet serves as the interacting medium.

Wednesday 19th July

13.00 - 13.40 hours
Z/I Imaging
TerraShare
Presenter: Joe Bima (Product Manager for TerraShare)
In your softcopy production environment, tremendous amounts of digital data are produced. Managing this data is an overwhelming burden. In a world moving in "Internet Time" exposing this data to your clients through the Web is a must. Z/I Imaging's new TerraShare suite of products removes the data management burden and automates the data distribution process. Thus capturing more time for navigating your business focus successfully.
13.50 - 14.30 hours

Z/I Imaging
Z/I Imaging's new Visions in 2000 and beyond
Presenter: Lewis Graham (CEO of Z/I Imaging).
Instant, global communications of rich data are rapidly changing every aspect of the way that we conduct business. Whether it is collaborative production, direct digital data acquisition or Application Service Providing, some aspect of the newly emerging paradigms will affect your business. Z/I Imaging is aggressively developing new products and strategies to provide customers with a competitive edge in a world moving in "Internet Time".

14.40 - 15.20 hours
ERDAS
Introducing ERDAS Stereo Analyst: Pioneering the Future of 3D Geographic Imaging, by Mladen Stojic, Photogrammetric Product Manager, US.

Be among the first to see this ground-breaking Windows-based stereo feature extraction system. Stereo Analyst provides automated tools for the accurate collection, interpretation and visualisation of 3D geographic information from stereo imagery. When compared with traditional data collection techniques, Stereo Analyst saves users significant amounts of time and money and enables the collection of true real-world 3D geographic information in one simple step. Designed to run as a stand-alone product, Stereo Analyst can also be easily integrated into ERDAS IMAGINE and ArcView GIS workflows.

15.30 - 16.10 hours

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16.20 - 17.00 hours

Applanix

Redefining Aerial Surveying with Integrated Inertial/GPS

Speakers: Dr. Blake Reid, President, Applanix Corp, Canada; Erik Lithopoulos, Manager Business Development, Applanix Corp., Canada;

Joe Hutton, Product Manager Airborne Applications, Applanix Corp., Canada.

A description of the Applanix Integrated Inertial/GPS POS/AVTM products, and how they truly are redefining the way airborne surveying is done: LIDAR, Digital Pushbroom Scanners, Digital Frame Cameras, Hyperspectral Scanners, SAR, Analog Frame Cameras.

An introduction to the latest addition to the POS/AV product line: the low-cost POS/AV 210.

Introducing POSPAC 3.0 with Inertial/GPS Integrated Ambiguity Resolution (IARTM): making the flying of flat turns during surveys obsolete.

17.10 - 17.50 hours

DELPHI 2

Based on brand-new procedures, Delphi2 has developed the software eCognition for object-oriented image analysis. It is particularly suited for the analysis of VHR- or radar data, allows extensive data fusion and handles even complex tasks. eCognition provides a multitude of new possibilities for image analysis and integration of RS and GIS.

Thursday 20th July

13.00 - 13.40 hours

Leica

FieldLink

GIS-Data acquisition solution for desktop and penpad computing

Author: Robert Schoech, Leica Geosystems AG.

FieldLink is a data acquisition and management program for professional surveying and engineering applications running on Microsoft Windows. The system saves data in ESRI Shapefile format. Tailorable forms are used for adding or visualising thematic data. Connect any Leica Geosystems TPS, GPS or Vector instrument for acquiring position data.

GPS/GIS with Leica GS50

Superior Morphology and Performance

Author: Christian Schorr, Leica Geosystems AG.

Leica Geosystems GS50 allows the measurement of DGPS positions in real-time with a 40cm accuracy rms. It can be upgraded even to survey-grade cm accuracy. The receiver is able to perform its measurements under dense foliage, even in the forest or in an urban environment, using Leica's patented ClearTrak™ technology. The corresponding GIS DataPRO™ office suite stores the GS50 data as native ESRI Shapefiles automatically. The waypoints guarantee a full two-way data flow between the sensor and the office suite.

13.50 - 14.30 hours

ERDAS

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Be among the first to see this ground-breaking Windows-based stereo feature extraction system. Stereo Analyst provides automated tools for the accurate collection, interpretation and visualisation of 3D geographic information from stereo imagery. When compared with traditional data collection techniques, Stereo Analyst saves users significant amounts of time and money and enables the collection of true real-world 3D geographic information in one simple step. Designed to run as a stand-alone product, Stereo Analyst can also be easily integrated into ERDAS IMAGINE and ArcView GIS workflows.

Friday 21st July

13.00 - 13.40 hours

ESRI

Mr. Frank Holsmuller, Regional Marketing Manager EMEA, ESRI-Europe, the Netherlands.

'ESRI's new product offering'

With products like ArcInfo 8 and ArcIMS, ESRI is entering a new era in its existence. Openness and one product-wide architecture are the key elements. An overview and demonstrations.

13.50 - 14.30 hours

ERDAS

Introducing ERDAS Stereo Analyst: Pioneering the Future of 3D Geographic Imaging, by Mladen Stojic, Photogrammetric Product Manager, US.

Be among the first to see this ground-breaking Windows-based stereo feature extraction system. Stereo Analyst provides automated tools for the accurate collection, interpretation and visualisation of 3D geographic information from stereo imagery. When compared with traditional data collection techniques, Stereo Analyst saves users significant amounts of time and money and enables the collection of true real-world 3D geographic information in one simple step. Designed to run as a stand-alone product, Stereo Analyst can also be easily integrated into ERDAS IMAGINE and ArcView GIS workflows.

National & Scientific Exhibition

A. American Society for Photogrammetry & Remote Sensing
5410 Grosvenor Lane
Suite 210
Bethesda, MD 20814-2160
U.S.A.
Tel: +1-301-4930290
Fax: +1-301-4930208

D. FH Bielefeld
Artilleriestr. 9
D-32427 Minden
Germany
Tel: +49-571-8385150
Fax: +49-571-8385250

G. FH Bochum
Lennershofstr. 140
D-44801 Bochem
Germany
Tel: +49-1234-7007039
Fax: +49-1234-7094223

I. International Cartographic Association
Postbus 80115
NL-3508 TC Utrecht
The Netherlands
Tel: +31-30-2532044
Fax: +31-30-2540604

P. China-Taipei Society of Photogrammetry and Remote Sensing
P.O. Box 93158
Taipei
Taiwan, P.R. China
Tel: +886-2-86633468
Fax: +886-2-29317225

M. Centre for Ecological Research and Forestry Applications- CREAF
Edifici C, Universitat
Autònoma de Barcelona
ESP-08193 Bellaterra
Spain
Tel: +34-93-5811312
Fax: +34-93-5811312

J. Delft University of Technology
Postbus 5030
NL-2600 GA Delft
The Netherlands
Tel: +31-15-2781701
Fax: +31-15-2782745

E. Dubai Municipality
P.O. Box 67
Dubai
United Arab Emirates
Tel: +971-4-2215555
Fax: +971-4-2217871

H. Elsevier Science
Molenwerf 1
NL-1014 AG Amsterdam
The Netherlands
Tel: +31-20-4853911
Fax: +31-20-4853203

R. The Finnish Society of Photogrammetry and Remote Sensing
P.O. Box 1200
FIN-02015 Hut- Espoo
Finland
Tel: +358-9-4513895
Fax: +358-9-465077

Q. General Command of Mapping
Marita Genei Komutanligi
Cebeci
TR-06100 Ankara
Turkey
Tel: +90-312-3638550
Fax: +90-312-3201495

B. Israeli Society of Photogrammetry and Remote Sensing
c/o 10 Hachsharat Haishuv
Street 75652 Rishon Lezion
Israel
Tel: +972-3-6231900
Fax: +972-3-5610866

S. ITC
Postbus 6
NL-7500 AA Enschede
The Netherlands
Tel: +31-53-4874444
Fax: +31-53-4874400

N. Kluwer Academic Publishers
Postbus 989
NL-3300 AZ Dordrecht
The Netherlands
Tel: +31-78-6392124
Fax: +31-78-6392323

R UBY - A a Magister Tours
Halaskargazi Cad. No: 321/1
TR-80260 Sisli Istanbul
Turkey
Tel: +90-212-2300000
Fax: +90-212-2484030

T. NIVR
Postbus 35
NL-2600 AA Delft
The Netherlands
Tel: +31-15-2787328

K. European Organisation for Experimental Photogrammetric Research (OEEPE)
Postbus 6
NL-7500 AA Enschede
The Netherlands
Tel: +31-53-4874339
Fax: +31-53-4874335

C. Società Italiana di Fotogrammetria e Topografia
c/o FAST
Piazzale Morandi n. 2
I-20121 Milano
Italy
Tel: +39-10-24431
Fax: +39-10-261400

F. United Kingdom National Committee for Photogrammetry & Remote Sensing
Hadley Court
Sidegate Haddington
EH41 4BZ, East Lothian
United Kingdom
Tel: +44-1620-823204

O. Vienna University of Technology
Gusshausstrasse 27-29 / 122
A-1040 Vienna
Austria
Tel: +43-15880-112201
Fax: +43-15880-112299

Amount of M²

Amount of M²	Nr. of Stands
9-12m²	27
13-20m²	16
21-35m²	12
36-50m²	7
51-75m²	3
75+m²	4

Exhibitors per Country

Belgium	3
Canada	8
Czech Republic	2
Germany	7
Finland	2
France	2
Italy	2
The Netherlands	10
Others	6
Russia	2
Spain	2
Switzerland	2
United Kingdom	6
United States of America	15

Exhibitors

ABC Software Developers
4172 Redwood Highway
San Rafael, CA 94903
USA
Tel.: +1-415-491-4408
Fax: +1-415-491-4823
Email: gcs@hooked.net
Website: www.abc-pc.com

Stand number: 222

ABC Software Developers delivers ABC32 and ACAD-Xpress, their Windows NT/98/95 of the popular ABC-PC software upgrade kit for all Analog & Analytical Stereoplotters and Software with driver interface into AutoCad R14 family of products. With the continuing demand for a reasonably priced software upgrade for stereoplotters and an interface to a data collection, ABC32 and Acad-Xpress is the answer you've been waiting for!

Aerodata Int. Surveys
Airport Business Centre
Luchthavenlei 7A, b10
B-2100 Deurne
Belgium
Tel.: +32-3-287-00-30
Fax: +32-3-287-00-38
Email: info@aerodata-surveys.com
Website: www.aerodata-surveys.com

Stand number: 110

Aerodata is specialised in the acquisition and processing of remote sensing data. Using state-of-the-art photographic equipment, we produce high quality aerial photographs which can be scanned on our photogrammetric scanner to be supplied as digital ortho-photographs. Aerodata also produces high definition DEMs (X, Y 1m, Z<0.15m) acquired with the latest airborne laser-scanning technology (TopoSys).

