Bright Perspectives: Some Thoughts on the Future of the Geospatial Business

Digital transformation of our professional and personal lives is a megatrend which is stimulated by technological innovation and driven by the needs of economy and society, according to Hansjörg Kutterer, president of Germany's DVW, in a column in '*GIM International*'. Politics and administration are working on legislation, infrastructure and services required to organise and promote digital applications of any kind. Industry and commercial service providers are developing attractive business models which make use of the new opportunities. How will all this affect the future of the geospatial business?

By its very nature, geospatial information plays a key role in this process as we live in a 3D world and 'everything happens somewhere'. During the last two decades, significant advances in technological development have paved the way to comprehensive digitalisation of our world. In the geospatial business this is closely linked with the broad use of new techniques in the acquisition, management, processing, visualisation and use of digital geospatial data. Rapid scanning devices and digital imagery, increasingly mounted on unmanned aerial vehicles (UAVs), provide huge amounts of 3D data ('big data') almost instantaneously. This data needs to be efficiently organised, processed, distributed and effectively used in order to exploit its full potential.

Smart technologies are key for meeting these challenges as they comprise data acquisition and integration, comprehensive connectivity of objects and cloud computing. On the one hand this refers to miniaturised devices such as smartphones or tablet computers which allow ubiquitous access to information for use in a wide range of applications. On the other, and as illustrative and reasonably complex application examples, smart cities, villages or ports are urban, rural or industrial areas that use smart technology to collect and supply geospatial information which is needed to manage assets and resources efficiently. Geospatial referencing – both outdoors and indoors based on wireless techniques such as GNSS or Wi-Fi – provides the immediate link to the digital geospatial world of objects and users alike.

The digital twins of our 3D environment enriched with georeferenced factual or specialist information are provided for use in a multitude of applications such as urban or rural planning, structural monitoring as well as hazard mitigation and civil protection. Advanced technological developments lower the entry threshold to digital geospatial applications for non-expert users. This holds true particularly for artificial intelligence (AI) techniques which allow automation of standard processes using image analysis and pattern recognition. There is a multitude of applications, such as smart farming in agriculture, road surface inspection in quality control or autonomous navigation in mobility.

Visualisation of geospatial data is increasingly based on high-resolution photorealistic virtual reality (VR) applications benefiting from cutting-edge imaging and scanning techniques. This is enhanced by augmented reality (AR) applications that provide direct access to site-specific factual information which is merged with the 3D digital representation of the environment in a geographically consistent way. As an evident progress, decisions are informed by the latest available geospatial data represented in visual scenarios.

The fundamental 'digital by default' requirement in geospatial applications leads to a disruptive concept of work in the geospatial business in terms of working basis, processes and results: 'Work 4.0'. Accordingly, induced by the developments mentioned above, a new mindset is needed together with agile concepts in order to provide new business models for the geospatial work. As this process is still at its very beginning, the geospatial community is advised to actively discuss and promote it.

In conclusion, a visit to Intergeo 2018 is an excellent opportunity to find out more about the megatrend of digital transformation and the bright perspectives for the geospatial business. Intergeo is the world's largest conference and trade fair for geodesy, geoinformation and land management and hence an outstanding professional platform, forum and networking opportunity. The 2018 edition will be held in Frankfurt/Main, Germany, from 16 to 18 October.