

Newsletter No. 1 – May 2008

Dear Colleagues, Delegates and Friends,

This newsletter aims to give a brief report on the activities of FIG Commission 6, present the FIG events of 2007 and 2008 which are related to Commission 6 and provide information on the coming events of 2008.

Outline of Newsletter:

1. General information from the Commission 6
2. FIG events of 2007
5. Forthcoming FIG events of 2008

1. GENERAL INFORMATION

At the FIG Congress in Munich, October 2006 was started the preparation the Commission 6 Work Plan (WP) for four-year term 2006-2010. This was accepted and approved by the General Assembly of FIG WW in Hong Kong, May 2007. In the WP was defined the Terms of Reference and Mission Statement of the Commission. These follow below. Furthermore, the complete WP which includes the Commission terms of reference, WPs of the working groups, their topics, aims and results and contacts to Commission officers and working groups is found in Commission's 6 web page (<http://www.fig.net/commission6/index.htm>).

Terms of reference

- Acquisition, processing and management of topometric data and all related information throughout the life cycle of a project (at construction site)
- Quality control and validation for civil engineering constructions and manufacturing of large objects
- Modern concepts for setting-out and machine guidance
- Deformation monitoring, analysis and interpretation, measurement of dynamic loaded structures (general)
- Prediction of deformation and movements in engineering projects, mines and areas of geological hazard
- Automatic measuring systems, construction and industry and multi-sensor measuring systems
- Terrestrial laser systems, their usage in architecture, civil engineering and industry
- Quality control at the construction site
- Standards related to construction and deformation measurement.

Mission statement

- Promote the knowledge, skills and abilities of surveyors in civil and industrial works within the various professional fields of engineering
- Support all development and multidisciplinary expertise leading to integrated survey methods, using various instruments and sensors and combining geometry with all other data relevant to each engineering problem
- Provide a forum for exchange of knowledge related to engineering analysis of survey data for the study of structures
- In addition to the links with related Working Groups of the International Association of Geodesy (IAG), the International Society for Mine Surveying (ISM) and the International Society for Photogrammetry and Remote Sensing (ISPRS), look for possible co-operation within these organisations and support the co-operation of civil, structural and mechanical engineers with our profession.

2. FIG EVENTS OF 2007

The main events under the auspices of FIG organised during 2007 which are of interest to Commission 6 are: the FIG Working Week and XXX General Assembly organised in Hong Kong SAR, China between 13-17 May 2007 and the 6th FIG Regional Conference organised in San Jose, Costa Rica, between 12 -15 November 2007.

a) FIG Working Week and XXX General Assembly in Hong Kong SAR, China 13-17 May 2007

The FIG Working Week 2007 and XXX General Assembly was organised in Hong Kong SAR, China 13-17 May 2007 by the Hong Kong Institute of Surveyors HKIS together with FIG. The conference was attended by more than 500 delegates from 64 countries.

The technical and scientific programme of the conference consisted 60 technical sessions and almost 300 papers. Whilst the number of un-presented papers was bigger than in previous FIG events, several of the sessions offered high profile presentations and especially the session that was coordinated with the World Bank got good impressions. In the future, Commissions are considering to increase the number of invited papers. This together with the peer-review process will offer good opportunities to academic members and at the same time raise the general level of presentations. The aim is, nevertheless, to maintain papers which provide case studies and practical aspects.

Commission 6 had a successful presentation in the Working Week with five relevant technical sessions (TS). Specifically, TS 1F – Deformation Measurement had 5 papers, TS 2F – Monitoring of Large Structures had 2 papers, TS 3F – Subsidence and Landslide Monitoring had 5 papers, TS 4F – Engineering Applications had 3 papers; in total 15 papers. Jointly with Commission 6, other Commissions such as Com 3 and Com 5 had a representation through the technical sessions TS 5F – Building Information Systems and GIS Applications with 3 papers, TS 6F – Terrestrial Laser Scanning I with 5 papers and TS 8C – Terrestrial Laser Scanning II with 4 papers. The topics covered in the sessions included the application of deformation systems in various sites (eg landslides) and large structures (eg mines, cultural sites, bridges, airports etc), the geometrical analysis of deformation measurements, the use of integrated techniques for deformation monitoring (eg INSAR, GPS and the use of GIS). It is worthy to emphasise the

number of papers presenting the use of newer monitoring techniques, such as terrestrial laser scanning. In total, 9 papers from two sessions demonstrated the state-of-the-art research that is currently undertaken in this new area and how this can be applied in deformation monitoring applications (eg ferry piers, buildings, slopes etc)..