Co-exhibitors: InterStation Benelux B.V. and TopoSys

Aero-Sensing Radarsysteme GmbH
c/o DLR Oberpfaffenhofen
D-82234 Wessling
Germany
Tel.: +49-8153-281588
Fax: +49-8153-281543
Email: aerosensing@dlr.de
Website: www.op.dlr.de/aerosensing

Stand number: 270

Aero-Sensing Radarsysteme GmbH represents the latest know-how in international radar technology, especially determination of heights and generation of three-dimensional images, all independent of weather and daylight. The major scope of application is to supply the world with basic data for the development of infrastructures.

Agfa-Gevaert N.V.
Aerial Imaging
Septestraat 27
B-2640 Mortsel
Belgium
Tel.: +32-3-444-4272
Fax: +32-3-444-4296
Email: michel.schots.ms@belgium.agfa.com
Website: www.agfa.com

Stand number: 510

Confident that very fine grain high resolution films can provide the most economical and highest density information, Agfa shows two new recording films: Aviphot Pan 80 (B/W) and Aviphot Color X100 (unmasked) and two new copying films: Avitone P 1 p-HR and P 3 p-HR (B/W) and Avitone CP 70 (colour).

Applanix Corporation
85 Leek Crescent
Richmond Hill, Ontario, L4B 3B3
Canada
Tel.: +1-905-709-4600
Fax: +1-905-709-6027
Email: info@applanix.com
Website: www.applanix.com

Stand number: 630

Applanix develops, manufactures, sells and supports integrated inertial/GPS products for precise measurement of the position and orientation of moving platforms in dynamic environments. Applanix Position and Orientation Systems (POS) are used for robust positioning motion compensation and geocoding applications in the air, at sea and on land. POS products are designed to increase the productivity of surveying and mapping missions, and to improve the quality of the users' data.

Arcadis
Division Geo-Information
P.O. Box 7002
NL-6801 HA Arnhem
The Netherlands
Email: geo-info@arcadis.nl
Website: www.geo-information.com

Stand number: 340

The Geo-Information division is one of several. Here specialists are active in a variety of fields. Aerial-Photography, Photogrammetry, Mapping, Data Conversion, Land Information Services are the major fields. Not only in production but also consultant services and management are carried out by our competent and well-trained staff using state-of-the-art techniques.

Argoss BV
P.O. Box 61
NL-8325 ZH Vollenhove
The Netherlands
Tel.: +31-527-242299
Fax: +31-527-242016

Stand number: 540

Co-Exhibitor of Geomatics Businesspark

ASPRS: The Imaging and Geospatial Information Society
5410 Grosvenor Lane, Suite 210
Bethesda, MD 20814
USA
Tel.: +1-301-493-0290
Fax: +1-301-493-0208
Email: asprs@asprs.org
Website: www.asprs.org

Stand: A

Visit our stand and view the variety of publications on Photogrammetry, Remote Sensing, Spatial Data, and GIS Technologies. We have the latest copies of the ASPRS Manual of Remote Sensing, volumes 1-3. Take advantage of show discounts, receive a FREE copy of PE&RS, sign up as an ASPRS member.

Atlas Ltd.
Na Krivce 50
101 00 Praha 10
Czech Republic
Tel.: +420-2-766085
Fax: +420-2-767426
Email: dmt@atlasltd.cz
Website: www.atlasltd.cz

Stand number: 520

Atlas Ltd., is a Czech company active in software developing since 1990. The main product is Atlas DMT – Digital terrain model. Atlas has about 800 customers in the Czech Rep., Germany, Switzerland, Spain, Italy and other countries. A new product for digital photogrammetry, developed together with TopoL Software, is presented at ISPRS 2000.

Co-exhibitor of TopoL Software

Autometric, Inc.
7700 Boston Boulevard
Springfield, VA 22153
USA
Tel.: +1-703-923-4000
Fax: +1-703-923-4001
Email: sbarrett@autometric.com
Website: www.autometric.com

Stand number: 100

Autometric, Incorporated, is showing enhancements to their suite of spatial data production software. KDMS, a photogrammetric vector collection package, now on Windows NT/2000 has a new Graphical User Interface. SoftPlotter 3.0, has an enhanced sensor support, updated KDMS Tool, and improved correlation and orthophoto generation, including multi-threading and multi-processor support.

Capi Lux Vak
Basisweg 42
NL-1043 AP Amsterdam
The Netherlands
Tel.: +31-20-58-58-585
Fax: +31-20-58-58-500
Email: info@capi.nl
Website: www.capi.nl

Stand number: 210

Capi Lux Vak has more than thirty years experience in developing, dodge printing and printing of aerial films. At Capi Lux Vak we specialise in developing both 5" and 9" aerial films, but we can also handle further development stages such as dodge printing, enlargements and finishing.

Co-exhibitor of Scanatron

Centre for Geo-Information
Droevendaalsesteeg 3A, building 101
P.O. Box 47
NL-6700 AA Wageningen
The Netherlands
Tel.: +31-317-47-43-19
Fax: +31-317-41-90-00
Email: g.j.a.nieuwenhuis@alterra.wag-ur.nl
Website: ww.geo-informatie.nl

Stand number: 240

Geoinformation science activities in Wageningen are being integrated to allow adequate and innovative answers to scientific and policy questions. Wageningen University and the Agricultural Research Department (DLO) have therefore established a Centre for Geo-Information. This centre uses its network of expert advisers to provide university-level education and research on geoinformation science.

Chinese-Taipei Society of Photogrammetry and Remote Sensing
P.O. Box 93158
Taipei
Taiwan, P.R. China
Tel.: +886-2-86633468
Fax: +886-2-29317225

Stand: P

Compagnia Generale Ripreseaeree S.p.A.
Via Cremonese 35/a
I-43010 – Località Fontana – Parma
Italy
Tel.: +39 0521 994948
Fax: +39 0521 992803
Email: cgr.aeroporto@compagniageneraleripreseaeree.it
cgrit@tin.it
Website: www.compagniageneraleripreseaeree.it

Stand number: 280

Active since 1969 in "Special Surveys", leader in the Italian market, Compagnia Generale Ripreseaeree employs more than 140 technicians.
Our main activities and products are:

- Aerial Protogrammetric surveys (nine aircrafts, ten photogrammetric cameras)
- Remote sensing with Multispectral Infrared and Visible Imaging Spectrometer – 102 spectral channels with 2m radians definition.
- Topography
- Photogrammetry
- Analytical and Digital Mapping
- Rectified Photos and Digital Orthophotos
- Geographic information systems (GIS)
- Cartographic production and sale

UNI EN ISO 9001 certified

CREAF
See MiraMon

Creaso B.V.
Sutton 4
NL-7327 AB Apeldoorn
The Netherlands
Tel.: +31-55-534-4451
Fax: +31-55-534-4520
Email: info@nl.creaso.com
Website: www.creaso.com

Stand number: 228

Creaso is one of the leading companies for scientific and technical software solutions. The basis of its success is extremely high-performance software for data analysis, visualisation and cross-platform application development: IDL (Interactive Data Language).
Creaso and partner RSI together support more than 70,000 installations of its products world-wide. Strategic markets are astronomy, earth sciences, physics, medical imaging and test engineering.

Cymbolic Sciences / Gretag Imaging
#501-13231 Delf Place
Richmond, BC
Canada
Tel.: +1-604-232-2290
Fax: +1-604-273-2775
Email: info@cymbolic.com
Website: www.cymbolic.com

Stand number: 500

Cymbolic Sciences, a Gretag Imaging company, offers wide format photo printers and wide format inkjet printers that provide high-resolution output for geographic, cartographic and land management services. LightJetRS wide format printers incorporate three laser technology to produce a precise, electronically controlled light source which

places pixels with exacting specifications of geometry and accuracy on photographic media.

Cyra Technologies
8000 Capwell Drive
Oakland, CA 94621

USA
Tel.: +1-510-633-5000
Fax: +1-510-633-5009
Email: info@cyra.com
Website: www.cyra.com

Stand number: 400

Cyra Technologies, Inc. based in Oakland, California, will demonstrate its advanced Cyrax 3D Laser system. The system, consisting of a long-range 3D laser scanner (100 meters >6mm accuracy) and Cyra software that turns scans into CAD models, is used by large engineering companies serving the civil and plant design markets.

Delphi2 - Creative Technologies
See Definiens AG

DAT/EM Systems International
8240 Sandlewood Place, Suite 101
Anchorage, AK 99507
USA
Tel.: +1-907-522-3681
Fax: +1-907-522-3688
Email: sales@datem.com
Website: www.datem.com/

Stand number: 470

DAT/EM develops photogrammetric solutions to increase mapping efficiency. We employ open communication, product feedback and straightforward business relations. DAT/EM continues to enhance its product line, based not only on years of photogrammetric development experience but, more importantly, on feedback from clients who deliver solutions everyday to their customers.

Datron/Transco Inc.
200 West Los Angeles Avenue
Simi Valley, CA 93065-1650
USA
Tel.: +1-805-584-1717
Fax: +1-805-526-3690
Email: info-request@dtsi.com
Website: www.dtsi.com

Stand number: 242

Serving markets world-wide with antennas and products for telemetry, satellite communications and Remote Sensing Satellite (RSS) data acquisition/control/processing. Complete RSS Ground Station services include design, manufacture, upgrade and integration. Our state-of-the-art ground, transportable, and shipboard systems meet the toughest environmental/reliability standards, while open architecture permits flexible configuration to meet exact customer requirements.

Definiens AG
Rindermarkt 7
D-80331 Munich
Germany
Tel.: +49-89-2311-800
Fax: +49-89-2311-8080
Email: eCognition@definiens.com
Website: www.definiens.com

Stand number: 390

eCognition – object-oriented multiscale image analysis, bridging Remote Sensing and GIS
- multiscale image segmentation
- semantic fuzzy classification
- knowledge-based segmentation
- analysis of VHR-& radar data
- multisource data fusion
- integration of RS/GIS
- automation of analysis processes
- integrated system with intuitive user interface

Delft University of Technology
Faculty of Civil Engineering and Geosciences
Section Photogrammetry and Remote Sensing
Thijsseweg 11
NL-2629 JA Delft
The Netherlands
Tel.: +31-15-2781701
Fax: +31-15-2782745
Email: frs@geo.tudelft.nl
Website: www.geo.tudelft.nl/frs/

Stand: J

The Photogrammetry and Remote Sensing Section develops efficient methods for measurements in digital images and the acquisition of digital elevation models. Research focuses on the semi-automatic interpretation of digital aerial imagery, measurements in close-range images using object models and the analysis and processing of data obtained by airborne laser altimetry.

DVP Geomatic Systems Inc.
8389, ave. sous-le-vent
Charny, PQ
G6X 1K7
Canada
Tel.: +1-418-832-1037
Fax: +1-418-832-8911
Email: sales@dvp.ca
Website: www.dvp.ca

Stand number: 350

DVP-GS Inc., from Canada, develops and sells a complete

range of soft-copy photogrammetric tools designed to attain the combined goals of precision, productivity and savings in a Windows environment. DVP-GS software is distributed throughout the world. To date, more than six hundred licenses of DVP-GS's main software have been sold in 56 different countries.

