

Exhibitions – Expositions – Ausstellungen

The Commercial Exhibition

Exhibition Hours: 09:00-17:00 daily

Days Open: 4th to 8th and 10th to 13th August 1992

Reported by: Dr. Christian Heipke (Germany)

The commercial exhibition was a major attraction during the ISPRS Congress. More than 100 exhibitors from all over the world, among them a large number of small US companies showed their latest developments in the areas of photogrammetry and remote sensing. Revolutionary new products were not on display, the trend towards digital photogrammetry, however, could be observed at nearly every booth. The largest ones were occupied by the traditional photogrammetric companies Intergraph, Leica and Zeiss. Computer vendors and GIS companies, on the other hand, were only present in rather small numbers. The exhibitor's showcase, a forum for oral presentation of products, was widely used by the companies, and must be judged a complete success.

1. Data Acquisition Systems

The highly developed and sophisticated aerial cameras from Leica (Wild RC 30) and Zeiss (RMK TOP and LMK 2000) belong in this category. Zeiss offers a three axis gyro stabilisation for both cameras in addition to forward motion compensation.

For close range applications Rollei had their camera series on display, including the Rolleiflex 6008 metric (an improved version of the Rolleiflex 6006), Rollei R_Metrika (a 9 cm x 12 cm réseau camera, which was developed in cooperation with Linhof), and the well known Rollei LFC Large Format Camera. Geodetic Services showed the cameras CRC-1, CRC-2 and for the first time CRC-3 for different film formats. At the Zeiss booth the new digital camera UMK-Scan for 13 cm x 18 cm pictures was presented. Within a few minutes four CCD arrays are shifted in the image plane in such a way, that the complete image can be reconstructed numerically from the partial images in a separate step.

Also the new planning software T-Flight from Zeiss, which supports pilot and navigator during the photoflight, shall be mentioned here. It operates in connection with the RMK TOP and the LMK 2000.

2. Analytical Stereoplotters

The market for analytical stereoplotters is still large enough for companies to actively improve existing and to develop new systems. Leica had the SD 2000 and for the first time also the SD 3000 on display. Both systems can be equipped with colour superimposition in stereo. Zeiss showed the Planicomp P1 and P3 running under UNIX on different hardware (DEC, Intergraph, HP). Using the Phocus module Change an automated generalisation of digital maps can be performed. Galileo Siscam has equipped their analytical stereoplotter DIGICART-40 with two CCD cameras and offers an automatic DTM

data acquisition software using digital image matching techniques. Further systems on display comprised the STEREOCART and the STEREOBIT-20 from Galileo Siscam, the Alpha 2000 from I²S, as well as the AP5 and AP6 from Augusta-OMI.

3. Digital Photogrammetric Systems

Digital photogrammetric systems (DPS) are defined as hard- and software to derive photogrammetric products from digital imagery using manual and automatic techniques. They include input devices for digital images (CCD cameras, film scanners), digital photogrammetric workstations for processing the image data, and output devices to produce analogue products on film and paper.

The ImageStation comes with a large monitor (1664 x 1280 pixels), a 3D device known from the Intermap Analytic and Intergraph hardware. It can be combined with the PS PhotoScan for digitising film hardcopy. Stereo viewing is realized by means of the Stereo Graphics Crystal Eyes equipment using active glasses and polarised light. The graphics processor EDGE II and the image computer VITec are used to display 24 bit true colour image data. Image coordinate measurement is achieved by roaming the images behind a fixed cursor just as in an analytical stereoplotter. Additional software is available for bundle adjustment, automatic DTM data acquisition (using the product MATCH-T from Inpho), orthoimage and orthophoto map generation, and acquisition of GIS input data using an extended MicroStation environment.

Leica markets the so called Digital Photogrammetric Workstations by Helava (DPW), which run under UNIX and are delivered as mono and stereo versions on PC and SUN workstations. A scanner is also available. Stereo viewing is achieved using the Tektronix LCD shutter and polarised light. This product range was developed in the last decade by Helava Associates for the US armed forces and is now available on the civilian market. Especially the software for automatic DTM data extraction and subsequent interactive editing seems to be very powerful. At present the system can only process 8 bit image data. Image coordinate measurement is achieved by moving the cursor in front of a fixed image like in a CAD system. GIS input data can be accomplished using the digital mapping software CADMAP from the US company Design Data. Leica also showed an improved version of the DVP Digital Videoplotter, which constitutes a low cost alternative to the DPW with limited application range.

