SURVEYING THE WORLD OF TOMORROW

TECHNOLOGY IS REVOLUTIONISING THE WORLD, WITH UAVS, THE INTERNET OF THINGS AND 3D VISUALISATION AMONG THE LATEST INNOVATIONS. CHRYSSY POTSIOU EXPLAINS HOW FIG IS WORKING TO INCORPORATE THEM AND OTHER TECHNOLOGIES INTO THE DAILY LIVES OF SURVEYORS AROUND THE WORLD

Change is constant. There was a time when we adapted very long baseline interferometry' (VLBI) to geodesy in a great leap forward in efficiency and precision. For a while, satellite Doppler positioning looked like the future marvel of distance surveying, but Doppler positioning quickly became supplanted by GPS.

The 3D tools available to surveyors today are numerous and nearly ubiquitous. LiDAR and GPS/GNSS are applied not only in topographic mapping but in construction, mining, deformation monitoring, planning, architectural/BIM and many more practical uses. FIG Commissions 8 and 10 are working in these fields.

UAVs are a remarkable technological application that started out as a toy and are another 3D tool the full possibilities of which have not yet been identified. Our technical FIG Commissions 4, 5 and 6 are adopting these technologies.

The advent of the computer and the internet created a new world for surveyors everywhere – but who saw the cloud coming? And a technology that predates us all, the common telephone, has become a 'smart' device, giving us access to data as well as personal communication.

Change in the surveyor's world is not limited to technological invention. Systems and processes are just as growth-oriented as the hardware that we use. In 2010, in the FIG Sydney Declaration, we noted several other important aspects of our profession: the wide applications of integrated land information systems in support of decision making and good land governance; and the emerging concept of the 'spatially enabled society'. We confirmed our commitment to supply society with reliable, evidence-based, open- or low-cost data for sound decision-making and implementation monitoring.

But the world has changed since 2010. There is massive creation and consumption of structured and unstructured data, including an extended use of affordable smart devices at increasingly high download speeds; a multitude of data collection devices and the Internet of Things; 'cognitive computing for all' to improve decision-making and the provision of personalised information; and the Internet of Me, a form of artificial intelligence. All these advances have changed our world.

Our role has changed as well. With all digital geospatial data, authoritative and non-authoritative, we can now connect, query and find new information, using modern technology and other computer programs, for purposes beyond what the original deliverables were created for – simultaneously improving our economy and environment.

The United Nations, the World Bank, governments and society in general expect us, the geospatial experts, to combine data and tools intelligently, to achieve the Sustainable Development Goals (SDGs) adopted by 193 member states in 2015. And how do we educate

professionals? FIG Commission 2 has a responsible work plan for the purpose.

These institutions have also challenged us to develop indicators that will monitor sustainability; provide a strategic approach and mechanism that will allow a consistent and repeatable updating of geospatial information; facilitate comparisons and monitoring of the "geospatial maturity" of our society; and prove we can process and use the information to optimise activities required to achieve the SDGs.

New developments

The Internet of Things (IoT) is an emerging reality, bringing all our tools and processes to a place of instant communication. Are we ready for this development? Have we discovered the possible benefits not only for field-to-office transmission of the surveyor's data, but in expediting the transfer of property ownership data, the operation of public services, the transparency of government functions and the many applications of IoT we have not even discovered? FIG Commission 7 is already working on Cadastre 4.0.

In 'blockchain' technology, transactions are recorded in blocks, both chronologically and linearly, for better management of data and information by 'distributed ledger technologies', reducing transaction costs across borders. It is being explored for property title security in international transactions and sounds like a perfect application for cadastral data management.

Is there a 'virtual cadastre' that could support property markets in our future? FIG Commission 9 is investigating the potential of blockchain technologies in risk management, access to credit and the management of real estate.

In the meantime, we are developing the 3D cadastre, by which the rights attached to property include the vertical dimension, from subterranean mineral rights to 'the penthouse in the sky'.

Surveyors are being challenged to include crowdsourcing in data collection. Trees, poles, street furniture, parcel corner markers and other objects might be identified through crowdsourcing.

However, crowdsourcing introduces the public into the geospatial data collection process and there are questions about its benefits and limitations, its reliability and its 'fitness for purpose'. FIG Commission 3 is working in this field.

Globalisation

The formation of FIG in 1878 was the beginning of the globalisation of our profession. First it was the organisation of surveying associations of a mere seven western European countries; today, it is more than 100.

Modern globalisation is being questioned for its fairness and efficiency, yet we also feel its beneficial effects on our profession. A new international code of ethics for industries involved in land and real estate ownership, marketing and development has just been published. We expect it to be adopted by all our members. FIG Commission 1 has brought this issue to our attention.

In addition, a guide to the valuation of unregistered lands is being studied by the UN Habitat and the Global Land Tools Network (GLTN). Our FIG Commission 9 is directly involved in this effort to develop a tool that can benefit vulnerable groups and support land markets everywhere.

For the surveying community, these efforts are examples of increasing our skills in combining and processing structured and unstructured geospatial data and tools intelligently, to improve their usability and optimise decisions in service to society. This is our contribution to the concept of augmented reality at its best.

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Chryssy Potsiou is the president of FIG (www.fig.net). This article is based on her opening address at the 79th FIG Working Week, co-organised by the Finnish Association of Geodetic and Land Surveyors (MIL) and the Finnish Association of Surveyors (MAKLI), and held in Helsinki, Finland, between 29 May and 2 June