Eastman Kodak Company
1447 St. Paul Street
Rochester, NY 14653
USA
Tel.: +1-716-253-1855
Fax: +1-716-253-0705
Email: aerial@kodak.com
Website: www.kodak.com

Stand number: 440

Kodak's Commercial & Government Systems division provides imaging solutions to government agencies and commercial customers. Examples include aerial photography, digital cameras, digital imaging systems for commercial imaging satellites, and optical systems for land and space telescopes. Images as Information. It's how Kodak helps customers make better business decisions - — everyday.

Egoltronics Corporation
86521 Arlington Boulevard, #210
Falls Church, VA 22042
USA
Tel.: +1-703-237-2501
Fax: +1-703-237-3151
Email: egol@erols.com
Website: www.Egoltronics.com

Stand number: 530

Egoltronics Corporation, successor to LogEtronics, uses the microprocessor-controlled Multidodge system on Mark V Contact Printers and 1010 Enlargers. The Mark V is the only microprocessor-controlled aerial printer on the market and has a variety of accessories, including automatic roll film and paper transports, enlargement and reduction.

EGS Ltd.
Lazaretni lla
615 00 Brno
Czech Republic
Tel.: +420-5-452-41029
Fax: +420-5-452-12061

Stand number: 320

Co-exhibitor of Geodis

Elsevier Science
Molenwerf 1
NL-1014 AG Amsterdam
The Netherlands
Tel.: +31-20-485-3757
Fax: +31-20-485-3432
Email: nlinfo-f@elsevier.nl
Website: www.elsevier.com/locate/earth

Stand: H

On display will be a wide range of international journals in the field of Remote Sensing and Photogrammetry, including ISPRS Journal of Photogrammetry and Remote Sensing. Specimen journal copies are available. Books will be sold at 20% discount. Detailed information on all Elsevier Science publications can be found on our website.

EOWorks
C/o Vito
Boeretang 200
B-2400 Mol
Belgium
Tel.: +32-14-33-68-58
Fax: +32-14-32-27-95
Email: dirk.fransaer@eoworks.com
Website: www.eoworks.com

Stand number: 227

EOWorks is an initiative of Vito to develop the market for Remote Sensing of the environment through the development of services, end-to-end monitoring systems, applied-oriented contract research and networking with other research groups and companies. EOWorks is distributor of

- Vito developed software and applications like NOAA-Chain, C-Fix, etc.
- different satellites data i.e. SPOT VEGETATION, SPOT High-resolution, etc.

ERDAS Inc.
Telford House
Fulbourn, CB1 5HB
United Kingdom
Tel.: +44-1223-880-802
Fax: +44-1223-880-160

Stand number: 620

ERDAS Inc, the leading supplier of geographic imaging software, will be launching Stereo Analyst(r) at ISPRS. This ground-breaking Windows-based stereo feature extraction system provides tools for the accurate collection, interpretation and visualisation of 3D geographic information from stereo imagery. ERDAS will also be demonstrating IMAGINE OrthoBASE, a Windows-based digital photogrammetric product providing the most streamlined and cost-effective solution for ortho-correcting imagery.

The European Space Agency (ESA)
ESA Head Office
ESA ESRIN
8,10 rue Mario Nikis
Via Galileo Galilei snc
F-75738 Paris, Cedex 15
France
Website: www.esrin.esa.it

Stand number: 170

ESA is a European intergovernmental organisation. The fifteen* Member States participate in programmes, including Earth Observation, Telecommunication, satellite navigation, launcher development, manned space flight, and research in microgravity environment.
ESA is defining and coordinating a new space strategy based on the pursuit of scientific knowledge, enhancing quality of life, successful European co-operation and global market competition to promote European Industry.
ESA's future "Living Planet" strategy for the new millennium involves two types of Earth observation mission: Scientific research missions - Earth Explorer, and application mission for dedicated user needs - Earth watch.

(*) An agreement with Portugal has been signed and will come into effect by July 2000.

ESPA Systems Ltd.
Tekniikantie 12
FIN-02150 Espoo
Finland
Tel.: +358-9-2517-3466
Email: espa@espasystems.fi
Website: www.espasystems.fi

Stand number: 420

ESPA Systems Ltd. is a software company that focuses on digital aerial photogrammetry, developing applications that enable efficient utilisation of digital aerial images. ESPA software includes five packages: EspaKernel, EspaBlock, EspaOrtho, EspaGate and EspaCity. ESPA software offers a direct 3-D data flow to AutoCAD, Microstation and Smallworld environments.

ESRI
380 New York Street
Redlands, CA 92373
USA
Tel.: +1-909-793-2853
Fax: +1-909-793-5953
Email: Info@esri.com
Website: www.esri.com

Stand number: 622

With annual sales of more than $340 million, ESRI remains the world leader in the GIS software industry. Our business involves the development and support of GIS software for all types of organisations—from the one-person office to multinational corporations to innovative Internet GIS solutions. Products: ArcInfo, ArcView, ArcIMS, ArcSDE.

FH Bielefeld
University of Applied Sciences
Faculty of Architecture and Civil Engineering
Artilleriestrasse 9
D-32427 Minden
Germany
Email: gpomaska@fhzinfo.fh-bielefeld.de
Website: www.imagefact.de

Stand: D

Close-range photogrammetry in cultural heritage preservation with respect to modern technology like digital imaging, 3D modelling and scene description as applied to the reconstruction of the appearance of Schloss Herborn is shown. The location of the castle can be detected in a VRML description of the city. Software packages for photogrammetric evaluation, modelling and description of 3D worlds will be presented.

Finnish Society of Photogrammetry and Remote Sensing
Institute of Photogrammetry and Remote Sensing
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FIN-02015 Hut- Espoo
Finland
Tel.: +358-9-4513895
Fax: +358-9-465077

Stand: R

FoMos PLC
47, Leningradsky Prospekt
Moscow, 125167
Russia
Tel.: +7-95-157-7264
Fax: +7-501-198-7709
Email: fomos.ru@g23.relcom.ru
Website: www.fomos.ru

Stand number: 590

Manufacturing and scientific association FoMos Public Limited Company is the Russian enterprise dealing with the development and manufacture of high-quality photographic materials and chemicals. It presents on exhibition high quality black & white, false colour and colour aerial films for day and night photography from various altitudes and from space, as well as the chemistry for their processing.

GeoCam GmbH
Berlin
Germany

Stand number: 140

Co-exhibitor of ISTAR

Geodan Geodesie BV
Koningslaan 35
NL-1075 AB Amsterdam
The Netherlands
Tel.: +31-20-5730-330
Fax: +31-20-5730-333
Email: info.geodesie@geodan.nl
Website: www.geodan.nl

Stand number: 580

Geodan Geodesie provides GIS and innovative airborne remote sensing products world-wide. At our stand we present:
- 3D digital imagedata products acquired with the HRSC digital photogrammetric camerasystem from DLR.
- Examples of Airborne Laserscanning projects performed world-wide.
- 3D imagedata products via the Internet. Come and meet our international partners AAMGeodan and DLR.

Geodis Brno, Ltd.
Lazaretní 11A
615 00 Brno
Czech Republic
Tel.: +420-5-45212040
Fax: +420-5-45212061
Email: geodis@geodis.cz
Website: www.geodis.cz

Stand number: 320

Geodis Brno, Ltd. provides services in ground and aerial photogrammetry. The photogrammetry department owns the latest digital technology used by a qualified and experienced team of photogrammetry experts. Standard outputs: aerial photography (RMKTOP), photo processing, analytical aerial triangulation (MATCHAT), digital terrain models (MATCHT), digital orthophotography (ORTHOPRO, ERDAS) photogrammetric mapping (10 IMAGESTATIONS).

Co-exhibitor: EGS ltd.

Geomatics Business Park
P.O. Box 49
NL-8316 ZG Marknesse
The Netherlands
Tel.: +31-527-242-335
Fax: +31-527-242-336
Email: info@geomaticapark.nl
Website: www.geomaticapark.nl

Stand number: 540

The Geomatics Business Park is a recently established science park for companies working in the geomatics business. Some individual companies will show their products and services but also a agricultural production chain and co-operation with the National Aerospace Laboratory (NLR).

Co-exhibitors: Argos B.V., Geoserve B.V., Synoptics B.V.

Geomatics
Earth Sciences / Sciences de la Terre
NRCan/RNCan
500-615,rue Booth Street
Ottawa, Ontario K1A OE9
Canada
Tel.: +1-613-996-7643
Fax: +1-613-995-8737
Email: geomatics.info@geocan.nrcan.gc.ca
Website: www.nrcan.gc.ca/ess

Stand number: 230

The Earth Sciences Sector of Natural Resources Canada is recognised nationally and internationally for its expertise in earth science knowledge and innovation.
Le Secteur de sciences de la Terre du Ministère des Ressources naturelles Canada est identifié nationalement et internationalement pour son expertise dans la connaissance et l'innovation des sciences de la Terre.

Geoserve B.V.
P.O. Box 81
NL-8325 ZH Vollenhove
The Netherlands
Tel.: +31 527 241010
Fax: +31 527 241011

Stand number: 540

Co-exhibitor of Geomatics Businesspark

GITC bv
P.O. Box 112
NL-8530 AC Lemmer
The Netherlands
Tel.: +31-514-561854
Fax: +31-514-563898
Email: mailbox@gitc.nl
Website: www.gitc.nl

Stand number: 226

GITC is an international publishing company with more than ten years experience in the international surveying and mapping fields of geomatics and hydrography.

Hansa Luftbild GmbH
Elbeskasse 5
D-48145 Münster
Germany
Tel.: +49-251-23300
Fax: +49-251-2330112

Stand number: 640

Co-exhibitor of Z/I Imaging

ICC- Institut Cartografic de Catalunya
Parc de Montjuïc
ESP-08038 Barcelona
Spain
Tel.: +34-93-567-15-00
Fax: +34-93-567-15-67
Email: scanas@icc.es
Website: www.icc.es

Stand number: 570

The main objective of the Institut Cartogràfic de Catalunya (ICC) is to carry out the necessary technical work required for the development and production of cartographic, geological and geophysical information, and programmes for the development and preparation of thematic cartography for the evaluation of available resources and environmental problems.

IGI – Ingenieur-Gesellschaft für Interfaces mbH
Langenauerstrasse 46
D-57223 Kreuztal
Germany

Stand number: 180

IGI is specialised in the design and development of guidance, positioning and sensor management systems for aerial flight missions. These systems are based on GPS or DGPS positioning, together with aircraft Directional Gyro information. The main products are Standard CCNS4, AEROcontrol, WinMP, AEROoffice.