Joel van Cranenbroeck from Com. 6, Ruth Neilan from Com. 5 and Matt Higgins FIG Vice President at the Exhibitors' Reception

The presented papers in each session related to Commission 6 were:

TS 1F - Deformation Measurement (Com 6), chaired by Mr. Lam Li Wah

A. Eichorn et al (Austria): Analysis of Thermal Deformations of an Arched Theatre Ceiling

E. Tang et al (Hong Kong SAR, China): Application of Automatic Deformation Monitoring System for Hong Kong KSL Railway Monitoring

M. Talich (Czech Republic): Geometrical Analysis of Deformation Measurement Using Continuum Mechanics by Web Application

P. Denys et al (New Zealand): Incorporating Localised Deformation Events in Dynamic Datums

K. Pietruszka (Poland): Geodetic Inspections of Mining Areas in Regions Affected by the Storage of Waste in Underground Mining Pits

TS 2F – Monitoring of Large Structures (Com 6), chaired by Mr. T.N. Wong

G. Roberts et al (United Kingdom): Further Results from Using GPS to Monitor the Deflections of the Forth Road Bridge

J. van Cranenbroeck (Belgium): Continuous Beam Deflection Monitoring Using Precise Inclinometers

TS 3F – Subsidence and Landslide Monitoring (Com 6), chaired by Dr. Andreas Eichorn

V. Lui et al (Hong Kong SAR, China) Reclamation Ground Settlement Monitoring by Using GPS and Other Positioning Technologies at ShenZhen Airport

Z. Zhenglu et al (China, P. R.): Study of 2G Technology and Method for Landslide Monitoring

A. Jarosz et al (Australia): Integration of InSAR and GIS for Monitoring of Subsidence Induced by Block-cave Mining

X. Ding et al (Hong Kong SAR, China): Application of Multi-Antenna GPS Technology in Monitoring Stability of Slopes

C. C. Chang et al (Chinese Taipei): Fitness Analysis of Land Subsidence Estimation for GPS Monitoring Station

TS 4F – Engineering Applications (Com 6), chaired by Mr. Frank Cheng

A. Lee Hung Shing (Hong Kong SAR, China): Engineering Survey System for TBM (Tunnel Boring Machine) Tunnel Construction

J. van Cranenbroeck (Belgium): Advanced Surveying Control Services for Building the Vertical Cities

A. Jarosz et al (Australia): Development of Inspection and Surveying Tool for Vertical Mining Openings and Shafts

TS 5F – Building Information Systems and GIS Applications (Com 6, 3), chaired by Mr. G. A. Andreassend

C. Clemen et al (Germany): The IMAP Principle in Building Information Systems

T. Schwing (Germany): Measurements and Documentation of Buddhist Stone Inscriptions in China, Shandong

S. Akkus et al (Turkey): Petrol and Natural Gas Distribution Lines in Turkey and Cartography Studies

TS 6F – Terrestrial Laser Scanning I (Com 6, 5), chaired by Prof. Lothar Gruendig,

G. Roberts et al (United Kingdom): Deformation Monitoring Trials Using a Leica HDS3000

I. Milev et al (Germany): New Tools for Terrestrial Laserscanning Applied to Monitoring of Rails and Buildings

W. C. D. Siu et al (Hong Kong SAR, China): 3D Modelling of Star Ferry Pier by Laser Scanning Technology

A. Wong et al (China, P. R.): Monitoring Slope Failure at Kadoorie Agricultural Research Centre with a 3D Laser Scanner

C. K. Lam (Hong Kong SAR, China): Engineering Survey Applications of Terrestrial Laser Scanner in Highways Department of the Government of Hong Kong Special Administration Region (HKSAR)

