

KNOWLEDGE AND ACTION FOR PLANET EARTH

Intergeo 2007

2007 marked the thirteenth consecutive annual Intergeo. The venue for this major conference and trade-fair for geodesy, geoinformation and land management, held this year from 24th to 28th September, shifts from year to year, always within the boundaries of Germany. This time the train stopped at Leipzig. The event is organised by HINTE GmbH in association with the German Association of Surveying (DVW), and this year took place in conjunction with the fifty-fifth German Cartographer's Day. The event made clearer than ever that geo-data acquisition is a booming industry. All things considered, including current financial figures, vendors of data acquisition systems face very good times.

Lying at the intersection of the medieval "via regia" between Paris and Novgorad in the Urals and the "via regia" linking Norway with Rome, Leipzig was by the early sixteenth century already the biggest German trading centre for exchange of goods between western and eastern Europe. The privilege of being the only town within a radius of 115km with storage for commodities will certainly have helped it achieve this position. As the industrial revolution progressed, trade companies increasingly brought samples of their products to Leipzig rather than their whole stock, and by 1870 such traders numbered more than a hundred.

Double M

The logo of the Leipzig Fair, two stacked Ms, reflects this history; the double M stands for 'Mustermesse' or Sample Fair. And now, in the twenty-first century, 475 exhibitors brought to the show innumerable samples of their products and services, all about acquisition, processing and use of geo-information. The proportion of non-German companies was almost 30% and the nearly 150 foreign companies came from 27 countries. More than 16,500 people visited the fair. In addition to the German language there were English, Chinese, Japanese, Russian and other Slavic voices in the air. The second day was the busiest on the exhibition floor.

Booming Geomatics

Geo-information is a booming market and manufacturers are flocking from a plethora of directions for a bite at the cake. One successful example represented at Intergeo was Magellan. Focusing mainly on the consumer market, the company also wants to serve the survey one, and not particularly the high-end of it. The company is looking at the surveyor who requires centimetre accuracy at an affordable price and for whom measuring a point in several minutes rather than seconds is not a decisive drawback. ProMark3 RTK can provide this in real time using Satellite Based Augmentation (SBAS). SBAS supports wide-area or regional augmentation through measurements taken at multiple ground stations. Correction messages are derived from these measurements and sent to one or more satellites for broadcast to the end-user to improve initial GPS measurements. SBAS Magellan's embedded BLADE (Base Line Accurate Determination Engine) technology enables the provision of centimetre accuracy using single-frequency only, and this also implies considerably lower cost. ProMark3 operates in two modes, base and rover, and rover alone and is designed for easy use without extensive training.

China

Another direction, especially in the geographical sense, from which manufacturers are entering the geo-data acquisition arena, is from the east, particularly from China. The presence at Intergeo of South is by now a tradition; a company established in 1989, headquartered in Guangzhou and providing the entire range of surveying equipment, from GNSS and total stations to levelling instruments and tripods, tapes and staffs. But this firm offering a broad range of products is now joined by more focused Chinese companies such as Hi-Target, also from Guangzhou and specialising in GNSS systems for both the survey and GIS market. This firm promotes itself as "the first GPS brand in China". Another recent newcomer is CHC (China Huace) from Shanghai, founded in 2003 and providing predominately satellite positioning for the land surveyor, GIS market and marine environment. This company's X90 dual-frequency and X20 single-frequency receivers featured in the Product Survey on GPS Receivers in the October issue of GIM. Successful penetration of the European market will depend not only on meeting quality standards but also on the establishment of a reliable and comprehensive dealer and service network.

Air and Space

Another newcomer, this time in the field of geo-data acquisition from the air, is Microsoft Photogrammetry. Sharing a stand with Diamond Airborne Sensing, which had its DA42 aircraft on the exhibition floor, Microsoft Photogrammetry showcased its UltraCamX digital camera, a Vexcel development. Jena-Optronik showed its low-cost optical airborne and space-borne scanners, a specialist field for the company. In addition to manufacturers of airborne and space-borne sensors, there were also producers of space imagery. SPOT image, for example, demonstrated products from its constellation of three satellites capable of delivering images up to 2.5m in resolution. Headquartered in Toulouse, France, the company today has offices in Australia, China, Japan, Singapore, United States, Brazil and Peru. Companies producing products, including maps, derived from airborne sensors, such as COWI of Denmark and Eurosense, headquartered in Belgium, had their services on display. One stand accommodated the Geomatics Division of Tiltan, from Israel, demonstrating the capabilities of its Lidar data-processing software. This standalone product, still under development and for probable release in spring 2008, is able to automatically segment point-clouds into bare earth, buildings and trees, although everyone knows the huge challenge involved and that nobody has yet come up with a perfect solution.