INPE – Instituto Nacional de Pesquisas Espaciais
Av. dos Astronautas, 1758 – Jardim da Granja
12.227-010 – São José dos Campos – SP
Brazil
Tel.: +55-12-345-6029
Fax: +55-12-341-2077
Website: www.inpe.br

Stand number: 515

The Instituto Nacional de Pesquisas Espaciais (INPE), a governmental civilian organisation, develops research in Space and Atmospheric Sciences, Remote Sensing, Meteorology and Space Technology and Engineering. INPE also provides numerical weather and climate prediction products on an operational basis and develops space systems. Many of these activities are done in co-operation with international organisations.

Inpho
Smaragdweg 1
D-70174 Stuttgart
Germany
Tel.: +49-711-228810
Fax: +49-711-2288111
Email: inpho@inpho.de
Website: www.inpho.de

Stand number: 445

Inpho offers world-wide leading technologies and products in digital photogrammetry, sensor orientation and digital terrain modelling. The well-known products MATCH-AT, MATCH-T, OrthoVista and SCOP are the basis of Inpho's new complete production system. All processes, from aerial triangulation to orthophoto mosaicking, are fully automated. Efficient tools for analysis and stereo-editing of AT and DTMs are available.

Intermap Technologies Corporation
2 Gurdwara Road, Suite 200
Ottawa, K2E 1A2
Canada
Tel.: +1-61- 226-5442
Fax: +1-613-226-5529
Email: info@intermaptechnologies.com
Website: www.intermaptechnolgies.com

Stand number: 130

Intermap Technologies is a multi-national digital mapping company focused on providing Digital Elevation Models (DEMs), Ortho-Rectified Imagery (ORIs) and thematic map products to a wide range of private and public sector markets. A key component of Intermap's success is its STAR-3i interferometric radar mapping system that generates high accuracy DEMs and high resolution ORIs simultaneously. STAR-3i is a technological breakthrough in the mapping industry.

International Cartographic Association - ICA
P.O. Box 80115
NL-3508 TC Utrecht
The Netherlands
Tel.: +31-30-2540604
Fax: +31-30-2531385
Email: f.ormeling@geog.uu.nl
Website: www.icaci.org

Stand: I

ICA is the world authoritative body for cartography, the discipline dealing with conceiving, producing, disseminating and studying maps. Its mission is to promote the discipline and profession of cartography in international contexts. It works together with (inter)national governmental and commercial bodies and other international scientific societies to achieve these aims.

International Institute for Aerospace Survey and Earth Sciences - ITC
Hengelosestraat 99
P.O. Box 6
NL-7500 AA Enschede
The Netherlands
Tel.: +31-53-4874-444
Fax: +31-53-4874-400
Email: pr@itc.nl
Website: www.itc.nl

Stand: S

ITC focuses on Education, Research and Consulting in the field of geoinformation processing for sustainable natural resources management, mainly in developing countries. ITC's core business is the integration of spatial and temporal data using remote sensing and GIS. The applications vary broadly, from mapping groundwater resources to planning infrastructural works.

InterStation Benelux B.V.
Nikkelstraat 37-39
P.O. Box 3303
NL-4800 DH Breda
The Netherlands
Tel.: +31-76-542-39-00
Fax: +31-76-542-39-10
Email: sales@interstation.nl
Websites: www.interstation.nl
www.mapinfo.nl

Stand number: 110

Business Solution Centre for CAD-, GIS-, and Mapping solutions
Keywords: Quality & Satisfied customer.
A tailored mapping solution using the latest technologies of Intra- & Internet, desktop/server products plus the right Data. Besides branch solutions for telecom, government, retail, transport, banking & assurance, also specialised in tailor-made solutions for marketing departments.

Co-exhibitor of Aerodata

ISM Europe S.A.
Avda. J. V. Foix 72, Local 5B
ESP-08034 Barcelona
Spain
Tel.: +34-932-801-050
Fax: +34-932-801-950
Email: info@ismeurope.com
Website: www.ismeurope.com

Stand number: 670

ISM's objective is to provide fully functional and low-cost, high-performance digital systems to assist clients to achieve cost-effective digital mapping. All the ISM photogrammetric software is PC-based and running with MicroStation and Windows NT. The ISM software includes: autocorrelation for aerotriangulation and DTM generation, mapping, orthophoto, surface modelling, etc.

Israeli Society of Photogrammetry and Remote Sensing - ILSPRS
Halperin - Felus Co.
10, Hacsharat Hayeshuv St.
New Industrial Area
Rishon Le Zion, 75612
Israel
Tel.: +972-3-962-7082
Fax: +972-3-962-6874
Email: felus@shani.net

Stand: B

ILSPRS presents a general survey of the photogrammetric and remote sensing activities in Israel.
The presentation will include the activities of the ILSPRS, the Survey of Israel and a number of private companies. The research and educational activities at six universities will be briefly presented.

ISTAR
2600 route des Crêtes
P.O. Box 282
F-06905 Sophia Antipolis
France
Tel.: +33-4-97-23-23-23
Fax: +33-4-93-95-83-29
Email: mktg@istar.fr
Website: www.istar.com

Stand number: 140

ISTAR is the world's premier cartography company, specialising in the production of digital geographic databases specifically created for design, optimisation and expansion of wireless telecommunication networks. ISTAR has processed satellite and aerial images covering more than 10,000,000 sq. km of the earth's surface. ISTAR's online HotSpots catalogue currently contains 2,000 cities and regions in one hundred countries and is updated daily.

Co-exhibitors: GeoCam GmbH, Matra Systems & Information

John Wiley & Sons Ltd.
Baffins Lane
Chichester, West Sussex
PO19 1UD
United Kingdom
Tel.: +44-1243-770373
Fax: +44-1243-770460
Email: adugan@wiley.co.uk
Website: www.wiley.co.uk

Stand number: 480

Visit the Wiley stand to view their range of books on GIS and Remote Sensing. Highlights include:
- Advances in Remote Sensing and GIS Analysis
- Fundamentals of GIS
- Remote Sensing and Image Interpretation

Kadaster International
Postbus 9046
NL-7300 GH Apeldoorn
The Netherlands
Tel.: +31-55-5285229
Fax: +31-55-5285235
Email: brb@kadaster.nl
Website: www.kadaster.nl

Stand number: 250

The work of Kadaster International concerns providing advice on cadastral projects, as well as canvassing and implementing such projects in countries where the cadastral function is either insufficiently developed or completely undeveloped.
For more information you can visit our stand (number 250) at the exhibition.

Co-exhibitors: NCGI, OmniSTAR BV, Oranjewoud, The Survey Department, Topografische Dienst Nederland

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KLT Associates, Inc.
200 Corporate Place
Peabody, MA 01960
USA
Tel.: +1-978-536-9100
Fax: +1-978-536-9110
Email: sales@kltassoc.com
Website: www.kltassoc.com

Stand number: 600

Photogrammetric Software, Windows NT-based KLT/ATLAS, for data collection; ATLAS/TIN for contouring, volumes, automatic terrain modelling; ATLAS/DSP for stereo viewing; ATLAS/ORTHO for creation and mosaicking; ATLAS/AT for triangulation; solves today's requirements for fully functional digital photogrammetry. KLT softcopy products fit easily into any organisation's current work-flow. KLT Solutions at work.

Kluwer Academic Publishers
P.O. Box 989
NL-3300 AZ Dordrecht
The Netherlands
Tel.: +31-78-639-2392
Fax: +31-78-639-2254
Email: Services@wkap.nl
Website: www.wkap.nl

Stand: N

Kluwer Academic Publishers is a leading professional publishing company and one of the world's most prominent research level/academic publishers specialising in numerous fields within science, technology, medicine, humanities and social sciences. KAP incorporates the science and technology publishing programmes of Chapman and Hall, Plenum Publishing and Kluwer Law, specialising in international law and human rights.

Laser-Scan Ltd.
Cambridge Science Park
Milton Road
Cambridge CB4 0FY
United Kingdom
Tel.: +44-1223-420414
Fax: +44-1223-420044
Email: markc@lsl.co.uk
Website: www.laser-scan.com

Stand number: 565

Laser-Scan's active object geospatial systems lead the world in mapping, charting, photogrammetry, toolkits and Internet content delivery. Laser-Scan technology brings true intelligence to thin applications, making possible the production of many customised, task-specific products from one centralised data store.

Leica Geosystems AG
Heinrich-Wild-Strasse
CH-9435 Heerbrugg
Switzerland
Tel.: +41-71-727-31-31
Website: www.leica-geosystems.com

Stand number: 624

Leica Geosystems offer new possibilities for measuring, defining and monitoring our living environment.
They provide powerful GIS/LIS solutions for transforming and analysing all data with speed, flexibility and accuracy into maps, 3D-drawings, orthophotos and reports. A visit to the Leica Geosystems stand no. 624 is highly recommended.

LH Systems, LLC
10965 Via Frontera
San Diego, CA 92127-1703
USA
Tel.: +1-858-675-3335
Fax: +1-858-675-3345
Email: info@lh-systems.com
Website: www.lh-systems.com

Stand number: 632

Leading world-wide supplier of aerial sensor and photogrammetric systems: RC30; ASCOT; PAV30; Flykin Suite+; brand-new ADS40 Airborne Digital Sensor; SD2000/3000; DSW500, SOCET SET®; ORIMA; PRO600. Joint venture of Leica Geosystems and BAE SYSTEMS Mission Solutions.
Offices in San Diego, Denver, Heerbrugg, London, Paris, Berlin, Madrid, Singapore, Tokyo and Sydney.

Lockheed Martin
Lockheed Martin Management & Data Systems
71 Buckingham Avenue
Slough, Berkshire SL1 4PN
United Kingdom
Tel.: +44-1753-696488
Fax: +44-1752-696218
Email: stephen.l.vanscoyk@lmco.com
Website: www.lmco.com

Stand number: 560

Lockheed Martin Space Systems Company is one of the major operating units of Lockheed Martin Corporation. Space Systems designs, develops, tests and manufactures a variety of advanced technology systems for space and defence. Chief products include space launch sys-

tems, ground systems, interplanetary spacecraft, other spacecraft for commercial and government customers, fleet ballistic missiles, missile defence systems, and imagery and geospatial solutions. At this year's ISPRS we will be showcasing total imagery management solutions and products (GeoSpatial Analyst, Intelligent Library System, palitt, PIPs, WebMap Analyst.)

MacDonald Dettwiler
13800 Commerce Parkway
Richmond, BC, V6V 2J3
Canada
Tel.: +1-604-278-3411
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Email: sales@mda.ca
Website: www.mda.ca

Stand number: 220

MacDonald Dettwiler is one of the world's leading suppliers of Earth Observation systems, data, and services. Our systems collect, archive, process and distribute commercial remote sensing data in over thirty ground stations worldwide. Through our subsidiaries, RADARSAT International and Triathlon Mapping, we are also leading suppliers of RADARSAT, Landsat, SPOT, IRS and ERS products, information solutions and mapping services.