TS 8C – Terrestrial Laser Scanning II (Com 6, 5), chaired by Mr. Andrew Hunter

A. Kwong et al (China, P. R.): Use of 3D Laser Scanner for Rock Fractures Mapping

Z. Kang et al (the Netherlands): Automatic Registration of Terrestrial Scanning Data Based on Registered Imagery

R. Staiger (Germany): Selection Criteria for Terrestrial Laser Scanners

D. Lichti et al (Australia): Self Calibration and Analysis of the Surphaser Hemispherical 3D Scanner

b) 6th FIG Regional Conference in San Jose, Costa Rica, 12 -15 November 2007

The 6th FIG Regional Conference was organized by the *International Federation of Surveyors* (FIG) and the *Colegio Federado de Ingenieros y de Arquitectos de Costa Rica* (CFIA)/ *Colegio de Ingenieros Topógrafos de Costa Rica* (CIT) which is the FIG member association in Costa Rica. As has been the case with the previous FIG regional conferences the conference in San José was organized in co-operation with other international and regional organizations like the United Nations and its agencies as well as with international and regional spatial information societies.

The expected attendance to the conference was mainly Latin American but the conference attracted delegates from Australia, the Americas, Asia, Africa, and Europe. Also, 65% of the delegates came from the Central America and the Caribbean. To help regional and local

participation the conference was held in English and Spanish and the Conference attracted participants from 30–50 countries representing all continents. In the technical programme there were 21 technical sessions and workshops. Running three sessions in parallel the sessions attracted a lot of delegates and held a very high professional standard so as did the 3 Plenary Sessions on each of the 3 topics of the conference and they were well attended. Totally 60 papers were presented and published. There were no presentations from Commission 6 but related geodetic papers came mainly from Commission 5 which has close relationships with Commission 6. Commission 5 facilitated 3 technical sessions and these focused primarily on positioning and measurement infrastructure to support the triangular concept between “land administration, coastal areas and building capacity”. The sessions were – TS 2 – GNSS CORS Fundamentals, TS 5 - Operational GNSS and CORS Infrastructure, TS 08 – Positioning and Measurement. The Technical Program and the papers can be found in:

<http://www.fig.net/CostaRica/Regional/2007/techprog.htm>.



View of the venue where the Technical Sessions were held

The FIG Regional conference was successful, which was emphasised by the FIG President Stig Enemark’s closing speech as he announced that a working group will be now be established by several countries in the region to look at holding a surveyors conference in Costa Rica in September 2008 to address regional surveying issues. In addition, President Enemark announced the “Costa Rica Declaration” which will be launched at the Stockholm FIG Working Week. This declaration will investigate:

- developing the concept of Integrated and Pro Poor Coastal Zone Management (CZM)
- identifying the problems and issues related to Costa Rica and the Central America region
- analysing these problems in the context of Pro Poor CZM
- looking at recommendations and ways forward.

c) Commission 6 Chair Attendance to Congress of ISM in Budapest - September 2007

Prof. Alojz Kopacik, Chair of Commission 6, attended the XIII Congress of ISM organised in Budapest during September 24-28, 2007 and have expressed greetings and best wishes on behalf the FIG Council to the Presidium of ISM. During the Congress was decided the frame of the next cooperation of both organisations, mainly in the field of education, instrumentation and methodology, industry and deformation measurement.

d) 13th FIG Symposium on Deformation Measurements and Analysis (WG 6.1) with the 4th IAG Symposium on Geodesy for Geotechnical and Structural Engineering (SC 4.2) – Lisbon, Portugal, 12-15 May 2008

The theme of the Symposium “Measuring the Changes”, reflects the importance, and demand, for fully automated, continuous, and reliable deformation monitoring in the civil engineering, mining, and energy sectors. In addition there is a strong trend to incorporating deformation systems into new structures from the very beginning, driven by concerns for whole-of-life structural health monitoring. Automation, multi-sensor integration, continuous data collection, integrated analysis and physical interpretation, and enhanced accuracy and reliability are the key developments in new monitoring systems.

These issues are the subject of studies of two international working groups: FIG Working Group 6.1 (Deformation Measurements) and IAG Sub-commission 4.2 (Applications of Geodesy in Engineering). This conference is the second joint meeting of the two groups under the theme “Measuring the Changes”, combining the 13th FIG Symposium on Deformation Measurements and Analysis with the 4th IAG Symposium on Geodesy for Geotechnical and Structural



Engineering. Information about the Symposium can be found at the official site of the organisers: <http://measuringchanges.lnec.pt/>. It was attended by about 160 (unofficial count) delegates from 30 countries. Maria Joao Henriques and her LNEC colleagues did a wonderful job of organizing the symposium and events, and the meeting was a great success.