Terrestrial Laser Scanning

The terrestrial laser scanner (TLS) market has definitely matured. Callidus, Faro, I-Site, Leica Geosystems, Optech, Riegl, Trimble and Zoller + Fröhlich were all at the show, demonstrating their latest achievements. This branch of the industry has also arrived in the field of geo-data acquisition from differing backgrounds, some from precision measurement of industrial products, others from surveying hostile environments such as nuclear power plants. So that TLS systems show a variety of characteristics. They also appear less than perfectly suited to daily survey applications because the equipment is big, difficult to move around and requires an external power supply and computer support for operation. For example, discussing the use of Riegl laser scanners for archaeological purposes in the October 2007 issue of GIM International, Wolfgang Neubauer of the University of Vienna complains about the physical bulk but at the same time praises the robustness of the systems. In many applications, unfavourable characteristics may fade into insignificance compared with the benefits; but survey workflow demands versatile set-ups. This is a matter already discussed by Trimble personnel Tim Lemmon and Paul Biddiscombe (GIM International, September 2006), and in answer to the perceived deficiencies Topcon introduced at Intergeo a laser scanner specially developed for the surveyor, the GLS-1000. This instrument, so brand-new it was not ready in time for our August 2007 Product Survey on Terrestrial Laser Scanners, can be carried around, set up and operated as a total-station. The battery is internal and the camera is also built in, while the control panel is part of the system.

Integration

'The GLS-1000 laser scanner is an instrument every surveyor can handle,' Ewout Korpershoek, European director of sales & marketing for Topcon told me. 'But really revolutionary is our imaging station which integrates [total station](#) , laser scanning and imaging. True, it has features similar to those of Trimble's VX Spatial Station.' Later, discussing the take-over of Sokkia he remarked, 'Approval is pending from the anti-trust department of the Japanese government.' Trimble's VX Spatial and Topcon's imaging station are both robotic total-stations with laser-scanning and imaging functionality, while Leica's ScanStation 2 is a real TLS system with total-station functionality, thus arriving at integrated system from the other direction. Some manufacturers of TLS systems deliberately choose a non-integrated-camera laser scanner, offering instead a camera mounted on top of the instrument. It may be argued that this is not real instrument integration, but the rationale behind such a decision is that a scanner without integrated camera improves user flexibility. For example, users may want to apply a certain camera type because they are used to it or because their applications require a specialised camera, perhaps a metric one. Such a configuration allows users to identify points in the photo and retrieve the corresponding (closest or interpolated) point in the point-cloud or to measure edges of objects and features, allowing for colour coding of all TLS points within a polygon built up by the edges. It may also be desirable to have the ability to change lenses depending on type of job; if this covers a wide variety of applications an integrated camera might limit the range. To integrate or not to integrate, that is the question. And talking integration, GNSS receivers, total-stations and other measuring equipment is growing more mobile as it is integrated with vehicles, not only cars, shovels or harvesting machines, but even remotely-steered mini-helicopters. The way things are going traditional methods of surveying roads and other hostile environments will become increasingly extinct. Adopting the possibilities offered by new technologies is crucial to survival as a land surveyor. Moreover, embracing these opportunities offers a stepping-stone towards a bright future.

From Russia with Rock

The evening of the second day is traditionally party time on the exhibition floor.

On Wednesday evening Sergey Melnikov, chairman of the board of directors of Moscow-based company Geokosmos, and his employees put on a splendid rock-show on their stand. Blues by Muddy Waters, Rolling Stones hits, and those of many other giants, were performed with such enthusiasm, vigour and musical professionalism that the evening was soon really swinging. All that remained was to avoid dehydration by rushing to the Leica stand at regular intervals to grab a beer, the better to enjoy the music of our youth. In their day job the musicians provide laser-scanning and digital-imaging technology worldwide and offer a broad portfolio, from airborne data-acquisition to the creation of 3D-models and maps.

Final Remarks

Leipzig, situated in the former German Democratic Republic (DDR) and inhabited by nearly half a million people, suffered devastation during the second world war and, until the fall of the Berlin wall, from a communist regime. Today, after a short period of intensive restoration of the old renaissance and art nouveau buildings, central Leipzig is a place of beauty. Intergeo 2008 will take place in Bremen from 30th September to 2nd October next year.