Matra MS2i presented the Traster T 10 at the SPOT IMAGE booth. A SUN Sparc 2 is used as host computer, all real time related tasks are handled by a special processor as in many analytical stereoplotters. Stereo viewing is again achieved using the Tektronix equipment. Software for automatic DTM data

generation, orthoimage computation and GIS input data extraction is available.

At the Topcon booth the PI-1000, a PC based system under MS-DOS, was shown. The PI-1000, which was displayed for the first time four years ago, has been substantially improved and allows for automatic DTM generation and GIS input data extraction. Stereo viewing is realised using two separate screens and again polarised light.

Besides the described ones a number of additional products were on display in the exhibition. They mainly cover special tasks of the whole photogrammetric process. Zeiss showed PHODIS for orthoimage and orthophotomap generation, as well as automatic generation of DTM (using TopoSURF, a version of MATCH-T from Inpho). PHODIS runs on Silicon Graphics hardware under UNIX and can be connected to the PS PhotoScan and various output devices. The system PRISM from I²S and Orthomap from Galileo Siscam allow for the computation of orthoimages and orthophotomaps and subsequent extraction of GIS input data from the orthoimage. Vexcel had their radargrammetry workstation for the processing of radar imagery on display. Inpho presented the already mentioned programme package MATCH-T, a powerful tool for the automatic generation of DTM from two digitised aerial images. The Canadian company ISM showed the SysImage Digital Orthophoto System and the so called Digital Image Analytical Plotter (DIAP), a cost efficient software solution for stereo processing. Also the Digital Ortho Module from ERDAS for the automatic DTM data extraction and orthoimage computation shall be mentioned here. Input and output devices are often manufactured by specialised companies (Barco Graphics, Cirrus Technology, Fire, Iris, Vexcel and others). They can be connected to most described systems via interfaces. In summary the market in the area of digital photogrammetric systems is changing rather rapidly and further improvements and developments are to be expected in the near future.

4. Geo-Information Systems, Computer Aided Design and Image Processing

In contrast to the situation in DPS only a few GIS/CAD vendors were present in the exhibition. In spite of the increasing integration of photogrammetry and remote sensing under the roof of GIS these areas are still clearly distinct in today's practice.

ESRI showed new developments of ARC/INFO (e.g., GRID for the combined processing of vector and raster data, ArcView for a simplified display of GIS data and results and ArcCAD for the integration of ARC/INFO and AutoCAD). Intergraph had their MGE (Modular GIS Environment) on display. A new module allows for the automated generalisation of digital maps. Galileo Siscam presented Archis, an information system for

architecture. At the Autodesk booth the latest improvements of AutoCAD could be seen. Besides these companies a number of small US firms offered their products and services in the GIS/CAD market.

As in the GIS/CAD area, image processing was only offered by a small number of vendors. ERDAS, Earth Resource Mapping with their product ER-Mapper, DIPIX and PCI shall be mentioned. Radar image processing was displayed by Intera, Radarsat and Vexcel.

5. Trends

A few trends for future development in photogrammetric and remote sensing products and services shall be hypothesised, as they became evident during these two weeks. The most obvious trend is the one towards digital photogrammetry. Digitally computed orthophotos are offered just about everywhere, programme packages for automatic DTM data extraction from digital images nearly count in the dozens already. While the quality of these products certainly does not yet satisfy every application - especially the results should not be underestimated for matching the time for verifying and editing (correcting) large scale imagery - the direction of development clearly points towards more automation. The human operator, however, will continue to play the central role in the photogrammetric process.

Digital photogrammetric systems are to be found on the market in surprisingly large numbers. The primary goal for the future seems to be the development of end-to-end systems, i.e. systems which cover all the necessary tasks for deriving photogrammetric products. The traditional vendors of photogrammetric systems seem to respond to this challenge and to become system integrators and software writers.

At the same time the analytical stereoplotters are not dead yet, partly because it is still superior to digital systems for a number of practical applications and partly because of the financial situation especially of smaller companies. Even in Washington a few companies offered new interfaces between digital mapping software and analogue (!) plotters. An important trend for the analytical stereoplotters is the availability of superimposition, in the meantime mainly in colour and in stereo.

The vendors of GPS receivers and services (Ashtech, GeoResearch, Magellan Systems, Trimble Navigation) shall be mentioned here at the end, since their results might very well change the whole concept of aerotriangulation in the not-so-far future.

Last not least it could be observed that the (few) GIS companies are more and more capable to process raster data, and the (few) image processing software vendors take vector data more and more into consideration. Thus, "GIS photogrammetry" does appear above the horizon after all.