Matra Systemes & Information
Les Quadrants
3 Avenue du Centre
B.P. 235
F-78052 St. Quentin en Yvelines
France
Tel.: +33-1-34637949
Fax: +33-1-34637920

Stand number: 140

Co-exhibitor of ISTAR

MiraMon - CREAF
Edifici C. Universitat Autònoma de Barcelona
ESP-08193 Bellaterra, Catalonia
Spain
Tel.: +34-93-581-1312
Email: contacte@miramon.uab.es
Website: www.creaf.uab.es/miramon

Stand: M

MiraMon ("WorldWatcher") is a complete raster&vector GIS and Remote Sensing software. Because of its high capabilities and low price (it costs as much as a university manual), MiraMon is ideal for management, research or teaching. It allows orthophoto generation as well as building true topology, even in very large and complex vector layers.

NASA Earth Observing System
NASA Goddard Space Flight Center
Greenbelt, MA 20771
USA
Tel.: +1-301-614-5560
Fax: +1-301-614-6530
Email: winnie.humberson@gsfc.nasa.gov
Website: eospso.gsfc.nasa.gov

Stand number: 360

In 1991, NASA launched its Earth Science Enterprise Program to study the Earth. Using satellites and information from ground-based sources, and working together with nations of the world, we hope to im-prove our knowledge of the Earth system and to use that knowledge for the benefit of future generations.

National Aerospace Laboratory (NLR)
P.O. Box 153
NL-8300 AD Emmeloord
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Tel.: +31-527-248-257
Fax: +31-527-248-210
Email: info@nlr.nl
Website: www.nlr.nl

Stand number: 550

The Remote Sensing department of the NLR carries out a broad range of Remote Sensing activities such as: data reception (through mobile receiving station RAPIDS), data distribution (IKONOS, LANDSAT, IRS, and more) and development of infrastructure (NEONET, RAPIDS).

National Clearinghouse Geo-Informatie - NCGI
P.O. Box 1442
NL-7301 BR Apeldoorn
The Netherlands
Tel.: +31-55-5285869
Fax: +31-55-5285803
Email: clhouse@euronet.nl

Stand number: 250

The National Clearinghouse Geo-Informatie (NCGI) is the market place for geo-information. The goal of the NCGI is to make existing geo-information in the Netherlands transparant, digital and easily accessible as metadator and for use in Internet-technology. Together with the providers of metadata, the NCGI takes care of the distribution.
The NCGI was founded by several organisations, including the Dutch Government. Thus far, the data providers have been mainly Government organisations and they offered a minimum of 1,500 records, which is growing every day.

Co-exhibitor of Kadaster

NESS Technologies – Telecom and Systems Group
P.O. Box 58180
Tel-Aviv 61581
Israel
Tel.: +972-3-5483514
Fax: +972-3-6499990
Email: real-time@atl.co.il
Website: www.atl.co.il

Stand number: 300

NESS Technologies –TSG, formerly ATL, will be exhibiting their latest military photography intelligence system, MPHIS, which was developed for modern Air Forces which require accurate photographic intelligence aids for mission planning, operational command and control, 3-D mission rehearsal and pilot target identification. MPHIS is a fully computerised system for processing, storing, retrieving, and disseminating military photographic intelligence material.

Netherlands Remote Sensing Board (BCRS)
Kanaalweg 4
P.O. Box 5023
NL-2600 GA Delft
The Netherlands
Tel.: +31-15-2691111
Fax: +31-15-2618962
Email: p.b.bcrs@mdi.rws.minvenw.nl
Website: www.minvenw.nl/rws/mdi/bcrs

Stand number: 450

The Netherlands Remote Sensing Board (BCRS) stimulates the use of remote sensing applications by government and private sector. With financial support, several organisations have executed projects in the field of meteorology and oceanography, tidal and inland waters, land-use planning, agriculture and forestry, nature management and climate and environmental research.

Netherlands Agency for Aerospace Programmes (NIVR)
Kluyverweg 1
NL-2629 HS Delft
The Netherlands
Tel.: +31-15-278-8025
Fax: +31-15-262-3096
Email: info@nivr.nl

Stand number: T

NIVR, founded in 1946, is a semi-governmental organisation to promote aerospace activities in the Netherlands. NIVR advises the Dutch government on policy aspects, in particular on aircraft and space development programmes. It initiates and monitors national aerospace research, technology and development projects. NIVR acts as a national space agency and it participates in the space consultation process. NIVR provides delegates for the Dutch delegation to the ESA council, boards and committees, and to the Eumetsat council and groups.

NRSC
Arthur Street
Barwell
Leicestershire, LE9 8GZ
United Kingdom
Tel.: +44-385-735981
Fax: +44-1455-841785
Email: j.murtagh@nrsc.co.uk
Website: www.nrsc.co.uk

Stand number: 165

NRSC is the UK's leading supplier of Earth Observation Data. Using satellite and airborne imagery NRSC provides a wide range of products and consultation services, and has a unique capability for producing high-resolution map accurate digital datasets. NRSC is constantly developing its technological capabilities in order to meet the growing needs of its international client base.

European Organisation for Experimental Photogrammetric Research (OEEPE)
P.O. Box 6
NL-7500 AA Enschede
The Netherlands
Tel.: +31-53-4874339
Fax: +31-53-4874335
Email: paresi@itc.nl
Website: www.oeepe.org

Stand: K

The OEEPE is the European research platform for National Mapping Agencies (NMAs), academic Institutions, private sector, industry and user's groups, on issues related to the implementation of technology developments in view of optimising the provision (collection, processing, storage, maintenance, visualisation, dissemination and use) of core data (data serving as a spatial framework for organisations involved in monitoring, management and development) in a Geoinformation Infrastructure (GII) context.

OmniSTAR BV
P.O.Box 113
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The Netherlands
Tel.: +31-70-3170900
Fax: +31-70-3170919
Email: dgps@omnistar.nl
Website: www.omnistar.nl

Stand number: 250

OmniSTAR BV is the world's market leader in the provision of satellite-delivered Differential GPS corrections and the design and development of Differential GPS technology. OmniSTAR services and products are currently used for highly accurate, real-time positioning in the agriculture, GIS, aviation, mining and civil engineering industries.

Co-exhibitor of Kadaster

Optech Inc.
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Toronto, Ontario M3J 2Z9
Canada
Tel.: +1-416-661-5904
Fax: +1-416-661-4168
Email: dainav@optech.on.ca
Website: www.optech.on.ca

Stand number: 410

Optech is the industry leader in the emerging field of airborne laser radars for digital terrain mapping and water depth measurement. Our systems use time-of-flight ranging to produce dense, rapid and highly accurate measurements of the terrain elevation or water bottom topography. In recent years we have developed several very sophisticated airborne scanning laser radars, and we continue to strengthen our expertise in this area.

Oranjewoud
P.O. Box 24
NL-8440 AA Heerenveen
The Netherlands
Tel.: +31-513-634505
Fax: +31-513-683353

Stand number: 250

Oranjewoud is an independent consulting firm, offering a wide range of high-quality services in the field of infrastructure, nature and landscape recreation, environment, building and real estate. The firm was founded in 1951 and has gone through a rapid expansion by taking advantage of new developments and changes in both society and technology. Oranjewoud has a permanent staff of over 1,800 employees and handles more than 10,000 projects per year in the Netherlands and abroad. In its line of business, Oranjewoud is one of the leading consulting firms in the Netherlands.

Co-exhibitor of Kadaster

Orbimage
21700 Atlantic Blvd
Dulles, VA 20166
USA
Tel.: +1-703-406-5800
Fax: +1-703-404-8061
Email: info@orbimage.com
Website: www.orbimage.com

Stand number: 567

Orbimage is a leading global provider of satellite-delivered Earth imagery services based on a constellation of five digital remote sensing satellites; OrbView-1, OrbView-2, OrbView-3, OrbView-4 and RadarSat-2. Orbimage operates an integrated image receiving, processing and distribution system which provides timely delivery of valuable and affordable remote sensing information.

Co-Exhibitor of Spot Image

PCI Geomatics
Headquarters:
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Richmond Hill
Ontario, L4B 1M5
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Tel.: +1-905-764-0614
Fax: +1-905-764-9604
Email: info@pcigeomatics.com
Website: www.pcigeomatics.com
Geomatica website: www.pcigeomatics.com/product_ind/geomaticaindex.html

Stand number: 190

PCI Geomatics has supplied the world with leading-edge geomatics software, customer support and service since 1982. Now the makers of OrthoEngine and EASI/PACE are introducing a revolutionary new geomatics software solution: GEOMATICA. After several years of development, this affordable and easy-to-use geospatial technology elevates the standard for highly integrated remote sensing, GIS, cartography and photogrammetry solutions.

Reinka Im- en Export BV
Essendonk 7a
NL-4824 DA Breda
The Netherlands
Tel.: +31-76-5423020
Fax: +31-76-5423120
Email: info@reinka.nl
Website: www.reinka.nl

Stand number: 370

Reinka B.V. is the representative of RolleiMetric for the Netherlands and Belgium. Mr. Paul Hertoghs will be present at the RolleiMetric stand during the ISPRS Congress.

Co-exhibitor of Rollei

Rollei Fototechnic GmbH
RolleiMetric Dept.
Salzdahlumer Str. 196
D-38126 Braunschweig
Germany
Tel.: +49-5-31-6-80-02-22
Fax: +49-5-31-6-80-03-03
Email: info@rolleimetric.de
Website: www.rolleimetric.de

Stand number: 370

RolleiMetric, the expert in close-range photogrammetry, presents the digital SLR camera Rollei d 7 metric. This megapixel camera is especially designed for metric applications. Its high mechanical stability, factory calibration, possibility for storing data in any storage media make it the ideal tool for documenting events or producing digital mosaics.

Co-exhibitor: Reinka

Scanatron AG
Obfelderstrasse 31
CH-8910 Affoltern a.A.
Switzerland
Tel.: +41-1-76-13-007
Fax: +41-1-76-19-040
Email: sam.visch@scanatron.com/scanatronsv@zonnet.nl
Website: www.scanatron.com

Stand number: 210

Scanatron: world leader in automatic aerial ECM-dodging printing in B/W and colour, with manual and full automatic roll-to-roll transport systems.

Co-exhibitor: Capi Lux Vak

SDS
3, Hope St.
Bo'ness, West Lothian
Scotland EH51 0AA
United Kingdom
Email: webmaster@sds.co.uk
Website: www.sds.co.uk

Stand number: 150

SDS is the European Sales/Support Centre for Supresoft's VirtuoZo Digital Photogrammetric System.
SDS is the European Sales/Support Centre for the Vexcel Imaging Corporation's range of high precision Photogrammetric Scanners.
SDS is the developer of the VideoRoute GIS Geo-referenced Video System.
All systems are being demonstrated at the SDS stand.

