

# Intergeo Forms Bridge to a Digital Future



When geo-IT experts from the worlds of business and science sat down together at a roundtable to discuss Intergeo, they painted a picture of geo-IT's significance and role at the present time before looking ahead to the transformation to a digital future. The experts concluded that intelligent geospatial applications will provide the answers to pressing issues that arise in the future.

*(By Monika Rech Heider, on behalf of Intergeo)*

Each of the experts at the table has a particular specialism. Surprisingly, despite the great diversity of the industry representatives from Hexagon Geosystems and Trimble and the scientists from the disciplines of cartography, photogrammetry and applied research from the Fraunhofer IAO, they all have one thing in common. They are all working on solutions based on digital geo IT expertise that promise a more adaptable and sustainable future with a better quality of life.

## Smart cities – the habitat of the future

One key focal point of the discussions is the digital city of the future. The Fraunhofer Morgenstadt Initiative based at the Fraunhofer Institute for Industrial Engineering IAO and Intergeo with its [Smart City Solutions](#) topic platform entered into their first ever strategic partnership this year. The Morgenstadt Initiative's work focuses on the city as a habitat but also as an innovation driver for the future. Created in 2011 as an electric mobility initiative, it now employs over 60 staff to explore the science behind topic areas including mobility as a service, hybrid power generation, data grids, smart energy buildings, connected public space and vertical farming, and also to pilot advances in Germany and the EU. The researchers identify problematic issues relating to cities, look at the possibilities for unlocking innovation potential using state-of-the-art IT and initiate pilot projects throughout Europe to try out new technologies, products and solutions. Morgenstadt initiative project manager Alanus von Radecki describes the internationally renowned research institute's motivation for entering into the cooperation arrangement as follows: "We see a great many overlaps with Intergeo and are hoping our partnership with this well-established exhibition format will enable us to specifically target municipal decision-makers in passing on our experience on innovation potential." He goes on to reveal that Germany is lagging behind other countries in Europe and beyond. "We must demonstrate what is possible and how digital solutions will help make the cities of tomorrow fit for the future, combining a good quality of life with sustainability and resilience. As we see it, there are numerous potential synergies with geo IT and Intergeo's target visitor groups in this regard," adds Radecki.

## Intelligent cartography visualisation

Jochen Schiewe, vice-president of the DGfK (German Cartographic Society), traditionally endeavours to depict relationships in the discipline he works in. According to the Professor for Geoinformatics and Geovisualisation at HafenCity University Hamburg, however, the 2D maps of the past are being replaced by personalised real-time visualisations that could be referred to as smart maps. Cartographers are developing intelligent visualisation systems through the digital networking of omnipresent sensor technology. "It's our task to derive intelligence from the flood of data and present the results," explains Schiewe. In the digital city context, for example, the experts are working on more intuitive systems for intelligent indoor and outdoor routing of pedestrians. "We'll get to the point where everyone receives information tailored to their needs all the time, such as vital statements about the immediate surroundings from the countless sensors in a car," continues Schiewe, adding that the way information will be presented – two-dimensionally, in three-dimensional models or enhanced with virtual or augmented reality developments – will depend on the relevant situation.

## The foundation of digital reality

The two main sponsors of Intergeo are also very closely involved with the solutions of the digital future. Raik Frankenberger from Hexagon Geosystems and Dietmar Bernert from Trimble quite clearly present their companies as solution providers and data managers. "With our technology, users scan objects and build digital reality on these foundations," says Frankenberger. He goes on to explain that the future lies in managing this data intelligently and "distilling" additional information. "This also opens up new areas of activity for our geoinformatics customers," continues Frankenberger. Solutions from the two international companies create the basic framework for digital cities, he says, for example providing the basis for autonomous navigation (real-time urban models that are always up to date) or BIM (building information modelling).

According to Bernert, there is something of a gold-rush mentality about digital planning and building at present. Although Germany is lagging behind other countries in Europe and beyond in this area as well, initiatives from the German government and the company Planen-Bauen 4.0, combined with the heavy involvement of the German construction industry in the extension of international standards such as IFC (Industrial Foundation Class), have got the market moving in all key areas of building. An entire industry is experiencing a sea change, he continues, from building that has traditionally been based on analogue control over the years and decades to new, fully digital processes. Bernert underlines that the BIM process will mean a fundamental change to the job descriptions of everyone from geodesists to building engineers and architects. One particular future-focused field for geodesists, he says, is the further development of BIM methods, with new job titles such as BIM project manager, BIM process manager or BIM consultant. The traditional distinction between structural engineering, infrastructure and urban planning, and the lines between existing phase models are becoming increasingly blurred. More all-rounders who can cover the widest possible range of services will therefore be required in the future. And who, he asks, could be better equipped for these tasks than geodesists and geoinformation specialists?

## Land register surveying

Heinz-Jürgen Przybilla, professor of photogrammetry and remote sensing in the Geodesy Department at Bochum University of Applied Sciences, is also contributing the vital know-how of his discipline to the digital future. Digital images are everywhere and the 3D information that can be derived from these is made available in many areas of life thanks to intelligent processes – just in time, with high precision and cost-effectively. This offers great potential for automated image evaluation – from satellites and UAS to terrestrial applications.

Although photogrammetric methods now represent a black box for many users, ever more sectors are making use of these image-based optical 3D metrology processes. In parallel to the digital products that have been available for many years in aerial image photogrammetry and remote sensing, and an ever-growing number of industrial applications (such as quality controls in the aerospace sector, the automotive industry and vehicle navigation), the scope of UAS especially has increased to such an extent that, in addition to agriculture, disaster prevention and the construction industry, initial applications are now also being seen in land register surveying with its particular quality criteria. Przybilla also points out the extent to which geodesists' everyday working lives will change. "We can assume that UAS will mean an upheaval for land register surveying in the future," he says.

## Data the essence of the digital future

Everyone at the Intergeo table stresses the value of data as the essence of the digital future. Data is the driving force behind innovations, the basis for intelligent solutions on the Internet of Things and the foundation for solutions based on artificial intelligence. Cities are already starting to recognise the value of data and – in particular in European countries outside Germany – are acting as data brokers. According to Radecki, this development represents another setback for the open data philosophy, with a trend towards better data rather than open data.

He stresses that Intergeo – especially in conjunction with Smart City Solutions – is ideally placed to act as a bridge to the digitalisation of cities and the environment.

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