

The 48th Photogrammetric Week

A Report on the Stuttgart Meeting

Organisation

The meeting was held in one of the University's twin towers in downtown Stuttgart in its usual format. Thus seven or eight lectures were delivered every morning. These were followed after lunch on the Monday, Tuesday and Thursday afternoons by two demonstrations, each lasting one hour with a short break in between. Of these six demonstrations, two involved projects being undertaken by the IfP; the other four demonstrated Z/I Imaging's current product range. The Wednesday afternoon was declared "free", while the final Friday afternoon was set aside for special demonstrations as requested by participants. Every evening had a reception hosted in turn by the city, by the joint organisers, by Z/I Imaging, etc. So the hospitality was quite fantastic, while the receptions gave plenty of opportunity for participants to meet old friends and make new acquaintances. Altogether it was an extremely well organised, very informative and thoroughly enjoyable meeting.

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Monday - Mainly from the Organisers

The lecture programme started with a most interesting and very entertaining account of the Space Shuttle SRTM Mission given by the German astronaut, Gerhard Thiele, who was a member of the crew for that particular flight. This was followed by a series of presentations given by staff members from the two organising bodies. Three of these were from the IfP. Thus Steffen Volz spoke about the NEXUS project which is developing a generic platform supporting location aware applications; Heiner Hild outlined a fully automatic system for the registration of space optical image data with vector GIS data; and Michael Cramer discussed the performance of combined DGPS/inertial solutions in photogrammetry, as evidenced by the extensive tests carried out by OEEPE and IfP in recent years. The two Z/I Imaging contributions comprised firstly a discussion on the workflow within integrated sensor management systems given by Lewis Graham (the company's CEO) and then another by Helmut Heier on how the new DMC multiple digital frame camera system can be introduced to complete an all-digital flow line and processing chain within a mapping organisation. The final presentation was given by Dr. Blake Reid of the Applanix company from Canada, which is cooperating with Z/I Imaging on the production of an OEM version of its

The 48th Photogrammetric Week (PhoWo 01) was held at the University of Stuttgart over the five days between Monday, 24th and Friday, 28th September 2001. As usual with this biennial meeting, it was organised in exemplary fashion by the University's Institute of Photogrammetry (IfP), led by Professor Dieter Fritsch, and by Z/I Imaging, under the leadership of Rudi Spiller, the head of the company's Oberkochen arm. To a large extent, it was a showcase for Germany's outstanding, indeed pre-eminent, position in photogrammetry (certainly in Europe) at the present time. Thus no less than 24 of the 36 invited speakers came from German universities, government organisations and system suppliers. Of the other twelve, six - 2 Swiss, 2 French and 2 from Scandinavia - were from the rest of Europe, while the remaining six were from North America, divided equally between the U.S.A. and Canada. In total, they gave the 500 participants a really good overview of the present (quite exciting) situation in photogrammetry, besides providing an interesting look at future developments and possibilities.

By Prof. Gordon Petrie

POS/AV direct geo-referencing system based on its integrated DGPS/INS platform.

Tuesday - Airborne Imagers

On Tuesday, the first very well presented lecture, by Jens Kremer, continued the previous day's discussions on DGPS/INS integration - in this case, as developed by the IGI company in Germany. After which, the rest of the morning was devoted to the presentations on the new



given in a very cool and clear manner by Peter Fricker. The second, on the HRSC from DLR, was delivered by

Professor Gerhard Neukum, who has been one of the main dynamic forces behind the development of the HRSC for airborne use, following on from its original development as a Mars imager. Interestingly, although the HRSC comes in alternative forms with different angular coverages - with narrow- (-A), normal- (-AX) and wide- (-AXW) angles - so far, the ADS40 is only being offered with a semi-wide-angle lens. Since the HRSC imagers are already operational with DLR and ISTAR, this must be helping to open up the path for the introduction of the commercial ADS40 line scanner and its acceptance by the mainstream photogrammetric community that is more accustomed to frame-type imagers. A final very interesting presentation in this group by Nicolas Blanc from Zürich gave an overview of CCD and CMOS technologies in terms of their respective suitability for future digital imagers. CMOS sensors are developing rapidly, but CCD-based imaging sensors will remain those best suited for the imagers being developed or used on high-resolution photogrammetric applications.

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generation of airborne and spaceborne imagers. As one might expect, they included a second presentation on the Z/I Imaging DMC multiple digital frame camera system given by Dr. Alexander Hinz, its principal designer. This was followed by two papers covering the new airborne pushbroom line scanners. The first, concerning the ADS40 from LH Systems, was

Tuesday - Spaceborne Imagers

The two remaining papers from the Tuesday session were concerned with future European projects employing multiple small space imaging satellites. The first by Stefan Scherer concerned the German RapidEye project. This is planned to have four small mini-satellites producing optical multi-spectral linescan images with 6m ground pixel size, designed primarily to establish a global monitoring service for agriculture. The second paper, by Alain Baudoin of the French CNES organisation, first covered briefly the forthcoming SPOT-5 satellite and then went on to discuss the follow-on Pleiades project. This Franco-Italian initiative is designed to produce both optical and radar image data from a constellation of two French (optical) and four Italian (SAR) satellites. One presumes that, if and when this becomes a reality, there will be a need for a different commercial organisation selling the resulting imagery to civilian customers than the present SPOT Image company.