Co-exhibitors: Supresoft and Vexcel Imaging Corporation

Sensor Systems, Inc.
103A Carpenter Drive
Sterling, VA 20164-4423
USA
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Fax: +1-703-437-0039
Email: rvsales@sensor.com
Website: www.sensor.com

Stand number: 460

Sensor Systems is the developer of industry-leading applications for image visualisation and analysis for remote sensing and medical imaging. Our RemoteView family of products is in use by government and commercial installations around the world and is the premier application for the exploitation of high-resolution satellite and other forms of remotely sensed imagery.

Società Italiana di Fotogrammetria e Topografia
c/o FAST
Piazzale Morandi n. 2
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Stand: C

Sovinformsputnik
47, Leningradsky Prospekt
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Russia
Tel.: +7-095-943-0757
Fax: +7-095-943-0585
Email: common@iasis.msk.su
Website: www.sovinformsputnik.com

Stand number: 120

Activities: satellite surveys, processing and distribution of remote sensing (RS) data, preparing of GIS data, development and distribution of photogrammetric software, complex projects.
Services: accepting of orders for satellite survey, production of digital maps, orthoimages, DEM, GIS layers, spatial 3D animation, consultations and training in modern mapping and RS technologies.

Space Imaging
International Department
12076 Grant Street
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Fax: +1-303-254-2217

Stand number: 660

Space Imaging's vision is to be a twenty-first century information company leading the growth of a new global earth information industry, which will use map-accurate and information-rich imagery to revolutionise the way people conduct business.

Spot Image S.A.
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F-31030 Toulouse Cedex 4
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Tel.: +33 5 62 194040
Fax: +33 5 62 194011
Website: www.spotimage.fr

Stand number: 567

Spot Image is the world's leading supplier of satellite-based geographic information, distributing data and services from the three SPOT satellites, the ERS and Radarsat radar satellites and, in 2001, the Orbview-3 and -4 VHR satellites. Spot Image offers a full operational service, from

image acquisition to processing and commercial distribution supported by four subsidiaries and a network of over eighty distributors.

Co-Exhibitor: Orbimage

STAR - Scientific Technology Applied Research Inc.
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USA
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Fax: +1-352-371-3128
Email: stargps@bellsouth.net
Website: www.caliterra.se/star

Stand number: 200

The carrier phase Mk-I GPS/datalogger system with digital and analogue interfaces comes in pocketsize field and heavy industry versions. A laser rangefinder gives the Mk-I remote coordinate determination capability.
STAR Inc. developed from a University of Florida research group that does instrument development and construction for NASA and ESA.

State scientific production enterprise "Geosystem"
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21100, Vinnitsa
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Fax: +380-432-46-65-19
Email: geo@sovamua.com
Website: www.vinnitsa.com/geo

Stand number: 430

Our product range consists of the following products:
- Colour photogrammetric scanners "Delta"
- Digital photogrammetric workstations
- Analytical stereoplotters "Stereoanagraph"
- Software for mapping and cartography

Stora Enso Forest Consulting Oy Ltd.
Kuparintie 47
FIN-55100 Imatra
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Fax: +358-2046-24960
Email: ismo.hippi@storaenso.com
Website: www.storaenso.com/forestconsulting/eng/tools.html

Stand number: 310

EnsoMOSAIC is a digital small-scale imagery system which produces georeferenced image mosaics. The whole EnsoMOSAIC process is digital, from image capturing to the creation of mosaics and DTM. Imaging is controlled by software that triggers the camera and labels the images with GPS coordinates. The Enso-MOSAIC image processing software semi automatically rectifies hundreds of images, applying bundle block adjustment, and joins them into a georeferenced mosaic.

Co-exhibitor: VTT Automation

Supresoft
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P.R. China
Email: market@supresoft.com
Website: www.supresoft.com

Stand number: 150

Supresoft is the company behind VirtuoZo. During the development of VirtuoZo our aim was to provide a flexible, no-nonsense, low-cost, Digital Photogrammetric System. We believe we have achieved with the latest release of VirtuoZo NT – a unique system that provides digital photogrammetry for all.

Co-exhibitor of SDS

The Survey Department
Directorate-General for Public Works and Water Management
Survey Department
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NL-2600 GA Delft
The Netherlands
Tel.: +31-152-691111
Fax: +31-152-618962

Stand number: 250

The Survey Department (SD) is the major consultant and information provider of the Dutch Ministry of Transport, Public Works and Water Management, in the fields of geo-information and information and communication technology. Two important products of the SD are the Actual Height model of the Netherlands (AHN) and the Amsterdam Ordnance Datum (NAP).

Co-exhibitor of Kadaster

Synoptics
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Stand number: 540

Co-exhibitor of Geomatics Businesspark

Taylor & Francis Ltd.
11, New Fetter Lane
London, EC4P 4EE
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Tel.: +44-20-7583-9855
Fax: +44-20-7842-2391
Website: www.tandf.co.uk

Stand number: 490

Building on two centuries' experience, Taylor & Francis has grown rapidly over the last two decades to become a leading international academic publisher. With offices in London, New York, Philadelphia, Oslo, Singapore and Sydney, the Group publishes over 450 journals and over 1,500 new books each year, including an exciting portfolio of books and journals in remote sensing and GIS, notably the International Journal of Remote Sensing,
official journal of the Remote Sensing Society.

TNO Physics and Electronics Laboratory
P.O. Box 96864
NL-2509 JG The Hague
The Netherlands
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Fax: +31-70-328-0961
Email: info@fel.tno.nl
Website: www.tno.nl/instit/fel

Stand number: 160

TNO-FEL has long-standing links with the defence industry. It has traditionally relied on the national and international defence market for the bulk of its R&D assignments and supports the Dutch armed forces in the following fields:
- Operations Research and Business Management
- Command & Control and Simulation
- Electronic Systems & Electronic Warfare
- Observation Systems
- Telecommunications and Security

Tomtecs A. G. Corporation
46 Ujiniban Uji-City
Kyoto 611-0021
Japan
Tel.: +81-774-21-6816
Fax: +81-774-21-6814
Email: info@tomtecs.com
Website: www.tomtecs.com

Stand number: 224

Tomtecs A. G. Corporation has developed and manufactured metric camera systems with mobility and precision for world-wide distribution. At ISPRS 2000, Tomtecs will exhibit the latest model of their HIEI 5 inch format camera systems.

Topografische Dienst Nederland
Bendienplein 5
P.O. Box 115
NL-7800 AC Emmen
The Netherlands
Tel.: +31-591-69-69-11
Fax: +31-591-69-62-96
Email: info@tdn.nl
Website: www.tdn.nl

Stand number: 250

Topografische Dienst Nederland is the national mapping authority of the Netherlands. We provide a range of digital and analogue map-products. In 1990 we started the digital production of topographic information. Within two years, all hand labour was replaced by digitising, a total shift in emphasis from maps to digital data.

Co-exhibitor of Kadaster

TopoL Software Ltd.
Fantova 1791/14
150 00 Praha 5
Czech Republic
Tel.: +420-2-51563003
Fax: +420-2-51564005
Email: topol@topol.cz
Website: www.topol.cz

Stand number: 520

TopoL Software Ltd. develops geographical information system TopoL, digital photogrammetric workstation PhoTopoL and applications based on this technology. These systems are distributed in the Czech Republic, Germany, Italy, Spain, Russia, Slovakia, Hungary, Poland and others. A new product for digital photogrammetry, developed together with Atlas company, is presented at ISPRS 2000.

Co-exhibitor: Atlas

TopoSys GmbH
Freiherr-vom-Stein-Str. 7
D-88212 Ravensburg
Germany
Tel.: +49-751-36605-0
Fax: +49-751-36605-31
Email: info@toposys.com
Website: www.toposys.com

Stand number: 110

TopoSys GmbH is specialised in the production of high-resolution digital elevation models (DEM). Typical applications for the basic product, a raster DEM at a grid width of 1m and a z-accuracy of 0.10 m, are 3D city models, monitoring of coastlines and river basins and corridor mapping.

Co-exhibitor of Aerodata

Turkish National Society for Photogrammetry & Remote Sensing
Marita Genei Komutanligi
Cebeci
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E-mail: monder@hgl.mil.tr

Stand number: Q

United Kingdom National Exhibit
Tel.: +44-1794-322-993
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Stand: F

The exhibit illustrates the UK growth in the period 1996-2000 and includes examples of satellite, aerial and close-range imagery. Millennium photography is highlighted. The exhibit has been prepared by the UK National Committee, comprising the Societies of Photogrammetry and of Remote Sensing (in process of merging) and the Royal Institution of Chartered Surveyors.

University of Applied Sciences Bochum
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Fax: +49-234-3214223
Email: franz-josef.heimes@fh-bochum.de
Website: www.fh-bochum.de/fb5/photo/

Stand: G

At the University of Applied Sciences Bochum a high-precision stabilised platform based on INS/(D)GPS has been developed. The platform is designed to carry different types of remote sensing devices. The system provides precisely stabilised imagery, even for low flying aircrafts under turbulent air conditions. At the same time, all elements of exterior orientation are determined (direct georeferencing).

Vexcel Imaging Austria
Muenzgrabenstr. 11
A-8010 Graz
Austria
Tel.: +43-316-849-0660
Fax: +43-316-849-0669
Email: scanner@vexscan.com
Website: www.vexscan.com

Stand number: 380

UltraScan5000' photogrammetric precision scanner • Global distribution with trained partners on all continents • Introducing the automatic roll film attachment • Best price-performance • Uncompromising specifications with ± 2 µm accuracy • Superior colour and radiometry • Maximum versatility • Great work-flow support • Quality manufacturing by Wild-Austria.

Vexcel Imaging Corporation
3131 Indian Road
Boulder, CO 80301
U.S.A.
Email: Vexcel@veximg.com
Website: www.veximg.com

Stand Number: 150

At Vexcel Imaging we are proud of our Image Scanning Systems. The VX4000 scanner has a proven track record with the Military and Commercial sectors, where flexibility, accuracy and reliability are paramount.
With the latest system we have achieved unparalleled speed and increased functionality. The VX4000 is now the complete scanning system.

Co-exhibitor of SDS

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Institute of Photogrammetry and Remote Sensing
Gusshausstrasse 27-29 / 122
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Fax: +43-15880-112299

Stand: O

VITO
See EOWorks

VTT Automation, Remote Sensing
P.O. Box 13002 (Otakaari 7 B)
FIN-02044 VTT
Finland
Website: www.vtt.fi/aut/rs/

Stand number: 310

VTT is an impartial and multidisciplinary expert organisation with a staff number of 3,005. Science-based innovation forms the core of VTT operations. The internationally recognised expertise in remote sensing at VTT Automation includes forestry applications, geometrical and radiometrical corrections of images, image mosaicking, and sea-ice monitoring using both optical and radar images.

