

# Engineering surveys in the international arena

Gethin Roberts FCIstCES, Chair, FIG Commission 6



## Gethin Roberts looks back on his chairmanship of FIG Commission 6

**O**NE of the ways in which ICES operates in the international surveying arena is through its membership of the International Federation of Surveyors (FIG). The institution has particular influence in engineering surveys — the area covered by FIG's commission 6. I have chaired this commission for the last four years, following a rolling plan of work. So, what have we achieved?

The four aims for my chairmanship were to (i) promote the knowledge, skills and abilities of surveyors in civil and industrial engineering; (ii) support the development of multidisciplinary expertise leading to integrated survey methods; (iii) provide a forum for exchanging knowledge related to engineering analysis of survey data; and (iv) improve links with other organisations. Much of the commission's work in achieving these aims is carried out by four working groups:

### Working groups

#### Deformation measurements and analysis

*Chair: Prof Wolfgang Niemeier*

This group has been looking at deformation studies. It has a broad knowledge of sensors, modern data storage and communication solutions, and advanced processing and analysis methods. The group also has a thorough understanding of the optimum monitoring systems for large scale structures and landslide affected areas. More recently the group has looked at how deformation tasks are becoming more oriented towards real-time systems, which require automation of data capture and new concepts in data processing, analysis and interpretation.

#### Engineering surveys for construction works and structural engineering

*Chair: Joel VanCranenbroeck*

This group has been tasked with promoting the use of adapted survey techniques built on the multidisciplinary collaboration between survey, structural and mechanical engineers. In particular it has looked at the rail sector and the development of a railway trolley monitoring system. It has also been promoting the understanding of

fibre optic sensors, such as interferometric sensors, Brillouin and Raman scattering and Bragg gratings, and studying the use of embedded sensor arrays and the role of advanced surveying techniques for structural monitoring.

#### Machine control and guidance

*Chair: Prof Dr-Ing Werner Stempfhuber*

As the use of real-time 3D positioning sensors for machine control in construction is growing, this group has been looking at kinematic measurement and sensor technology, data processing and data flow, control processes and algorithms, and standardisation in major construction projects.

#### Ubiquitous positioning

*Chairs: Dr Allison Kealy,*

*Dr Guenther Retscher*

This is a joint working group between FIG commissions 6 and 5 (commission 5 covers positioning and measurement) and the International Association of Geodesy. It focuses on positioning sensors and technologies that can play a role in the development of ubiquitous positioning systems. Within this is the theoretical and practical evaluation of current and new algorithms for measurement integration within ubiquitous positioning systems.

#### Activities

The commission has been involved in numerous activities during my three years as chair. These include workshops and conferences in Hong Kong, Russia, Mongolia, Germany, Italy, Kazakhstan, China, Uruguay, Nigeria, Morocco, the UK and Malaysia. All have attracted papers and speakers of a high calibre. We also closely follow the work of FIG's Young Surveyors network. As I step down, Dr Ivo Milev from the Union of Surveyors and Land Managers in Bulgaria will be taking on the role of chair of commission 6 in 2015.

*Gethin Roberts FCIstCES, Chair,*

*FIG Commission 6*

*Papers and research can be found at [www.fig.net](http://www.fig.net)*