One of the action items was to provide a web site specifically for deformation topics and the past proceedings and related documents. While this is not accomplished yet, links for the proceedings for all the past events with digital proceedings can be seen below. The majority of the proceedings are at this general link - <http://www.fig.net/commission6/reports/reports.htm> , with specific links as below. The Lisbon proceedings will be added in the near future. The purpose of the web site will be to disseminate information on deformation topics to all interested parties. Thought was also given to the possibility of adding a user thread to aid interaction and discussion.

Alojz Kopáčik, Cecilia Whitaker and Gethin Wyn Roberts from Com. 6 at the Symposium Social Dinner

The conference participants are prepared the Condolence Letter for the victims of the devastating Chengdu earthquake and have been express their sadness and solidarity with the peoples of Sichuan Province.

Discussion was held regarding the next symposium - mainland China, Canada and Australia – were all offered as possibilities. Proposals for these or other sites, need to be submitted to Adam Chrzanowski and Chris Rizos for consideration. Proposals should address topics like local and international travel to site, hotel accommodations, conference facilities, cost to participants and local appeal.

3. FORTHCOMING FIG EVENTS OF 2008

Seminars and Symposia organised or co-sponsored by FIG and its Commissions that will take place during 2008 and are of special interest to Commission 6 are the following:

c) FIG Working Week Stockholm, Sweden – 14-19 June 2008



The *FIG Working Week 2008 – Integrating Generations* will be held in Stockholm, Sweden in June 2008, the week before Sweden’s most traditional celebration, the “Midsummer”. This conference is hosted jointly by the International Federation of Surveyors (FIG) and the Swedish Association of Chartered Surveyors (Sveriges Lantmätareförening, SLF), which will at the same time celebrate its 100th Anniversary.

During two days of the 2008 Working Week special attention will be paid to this in a series of sessions, jointly organised between FIG and UN-Habitat, in which the possibilities of the surveying world and the financial sector in changing this will be the main focus.

All ten FIG Commissions will attend the conference and papers are therefore requested to all the following topics:

- Professional Standards and Practice
- Professional Education
- Spatial Information Management
- Hydrography
- Positioning and Measurement
- Engineering Surveys
- Cadastre and Land Management
- Spatial Planning and Development
- Valuation and the Management of Real Estate
- Construction Economics and Management.

Commission Meetings will be held June 15 (Sunday) at 15:30-17:30. The Commission 6 will participate on 8 TS's, some of them is jointly prepared with the C5. Separate TS is devoted to the actual topic new sensor technologies.

Monday 16 June 14:00-15:30 Norra Latin Room 451	TS 1H - Developments in Scanner and Sensor Technologies Commission: 5 and 6 Chair: Prof. Rudolf Staiger , Germany Rapporteur: Mr. David Martin , France
Monday 16 June 14:00-15:30 Norra Latin Room 458	TS 1I – Imaging Data Applications Commission: 5 and 6 Chair: Prof. Alojz Kopáčik, Chair of FIG Commission 6, Slovakia Rapporteur: Mr. Craig Roberts, Australia
Monday 16 June 16:00-17:30 Norra Latin Room 361	TS 2D - Calibration of Instruments Commission: 5 and 6 Chair: Dr. Neil Weston, USA Rapporteur: Dr. Volker Schwieger, Germany
Tuesday 17 June 11:00-12:30 Norra Latin Room 458	TS 3I - Deformation Monitoring – Techniques and Case Studies Commission: 5 and 6 Chair: Prof. Alojz Kopáčik, Chair of FIG Commission 6, Slovakia Rapporteur: Prof. Lothar Gruendig, Germany
Tuesday 17 June 14:00-15:30 Norra Latin Room 361	TS 4D - Engineering Surveying Commission: 6 Chair: Dr. Gethin Roberts, United Kingdom Rapporteur: Ms. Kerstin Hegner, Sweden
Tuesday 17 June 14:00-15:30 Norra Latin Room 463	TS 4G – Processing of Geodetic Data Commission: 5 and 6 Chair: Dr. Volker Schwieger, Germany Rapporteur: Mr. Rob Sarib, Australia
Tuesday 17 June 16:00-17:30 Norra Latin Room 361	TS 5C - Structural Monitoring Commission: 6 Chair: Dr. Ivo Milev, Germany Rapporteur: Dr. Gethin Roberts, United Kingdom
Wednesday 18 June 11:00-12:30 Norra Latin Room 463	TS 6K – Traceability and Data Processing Commission: 5 and 6 Chair: Prof. Alojz Kopáčik, Chair of FIG Commission 6, Slovakia Rapporteur: TBA