Co-exhibitor of Stora Enso

Wehrli & Associates Inc.
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Email: rm1wa@aol.com

Stand number: 330

Our goal is to develop and manufacture leadingedge photogrammetric systems of the highest quality at the lowest cost to the user; thereby offering our customers the ability to earn a fair and quick return on their investment.
We are pleased to demonstrate the RasterMaster precision photoscanner. These easy-to-use RasterMaster photoscanners are installed world-wide and supply images to all softcopy, orthophoto and aerotriangulation software systems.

Z/I Imaging GmbH
P.O. Box 1106
D-73442 Oberkochen
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Website: www@ziimaging.com

Stand number: 640

Z/I Imaging Corporation, an Intergraph Carl Zeiss joint venture, provides open Windows NT-based imaging solutions, including aerial cameras, workstations, photogrammetric scanners, and image management, processing and distribution software. Z/I Imaging is the premier provider of total customer service in the industry, committed to long-term, mutually beneficial relationships.

Co-exhibitor: Hansa Luftbild GmbH

Warming Up for ISPRS Amsterdam

A Look at Current and Future Imagers, Imagery & Systems

by Professor Gordon Petrie

To begin with, we can certainly expect a great deal of attention at the forthcoming ISPRS Congress to be focused on the new generation of optical airborne and space-borne imagers. Of course, optical imagers have always been important, indeed vital parts of the mapping process, yet at the same time, they have been something of side-show at past ISPRS Congresses. On the airborne side, over the last 30 years, the very high performance frame-type film cameras from the two major European suppliers, Zeiss (now Z/I Imaging) and Wild (now LH Systems) have totally dominated the scene. Over this long period, the only really major change was the adoption of image movement compensation (IMC) in combination with gyro-controlled mounts and fine-grain high-resolution film to give markedly improved ground resolution. By contrast, on the space-borne side, over the same period, there has been a steady progression in the form of scanners producing digital image data with ever smaller ground pixel sizes -from 80m (MSS), through 30m (TM), 10m (SPOT) to 6m (IRS-1C/D). During this time, optical space imaging technology has been dominated by the use of scanners equipped either with rotating optical-mechanical elements, as used on Landsat (since 1972), or linear array sensors, as used on MOMS (since 1983), SPOT (since 1986) and IRS (since 1995).

Frame-type Imagery &Linescan Imagery
Thus there has been a*f* very clear distinction from the geometric, technological and the physical product points of view between (i) airborne analogue film data consisting of discrete frame-type images with a very high geometric resolution; and (ii) space-borne digital data comprising continuous strips of line-scan imagery having a much lower geometric resolution.

Furthermore the Congress should reveal a complete cross-over and mixture of the previously distinctive technologies, including frame-type digital cameras being operated from space and pushbroom linear array scanners being operated from aircraft.

Kodak 's Airborne Digital Frame Cameras
In recent years, small-format digital framecameras with areal arrays of CCD detectors have appeared that are suitable both for airborne and space-borne imaging operations. Thus Kodak has produced its relatively inexpensive Megaplus range of monochrome cameras, typically with 2k x 2k =4 Megapixel arrays. These have been used to take both single-shot pan images and sequential exposures in conjunction with the use of a rotating filter wheel placed in front of the camera to produce multi-band images -as in the case of the Sensys Technologies AA497 Airborne Multi-spectral Digital Camera (AMDC). Kodak 's own DCS 460 CIR cameras employ 2k x 3k =6 Megapixel arrays with integral filters (giving 18 Megapixels for three bands) to produce colour infra-red (CIR) false-colour images. Over the last two or three years, these have proven to be very popular, especially those developed with special mounts for use in small aircraft and integrated with GPS sets by Positive Systems in the USA (with its ADAR system) and GeoTechnologies (with its ADPS) in the UK.
These have given a number of commercial mapping companies, environmental organisations and universities experience of using digital cameras in light aircraft with low operating costs, especially for applications such as crop, environmental or disaster monitoring -where rapid local response is a key issue. Notwithstanding the limited

ground coverage of each frame image produced by such cameras and the very large numbers of these images needed to cover any substantial area of terrain, the users are enthusiastic about this development and can be expected to share their enthusiasm at the Congress.

Other Airborne Digital Frame Cameras

Going up the scale in terms of CCD array size,4k x 4k =16 Megapixel areal arrays have been utilised in the experimental air-borne digital cameras developed by IGN (France) and Ohio State University (USA).

Currently at the top of he resolution and format range, Philips have produced a 7k x 9k =63 Megapixel array and Lockheed-Martin-Fairchild an 8k x 8k =64 megapixel array. However the manufacture of such large arrays lies at the very edge of current chip fabrication technology. Furthermore, to get such a large number of individual imaging elements to work properly, each with the same response and avoiding dead pixels, is very difficult -as is the radiometric calibration of these sensors. With low chip yields, this makes large-format CCD areal arrays very expensive to produce. In this context, there has never been any question about the adequacy of the geometric resolution of digital cameras -e.g. the Kodak cameras use areal arrays with a 9.2 μm pixel size. However the small array size gives a limited ground coverage, especially when compared with the 25k x 25k =625 Megapixels of a aerial film camera image digitised at the same pixel size of 9.2 μm. However, of the two major manufacturers, Z/I Imaging is now taking the plunge into this area with its new Digital Modular Camera (DMC) concept involving the use of multiple cameras (i) to get over the ground coverage limitations, and (ii) to produce multi-band, multi-spectral images. If the actual hardware DMC camera is shown at the Amsterdam Congress, then it is certain to be a centre of attention.

SSTL 's Digital Space Cameras

A the same time, in parallel with these air-borne developments, digital cameras are starting to be mounted in satellites. Thus, for example, low-cost digital cameras equipped with off-the-shelf 1k x 1k CCD areal arrays from Kodak and lenses from Leica have been installed and used in the experimental UoSAT-12 mini-satellite produced by SSTL in the UK to validate key mini-satellite bus and payload technologies. Even these inexpensively produced cameras are producing pan images with ground pixel sizes of 10m (equivalent to that of the SPOT Pan sensor) and multi-spectral images with a 30m ground pixel (equivalent to that of Landsat TM) -albeit with limitations in their ground coverage.

The UoSAT-12 cameras also employ the approach of sequential exposure of the constituent band images to produce multi-spectral images -like that adopted on the Sensys Technologies AA 497 airborne camera mentioned above. Whereas, in the earlier SSTL TM-Sat, three separate cameras are being used to produce the component band images simultaneously to create multi-spectral images -in a similar manner to that proposed with Z/I Imaging 's DMC camera.

Other Space-borne Cameras

Digital cameras using areal arrays were also installed in EarthWatch 's EarlyBird satellite. Unfortunately, although the satellite was launched successfully in December 1997,the on-board power supply failed four days later. A similar camera was to have been mounted in NASA 's Clark satellite. However, in February 1998,the project was terminated due to cost overruns and the delays associated with the non-availability of the launcher. In summary, regarding future prospects in this field, the new digital cameras with areal arrays that will be discussed at the Amsterdam Congress are just the beginning of this development.

There is still a long way to go before these digital cameras can compete directly with current large-format film cameras: in this respect, everything is dependent on the successful development of larger areal arrays and their availability in quantity at a reasonable cost.

Airborne Pushbroom Scanners

At Amsterdam, we shall also see the entry of the airborne pushbroom scanner based on the use of linear CCD arrays into the mainstream of photogrammetry. The technology has undergone a long gestation period. The original concept of the three-line scanner with fore/nadir/aft pointing allowing along-track stereo-imagery to be acquired both from the air and from space is that devised by Hofmann in 1972 and has been nurtured ever since by the German Aerospace Centre (DLR). Under its sponsorship, in parallel with the development of the technology for use in the MOMS,MEOSS,Mars96 and Mars Express space missions, a series of airborne versions of the three-line scanner have also been built. These have included the EOS (in 1978), the Digital Photogrammetric Assembly (DPA), the Wide-Angle Airborne Camera (WAAC) and, most recently, the High-Resolution Stereo Camera (HRSC). The use of the last of these (the HRSC-A) by DLR and the French ISTAR company has resulted in a series of most impressive mapping products, including high-resolution multi-spectral orthoimages and DEMs.

Now the technology has been taken up by the second of the two major aerial film camera manufacturers, LH Systems. The results achieved with the engineering version of the company 's new scanner installed in a gyro-controlled mount and utilising a 12,000 pixel linear array with a pixel size of 6.5 μm were shown publicly at the beginning of 1999.A further prototype model was flown in January 2000.If,as promised, the production version of the imager featuring a multi-spectral capability with four lines recording images simultaneously in the blue, green, red and near-IR bands and the use of 20,000 pixel arrays in each line does appear, then undoubtedly it will be another star attraction in the Technical Exhibition at the Congress.

Space Pushbroom Scanners

Here he emphasis will almost certainly be on the products from the new high-resolution space imagers. After the protracted development of the technology and several disappointments over failed launches, at last, Space Imaging 's IKONOS with its Kodak-built pushbroom scanner -whose pan sensor is equipped with a 13,500 pixel linear array with a 12 (m pixel size - has been placed successfully in orbit and has come into commercial operation. Certainly we should expect to see and hear a great deal about the products and the applications of the IKONOS imagery at the Congress. This will be reinforced

by the first images (if all goes well!!) from the competing QuickBird, EROS and OrbView satellites, all of which are scheduled to be launched during the next few months before the Congress takes place towards the end of July. Although the resulting Pan imagery is being labelled as "high-resolution ",some sense of perspective needs to be kept about the use of he term in his particular context. Thus the 1m ground pixel of the new space imagery is equivalent to that obtainable from modern 1:40,000 scale aerial photography. Whereas a 20 to 25cm ground pixel can fairly readily be obtained from 1:10,000 scale aerial photography and still larger scale photography -in the scale range 1:3,000 to 1:6,000 -with a 5 to 10cm ground pixel size is in regular use for the large-scale mapping of urban areas. Thus the biggest value of the "high-resolution "space images could well be hat of allowing images to be acquired for remote areas and over countries that have severe restrictions regarding the taking and dissemination of aerial photography of heir territory. But the pricing of he new imagery as compared with that of comparable aerial photography will also be a decisive factor in its take-up. Again this whole matter should become clearer at the Congress and it will be very interesting to see how the issue of the Space Imaging company refusing to release the sensor model of IKONOS to the system suppliers will be resolved.

Imaging Spectroscopy

During the last few years, much of the attention of the remote sensing community has been given to the development of imaging spectroscopy. With this technology, the imaging of he ground takes place using a scanner that provides images in a large number of contiguous, narrow, but discrete spectral bands so that a complete spectrum is obtained over a wide range of visible and infra-red wavelengths for the area being imaged. Usually this technique is termed hyperspectral imaging with the term "hyper "replacing "multi "to convey the idea of the much large number of individual bands or channels being covered as compared with the small number of much broader bands used with multi-spectral imagery. To achieve this, suitable prisms or gratings are used to refract the incoming radiation differentially on o an array of detectors that can capture the full range of up to several hundred narrow spectral bands. Much of the impetus for this development has come from NASA, which has funded the development and construction of a number of alternative hyperspectral scanner designs both in-house (e.g. those built by JPL and GSFC) and by outside contractors (e.g. TRW).

