

# Integrating Geospatial Technologies: Reflections on Intergeo 2016



As the leading event for the global geoinformation community, Intergeo 2016 provided a forum for 531 exhibitors to present their latest products and around 150 speakers to disseminate their innovative thoughts. 17,000 visitors and 1,300 conference delegates from more than 100 countries travelled to Germany's main harbour city, Hamburg, to see the latest developments and applications in

the geospatial sector.

(By Abdulvahit Torun, Aperigae Information Technologies Consulting, Turkey)

The speakers, talks and technology presentations covered open geoinformation acquisition, management and servicing policies, and strategic plans at national and urban level for various sectors.

The leading topic of the event was 'Smart Cities – digitalisation of urban life'. In his case study on Manchester, keynote speaker Nigel Clifford, CEO of Ordnance Survey UK, clarified solutions to challenges such as transportation, population growth, health and the continual generation of big data. Other conference speakers, including governmental

institutions and private companies, presented examples of German cities and particularly of Hamburg. Top executives from Trimble and Leica Geosystems highlighted the technology supporting the concepts of 'urban digitisation', Building Information Modelling (BIM), Geospatial 4.0 and interaction with other sectors such as agriculture and transportation.

## Innovative Face

With so much innovation on display at the exhibition, it is difficult to select the absolute 'newest' and 'most innovative' developments. There were innovative new technologies which aim at excellence in operation, accuracy and size minimisation for the purpose of terrestrial surveying, engineering surveying, satellite surveying, mobile mapping, laser scanning, navigation, unmanned aerial vehicles (UAVs) at Intergeo Solutions, big data analytics, BIM and services particularly for realisation of smart cities, to name but a few. But the innovative face of Intergeo 2016 can be characterised by keywords such as 'workflow efficiency', 'excellence in integrating multiple sensor, hardware and software' and 'excellence in one-point solutions as a complete service'. Furthermore, while wearable devices are not new, the capability for visualisation and real-time processing in augmented reality looks promising for new application fields.

## Smart Cities and SDI

Together, the exhibition and conference provided the technological and implementation base for realisation of the smart city concept which has been in development for more than a decade. Solutions and technologies covering observation, mobile mapping, online monitoring and processing were seamlessly integrated in GIS/BIM-enabled analytics software to support digitalisation of urban management.

German national institutions including the Federal Agency for Cartography and Geodesy (BKG), the Working Committee of the Surveying Authorities of the States of the Federal Republic of Germany (AdV), the Bundeswehr Geoinformation Centre (BGIC) and the German Society for Geodesy, Geoinformation and Land Management (DVW) shared their experiences to contribute to the national and international geospatial framework.

## UAVs and Mobile Mapping

Almost 25% of the exhibitors presented equipment or software solutions for single or multi-sensor UAVs, some of which were capable of real-time data processing. An increase in the positional accuracy was mainly provided by the post-processing kinematic (PPK) technique. Demonstrations in the flight zone showed planning, operation, take-off and landing as well as in-air stability of various UAVs.

There is a growing number of mobile mapping systems available from various vendors for cars, quadros, backpacks and trolleys, for both outdoor and indoor applications. As most of them rely on common OEM parts (GNSS/IMU, camera and laser scanner), the differences lie in operational reputation, integration, data processing, interoperability and the vendors' support networks.

## Blurring the Boundaries between Surveying, GIS and BIM

The boundary between GIS/photogrammetry and surveying is becoming invisible, resulting in seamless interaction. The multi-sensor surveying equipment provides more data and 'awareness' to surveyors, who in turn are more or less becoming GIS technologists. On the other hand, the one-button, easy-to-use surveying and processing provided by new technology such as UAV photogrammetry, including laser scanning, means that GIS professionals are becoming natural surveyors and field data experts.

Companies such as Trimble, Leica Geosystems and Topcon displayed their complete solutions of technology and software, with end-to-end, one-point solutions for geomatics and geoinformation processing. These solutions cover processes ranging from mobile mapping to UAV photogrammetry, engineering surveying to rail monitoring, and terrestrial to offshore laser scanning.

Esri and Autodesk exhibited their evolutionary products, solutions and services from GIS and CAD perspectives, respectively, aimed at solving societal problems related to smart cities, utility management and BIM.

## GNSS, Positioning and Navigation

Despite the ever-decreasing size of GNSS antennas and receivers, they provide high accuracy (for sub-centimetre level geodetic or sub-metre level GIS data acquisition purposes) and reliability as well as wireless connectivity to data management software. There were notably few exhibitors of indoor positioning systems (IPs) based on vision-based positioning or radio-frequency navigation technologies. As the boundary between positioning and indoor/outdoor navigation becomes blurred, the Internet of Things will become more geointelligent, which will open up new geobusiness opportunities and markets.

## Interfacing with Other Businesses

Business-oriented visitors were attracted by geoinformation technology and software solutions for engineering, smart grids, electricity, construction, mining, land management, road/rail maintenance, ground visualisation (geotechnical monitoring) and agriculture. Numerous companies and European institutions in the field of satellite imagery and services, aerial imagery, geovisualisation, mapping, GIS, geodata analytics and web publishing presented their solutions and took advantage of the opportunity to hold business meetings.

## Young Professionals

The Intergeo 2016 platform encouraged emerging new business developers and start-ups to compete with established market players by introducing efficient new technologies and one-point solution service models. This year's event attracted an impressive number of young visitors and junior geomatics professionals who showed incredible enthusiasm for learning and keenness to embark on a good career in a technology-driven company.

Looking ahead to Intergeo 2017, which will be held from 26-28 September in Berlin, as geospatial technologies are becoming an important component across many verticals the geomatics community can expect to see innovative applications in mining, agriculture, transportation (roads, rail and inland waterways), robotics and automotive.

### ***A general overview of the geomatics sector from an Intergeo 2016 perspective***

*Throughout the last decade, the affordable technology from other sectors such as navigation, robotics, automotive and industrial surveying have been 'borrowed' by the geoinformation sector to seamlessly integrate them in new geodata capturing and processing workflows such as UAV photogrammetry, laser scanning and multi-sensor surveying set-ups. Introducing new technology and data processing capabilities into current geobusiness models and business processes has scaled up the contribution of the geoinformation sector in other sectors and businesses. This de-facto situation has resulted in increasing market demand for the whole geoinformation sector, from technology production to services and users.*

*Since the current market demand is mainly dominated by the public sector, there is still a gap in the perception of leading technology vendors and service providers. However, this gap is narrowing in view of the strong demand from mobile individuals, efforts to improve public services in the context of smart cities and due to the ecosystem of cloud computation and the Internet of Things (IoT). In response to these trends, the leading market players are continually developing innovative technology to provide total solutions for the GI sector as well as for geo-fuelled sectors ranging from automotive to transportation and from agriculture to urbanisation.*

### **Author**

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