All information about the FIG Working Week can be found in: <http://www.fig.net/>.

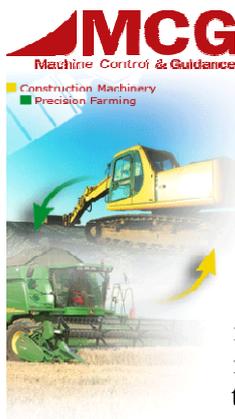
d) 1st International Conference on Machine Control and Guidance – Zurich, Switzerland, 26-26 June 2008

The motivation of the 1st International Conference on Machine Control & Guidance in the fields of construction and agriculture is to initiate a technical and scientific discussion among researchers, academics, system and service providers as well as users. Operation of 3D-position sensors for navigation of machinery on construction sites of roads, tunnels, railways and airports has increased over the last years. GPS-based applications such as crop mapping and automatic steering have also found their way into agriculture and are well introduced.

The 1st International Conference on Machine Control & Guidance will contribute to interchange of know-how, bonding of synergies between different applications and boosting of research activities in this highly interesting field.

The following topics will be discussed:

- Kinematic Measurement and Sensor Technology
- 3D-Construction Applications (State of the Art, Trends)
- Agriculture Applications (State of the Art, Trends)
- Data Processing / Flow
- Control Process and Algorithm
- Standardisation
- Major Construction Projects



Abstracts of a maximum of 300 words are invited for submission until January 31, 2008 and should include title, the author's name and affiliation. These can be sent to mcg@geod.baug.ethz.ch. The abstracts should be submitted in English. After the submission of the abstracts the scientific committee will decide on the form of the presentation (oral presentation or poster) and authors will be informed accordingly.

In addition to the oral and poster presentations there will be the opportunity for demonstrations (available space approx. 2 x 2m) and a presentation of machinery on the premises of ETH Hoenggerberg. There will be no sale of machinery and only technical based presentations. Further information about the Conference can be found in the official site: <http://www.mcg.ethz.ch/index>

d) INGENEO2008 in Bratislava - October 23-24, 2008.



INGENEO2008 is the 4th event in the series of engineering surveying conferences organized by the Department of Surveying at the Slovak University of Technology in Bratislava. This conference is for the second time organized as the FIG Regional Event with really close cooperation and supporting of FIG Commission 6 and WG 6.2. The WG 6.2 has planned for 2008 workshop to discuss the main topics of their work. Resulting of cooperation on the mentioned subjects, with the idea to support the Central and Eastern Europe Region, Bratislava (Slovakia) was stated the place of the common event.

Conference topics are the follows:

- present-day problems of engineering surveying,
- methods and technologies, trends in development of engineering surveying,
- engineering surveying procedures for industry (power plants, nuclear facilities, etc.),
- industrial metrology in production, assembling and finishing processes, in-situ calibration of used technology,
- lasers and laser measurement systems, with special emphasis on terrestrial laser scanning,

- new technology for deformation measurement,
- new techniques for as-built documentation and facility inventory,
- data integration in facility management, exchange, provision and presentation of facility management data in computer networks,
- industrial and city information systems.

Continually update of the conference web site will be offered by the Conference Secretary.
<http://web.svf.stuba.sk/kat/GDE/Ingeo2008/Ingeo.html> . For information you can use the
www.fig.net events in October 2008, too. We will be happy to see you in Bratislava.

Best regards,

Alojz Kopáček
Comm 6 Chair

Maria Tsakiri
Vice-Chair of Administration