Geomatics:

AN INCONSPICUOUS BASTION OF DIGITAL CZECHIA

Geomatics plays a key role in the digitalisation of the Czech environment, but it is not something we hear much about. Ing. Martin Hrdlička heads the Czech Association of Entrepreneurs in Geomatics (APG), an organisation that has been actively cultivating the business sphere in this industry and promoting the interests of its members since its inception in 2018. In the interview he explains what geomatics is, the successes APG has achieved and the current challenges and trends in the field.

APG Director Ing. Jaroslav Cibulka (left), APG Chairman Ing. Martin Hrdlička (right)

What exactly is geomatics and how is it relevant to the average citizen?

Geomatics is a scientific and technical discipline concerned with the collection, analysis, processing, management and distribution of geographic data. It includes geodesy, engineering geodesy, mapping, cartography, photogrammetry, remote sensing, the creation of spatial data bases, geographic information systems and information modelling, and building management or BIM. This may sound complicated to the average citizen, but in reality, they see the results of our work every day - from mobile phone navigation and cadastral maps to land improvements that benefit the landscape around us. Our data and technology mean, for example, that a young family wanting to buy a piece of land can find out whether there are utilities running it that could complicate construction.

The Association of Entrepreneurs in Geomatics was established in 2018. What's your mission and what successes have you achieved?

Our mission is to nurture, develop and promote the field of geomatics among other respected disciplines. I consider one of our greatest achievements to be advocating the verification of surveying work as a selected activity in construction, thus ranking us alongside other engineering disciplines. We've also managed to formulate comments on the new decree on building documentation, we organise the successful GEOMATICS conference every year, we've created a number of educational professional videos and we're launching a campaign to popularise the field amongst primary school children and their parents. Another important step was to draft an amendment to the Surveying Act, resulting in the establishment of the Czech Chamber of Land Surveyors in 2023. In addition, we've organised webinars and established cooperation with a number of important partners.

You talk about important partners, how many members does your association have?

The Association of Entrepreneurs in Geomatics has 50 core members, 14 associate members and 6 honorary members. The total annual economic turnover of the core members is CZK 2.6 billion. We consider our partners to be not only our members, but also other professional associations, state and local government institutions. The philosophy of cooperation is reflected in our day-to-day activities. As we like to say. "Together we achieve more". We and our partners seek topics that unite rather than divide us.

What's the history of geomatics in the Czech lands?

Surveying has a very long tradition in the Czech lands. As early as the 13th century, Ottokar II of Bohemia ordered the appointment of special officials to mark out royal towns. The first cadastre registering land on the basis of measurements was introduced by Emperor Joseph II in 1785. More than 30 years later, Emperor Francis I ordered the construction of a stable cadastre with geodetic measurements. Officially authorised civil surveyors began to work in the Czech lands later, with one for each district town. Before World War I, the Association of Czech Geometers was founded, which began to publish the Geometric Journal. In 1924 Czechoslovakia had several hundred authorised specialists, associated in the Union of Officially Authorised Civil Surveyors. After World War II, there were over 500 authorised private surveying companies in Czechoslovakia, but these were closed down as a result of the subsequent political changes. Their return came with the Velvet Revolution.

What is a Digital Technical Map (DTM) and how can it help citizens and local governments?

Surveying in the field

The Digital Technical Map is the largest industry work in the last 100 years. The DTM includes elements of the topographical map such as buildings, roads, utilities and elevation. It is created by using existing data and gradually adding new data. The DTM offers a number of advantages for citizens - such as when choosing a plot of land, enabling them to check whether there is a potential problem hidden under the surface, such as utility lines. For mayors, up-to-date map data helps them to effectively address operational situations in municipalities, prevent disputes between neighbours and ensure the safety of citizens. The DTM also enables the digitalisation of construction procedures, simplifying and speeding up the preparation and permit process for construction projects, minimising the administrative paperwork for the builder and helping to streamline investment planning. It is one of the key means enabling the practical implementation of the Digital Czech Republic. We believe that the DTM will be widely used in construction and also in asset management.

What role does geomatics play in the BIM (Building Information Modelling) concept?

BIM is a collaborative method that enables all disciplines within the construction process to work together effectively by sharing information on a common repository and using digital modelling. However, accurate and guaranteed data measured by a geomatics engineer is essential for it to work properly. This enables the building to be placed in the geospace at the design stage, confirms and guarantees the measured data at the construction stage and verifies the data during the final approval process. Simply put, geomatics ensures the transition from the digital twin to reality and vice versa.

For existing buildings not in BIM, it acquires up-to-date spatial data for renovations, spatial analyses and the subsequent optimisation of space utilisation. BIM without accurate geodetic data would be nothing more than a theoretical concept, not a practical tool.

What do you think are the biggest challenges in the field of land management?

One is securing stable sources of funding. As a result of the APG's work, land improvements have been incorporated into the National Recovery Plan, which is a step in the right direction. Another challenge is to improve the tendering process and the setting up of works contracts to reflect the actual complexity of the work. APG became a commenting point on the Land Development Ordinance and produced a comprehensive set of comments. At the same time, we created a promotional video about land development to highlight its issues and impact on the landscape. Land improvements are not only a way of settling ownership relations, but above all a key means of protecting the soil, water and landscape from erosion, drought and flooding. The quality of these improvements is essential for the future of our environment.

How does the Association of Entrepreneurs in Geomatics work with educational institutions?

We see education as one of our priorities. Members of our working group actively give talks to high school and university students, which helps to raise awareness of our field. Four universities and six secondary schools have already become our associate members, which deepens our cooperation. Our objectives include creating a system of lifelong learning for people involved in geomatics and collaboration with universities and scientific institutions active in this field. We recognise that attracting young talent and providing them with a quality education that combines traditional surveying practices with state-of-the-art technology is key to the future of our industry.

How do you see the future of geomatics in the context of the digitalisation of the Czech Republic?

I'm very optimistic about the future. Geomatics is an essential foundation for the successful digitalisation of our country. Without accurate spatial data, the concept of a digital Czech Republic would be just a theory. We can see this, for example, in the Digital Technical Map project, which plays a significant role in the digitalisation of construction management, or in the implementation of BIM in construction processes. In the years to come, I expect to see geomatics technologies further integrated into the everyday life of citizens, companies and public administration. We will also be focusing on the use of AI in spatial data processing and on linking geomatics with other fields such as transport systems, energy and crisis management. Our association wants to continue to be an important partner of the state in shaping strategies and legislation in this area. We are proud to contribute to building a digital Czech Republic that will serve its citizens and boost our country's competitiveness.

Thank you for the interview
Ondřej Marušák

The BIM method cannot do without accurate geodetic data

Digital Technical Map

ASOCIACE PODNIKATELŮ V GEOMATICE

Asociace podnikatelů
v geomatice, z.s.
office: Bohdalecká 1460/8,
101 00 Prague 10 - Michle