Wednesday - DTMs

Wednesday morning's programme was concerned with the photogrammetric processing of image data. The initial part dealt with DTMs. First there was a paper on the automated extraction of city models by Dr.

Claus Brenner, formerly with the IfP and now with Robert Bosch in Hannover. This was especially interesting, given that, earlier in the meeting, he had been presented with the Carl Pulfrich Award by the German Society of Photogrammetry & Remote

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Sensing for his work on 3D surface reconstruction from airborne laser-scanned and close-range photogrammetric data. This was followed by Marian Werner's account of the status of the processing of the SRTM X-band InSAR data. The calibration of the imager and the need to compensate for the oscillations of the mast and the secondary antenna appear to have been very difficult and time-consuming. However operational processing is at last under way, although the complete data set will not be ready till mid-2003. A second InSAR paper, given by

M. Rombach of AeroSensing Radarsysteme, was concerned with the determination of both the surface canopy and the ground topography of an area of tropical rain forest in Brazil using a P-band (long-wavelength) SAR.

Wednesday - Orientation & Aerial Triangulation

The remaining four papers from Wednesday were concerned with the classical photogrammetric operations of exterior orientation and aerial triangulation. Three of the papers covered recent developments by commercial software suppliers. They included accounts (i) by Christoph Dorstel of Z/I Imaging on its new ISAT product; (ii) by Scott Miller of LH Systems on updates of the SO CET SET and ORIMA software packages to handle ADS40 linescan imagery and of PRO600 to deal with airborne laser scan data; and (iii) by Manfred Sigle of Inpho on improvements to MATCH-AT and the introduction of his company's new inBLOCK block adjustment software. Finally Professor Christian Heipke from Hannover presented the results from the first phase of the OEEPE Test on Integrated Sensor Orientation in which 13 organisations participated. From his account, it appears that direct georeferencing using airborne sensors is adequate for orthophoto and other applications having less stringent accuracy requirements. However stereo-plotting carried out on the basis of only airborne georeferenced data is not yet possible - as evidenced by the presence of quite large residual y-parallaxes in the resulting stereo-model.

Thursday - More DTMs & Orientation + Small Format Imagery

Thursday morning's programme was a mixed bag. Two of the lecturers returned to DTMs. Anders Schleyer spoke about the DGM of Baden-Württemberg produced by airborne laser scanning. While Dr. Bryan Mercer of Intermap Technologies discussed the relative merits of airborne laser scanning and airborne InSAR for DEM production. His opinion was that the former is better for forested and urban areas, while the latter is more suited to give large-area cover of sparsely vegetated areas. Besides which, there were two papers on the use of Kodak small-format digital cameras mounted on airborne platforms. One was the use of the DORIS system which uses DGPS/INS in conjunction with the digital image data. This was provided by Ahmed Mohamed from Alberta, Canada. The other was presented by Mikael Holm from Finland on the new COBRA software from Inpho. An article on



Z/I Imaging's new DMC multiple digital frame camera system.

this package has already appeared in last month's issue of GeoInformatics. Sveinung Himle from Fotonor in Norway then spoke about his company's experience with Applanix DGPS/INS systems. Next Norbert Haala of IfP discussed the use of directly geo-referenced terrestrial images to answer spatial queries using wireless techniques. This forms part of the NEXUS project already mentioned above. The final paper in this session was given by Karl-Heinrich Anders of Z/I Imaging and concerned data mining for automated GIS data collection, for which he gave an example using a graph-based clustering technique.

Friday - Web Photogrammetry & e-Business

The first of the lectures given under this heading was in fact given as the last item in Thursday's programme. It was delivered by Pierre Grussenmeyer of Strasbourg Polytechnic on the topic of Web Photogrammetry, using the Web-based ARPENTEUR software tool developed in his institute. The software plugins are first loaded, after which, the image and control data are uplifted to the server using ftp in conjunction with a Web browser such as Netscape or Internet Explorer. It is all very intriguing! This was followed by P. Jäger

on ESRI's approach to Web-based mapping. Then Hartmut Rosengarten of Z/I Imaging discussed the company's TerraShare package for the management and distribution of large amounts of geo-image data. He was followed by Trevor Greening of Analytical Surveys in the U.S.A. who outlined his company's experience with the TerraShare software. Next Christoph Ueffing contributed further to the topic of managing very large image databases - in his case, that of the TerraMapServer in Dortmund. The final contributions on e-Business were given by two speakers from IfP. First Michael Reiss outlined the basics of e-Business in general. This served as a background and introduction to Professor Fritsch, who then gave his vision of e-Business within the particular context of mobile photogrammetry and mapping, based on the availability of broadband wireless communication links providing location based services. Which was a suitably futuristic note on which to conclude an excellent week of photogrammetry!

Conclusion

For those who could not participate in the meeting, the presented papers are available in printed paperback form as Fritsch/Spiller (Eds.) - "Photogrammetric Week '01", published by Wichmann, Heidelberg (ISBN 3-

87907-359-7). In my opinion, the set of papers really do form a top-class volume that is of great current interest.

Professor G. Petrie (g.petrie@geog.gla.ac.uk),
Department of Geography & Topographic
Science, University of Glasgow, Glasgow, G12 8QQ,
Scotland, U.K.

Web Pages - <http://www.geog.gla.ac.uk/~gpetrie> ■