Airborne Hyperspectral Scanners

Although the eventual deployment of these hyperspectral scanners will be in space vehicles, up till now, almost all of the existing imagers have been operated from airborne platforms to prove the design, operation, performance and reliability of the new systems. Prominent among these is the Advanced Visible Infra Red Imaging Spectrometer (AVIRIS) constructed by JPL and operated from high-flying NASA aircraft. Besides the many NASA sponsored developments, a number of commercial suppliers -e.g. GER (USA), ITRES Research (Canada)a nd Integrated Spectronics (Australia) -have entered this field and have sold airborne systems to various mining exploration companies and to government organisations involved in environmental monitoring. One can expect the results from this development and its applications to be presented at the Congress. They are eagerly awaited and sought by many field and environmental scientists.

Spaceborne Hyperspectral Scanners

The story regarding spaceborne hyperspectral devices has been punctuated by failures and disappointments -as has so much of optical remote sensing from space in recent years. In particular, NASA 's Lewis satellite with its two alternative hyperspectral imagers built by TRW and GSFC respectively was lost shortly after its launch in August 1997.But a determined effort is now under way to retrieve this rather dire situation. Thus NASA 's newly launched Terra satellite has various sensors with multiple band imaging capabilities in the form of its ASTER, MODIS and MISR scanners. In two or three months' time, NASA will also launch its EO-1 developmental satellite with its advanced ALI multi-spectral linear array scanner and its Hyperion hyperspectral imager with 220 spectral bands - the latter instrument being derived from that lost on the Lewis satellite.EO-1 will be orbited in formation with both Landsat-7 and Terra for comparative purposes. Again, if indeed all goes well, then one can expect the images and preliminary results from all three satellites to be presented and discussed before a large audience at the Amsterdam Congress. In particular, there has been a big revival of interest with the advent of this latest satellite (L-7) in the Landsat series.

Furthermore, the availability of its multi-spectral imagery with its wide ground coverage at a medium resolution and at a low cost seems certain to be reflected in papers given in the appropriate technical sessions and in the images that will be displayed on the stands in the Technical Exhibition.

Radar Imagery

Dealing with microwave radar imagery is not easy -in this respect, your reviewer still bears the scars of his own considerable involvement with his type of imagery during the 1980s.And there is still no sign of solutions to some of the fundamental difficulties -including the occurrence of speckle or clutter; foreshortening; layover; dead areas due to radar shadow; etc.- that are experienced with this type of imagery. Notwithstanding your reviewer 's previous (poor) experience, it is obvious that currently there is a big revival of interest in this field. Much of this has been fuelled by the recent developments in interferometric SAR (InSAR or IfSAR) for DEM generation. The basic idea is quite an old one -having been introduced originally by the Goodyear company in the mid-1970s.However,since then, the technology and the subsequent processing of the data have slowly been developed to a much more mature state. This has resulted in much activity taking place recently using data acquired both from airborne and spaceborne platforms. Indeed current interest is literally sky-high -it really is a hot topic!!

Airborne SAR Imagery

Once again, much of the basic research and development in this field has been carried out by NASA with JPL to the fore. This work has resulted in the development of systems such as the TOPSAR/AIRSAR dual-frequency SAR and the IFSARE InSAR system (in co-operation with ERIM). The

latter has formed the basis of he STAR-3i system now being operated on a commercial basis for DEM and orthoimage generation by the Canadian Intermap company. Another Canadian company, Atlantis, is also operating the venerable CCRS SAR-580 system on a commercial basis. As a result, some really large contracts have been completed in North and Central America (e.g. in Puerto Rico, Panama and Colorado)using these two systems. Besides the InSAR developments, work still continues at CCRS and Vexcel using stereo-radar for height determination and mapping. If the North Americans do indeed come in force and present their work at he ISPRS Congress, there will be plenty of interest -especially in terms of the accuracy and completeness of the DEMs and orthoimages produced by airborne InSAR methods in comparison with those generated from aerial photography and airborne laser scanning. The upsurge of interest in both airborne and spaceborne radar has also been reflected in the positioning of some of the system suppliers -who have allied themselves with specialist radar software companies.
Examples include Z/I Imaging offering Atlantis 's Earth-View InSAR processing software and ERDAS' new InSAR, StereoSAR and OrthoRadar packages which have been developed in co-operation with Vexcel (USA) and NPO Mashinostroenia (Russia). PCI's RadarSoft is another (home-brewed) software suite for use in this area of SAR imagery. Ask about all of these on the exhibition stands!

Spaceborne SAR Imagers

There has been something of a lull in this field with regard to InSAR data collection activities after the Tandem Mission of ERS-1 and -2 in 1995 allowing two-pass InSAR operations .However processing of the data still continues -e.g. DEM and image data covering a large area (130,000 sq.km.) of Labrador was produced from 23 ERS-1/-2 tandem-mode pairs by Atlantis Scientific and completed at the end of 1999.Since the end of the Tandem Mission,ERS-2 has continued to collect data on its own for those areas that are covered by suitable ground stations and this has been supplemented by the similar widespread activities of the Canadian RADARSAT. So there has been plenty of space SAR imagery available for those who find benefit from its application. In this respect, the RADARSAT orthoimage mapping mission covering the whole of Antarctica, carried out in co-operation with NASA, is particularly outstanding.
Experimental work using repeat-pass RADARSAT InSAR data has also been carried out by CCRS and Atlantis. Furthermore RADARSAT stereo-pairs using images with same-side and opposite-side configurations obtained from different orbits have been used by Vexcel and by CCRS for DEM generation. But in this particular area, the Congress limelight will surely shine most brightly on the NASA-JPL and DLR Shuttle Radar Topography Mission (SRTM) with its aim of generating a DEM of the whole of the Earth 's land mass lying between latitudes 60°N and S. This mission is currently under way from the Space Shuttle Endeavour using the single-pass InSAR technique made possible through the innovative use of a 60m telescopic mast to carry the second antenna. Although the processing of all the data collected during its ten day mission will take at least two years to complete, one would expect some preliminary results to be given at the Amsterdam Congress. If so, they will be of great interest to many participants.

Airborne Laser Scanning

Like so many of the current "new "technologies, airborne laser scanning has, in fact, had to undergo a long, slow and difficult development period since it was first devised in the 1970s.But now it is mature, operational and exciting, with a large number of systems having been built and put into service, both in Europe (e.g. TopoSys, TopScan and TopEye) and in North America (Optech, Nortech, EagleScan, etc.). Almost all of he devices in current use employ cross-track scanning using a downward pointing laser and time (and therefore distance) measurements of the returns from the ground objects in conjunction with an integrated DGPS/INS system to determine continuously the position and attitude of the sensor. After processing these measurements, dense elevation data in the form of a DEM is produced along a narrow swath of the terrain. Part of he attraction of the method is that the rapid pulsing rate and dense sampling allows penetration of the vegetation canopy to give both the height of the vegetation and of the terrain surface (the so-called "bald Earth " !!) below. Building roof elevations are another result from such surveys. Another important point is that a modern laser scanning system can readily be fitted into a small plane or helicopter. However, a present, since the effective operational flying height (and therefore the swath width) over which most airborne scanning lasers can be operated is limited, the method has been applied mainly to "corridor "surveys, e.g. in The Netherlands -where water management is so important -along coasts, rivers, canals, dikes and polders.
Similar surveys have been carried out along power transmission lines, pipelines, railway networks and roads in other countries. Since laser scanning only produces DEM data, not image data, it frequently needs to be supplemented by imagery taken with a digital or video camera.
Whether the laser scanning technique is cost effective over large areas of terrain in competition with aerial photogrammetric mapping or airborne InSAR surveys is a matter that will no doubt be discussed and debated at the Congress. In this respect, the new AeroScan laser scanner developed for use by the EarthData and Spencer B. Gross mapping companies in the U.S.A. can reputedly be operated at flying heights up to 20,000 ft. (6,000m). If this is correct, then it could change he situation entirely.

Integrated DGPS/INS Systems

What has also become very clear over the last few years, especially with airborne scanning devices -whether push-broom linear array scanners, InSAR radar imagers or laser scanners -is the ever growing importance of integrated DGPS/INS systems. This has come about since the very accurate DGPS measurements can only be made at a comparatively wide time interval (typically once per second) whereas the INS gives measurements at a much smaller time interval (typically 200 times per second).
Thus the DGPS data gives very accurate in-flight positions, but only at well spaced intervals. By contrast, the INS data has a lower absolute accuracy but provides frequent measurements with a high relative accuracy between successive measurements. This helps to determine the short-term changes in the platform position and attitude -which is especially important when considering the high speed of

operation of a scanning device. Thus the 3D coordinates of he actual point in the air from which each line scan originates can be determined more accurately by using the INS data to help carry out the interpolation between the DGPS positions and to handle the rapid changes in the sensor's tilts arising from atmospheric turbulence. Since the individual lines of the scanned data are being acquired at intervals of a few milliseconds, the INS data is essential in providing the positional and attitude data required for each line if the scanner images or data are to be used for photogrammetric purposes. But these integrated DGPS/INS systems are still very expensive (up to $200,000 per unit).

Aerial Film Cameras

Which brings one back finally to the classical "old fashioned "frame-type film cameras. Notwithstanding all the new or recently developed all-digital imaging technologies that command so much of the current attention of the photogrammetric and remote sensing community and of the discussion conducted above, these film cameras and the products derived from them still set the standard against which everything else is judged.

In this context, it is worth remembering that, at the present time,99%of all topographic mapping is being carried out using images acquired by frame-type film cameras. Their combination of large-format, wide coverage, high resolution and low geometric distortion is still unrivalled.

Which means that, notwithstanding the inconvenience and expense of first having to chemically process and then scan the films for use in digital processing systems, they will still be with us and serving us well for quite some time to come.

Nonetheless, it is still important to consider the matter of the impact of integrated DGPS/INS systems on these film cameras as well. Positional accuracies of ± to 30cm and attitude accuracies of ± arc-seconds are being claimed for systems such as the Applanix Position & Orientation System (POS). Indeed, it is claimed that the accuracies of these values are such as to eliminate the need for aerial triangulation. This remains to be proven, but, at the very least, they should certainly reduce the control point requirements for such triangulation operations. Whether the absolute orientation of each individual stereo-model can indeed be achieved using the DGPS/INS data resulting in the elimination of the aerial triangulation process is another matter that needs to be proven through extensive and rigorous testing. No doubt, we can expect his type of research work to be reported at the Congress too. If it is successful, then it has considerable implications for the future of all types of digital photogrammetric systems and operations.

Conclusion

Given the rich menu that will be offered, I am really looking forward to the sumptuous meal that can be consumed at his Congress!!

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