



International Federation of Surveyors
Fédération Internationale des Géomètres
Internationale Vereinigung der Vermessungsingenieure

**FIG Commission 5 Positioning and Measurement
July 2017 eNewsletter and FIG Working Week
Helsinki Report**

Dear Colleague,

In this edition you will read about the activities of our Commission at the FIG Working Week and the 40th General Assembly.

We had a great FIG Working Week in Helsinki. Besides high quality plenary and technical presentations and open personal discussions we all enjoyed the hospitality and friendliness of the Finish colleagues.

The Working Groups of FIG Commission 5 are working permanently to achieve the targets of the work plan. Working Group 5.6 'Cost-effective Positioning' has organized the Cost Effective Positioning and Geo Data Seminar during GeoSiberia at Novosibirsk, Russia, 20 April 2017. The series of Technical Seminars on Reference Frames in Practice will be continued at Kobe, Japan, 29-30 July 2017 and at Istanbul, Turkey, 2018. For the INTERGEO in Berlin, 26-28 September 2017, Commission 5 will organize a session 'Trends in GNSS'.

Kind Regards

Volker Schwieger (Volker.Schwieger@ingeo.uni-stuttgart.de)
Chair of FIG Commission 5



FIG Working Week – Helsinki, Finland, 29 May – 2 June 2017



Event Overview



General Assembly: the audience

The 80th FIG Working week and 40th General Assembly (GA) was held at Messukeskus Exhibition & Convention Centre from 29 May to 2 June 2017 in Helsinki, Finland. Together with other members and observers there were around 350 participants active during the General Assembly; in total 73 member associations have been present.



General Assembly: the council



Commission 5 delegates during General Assembly

Around 1400 surveyors from all around the world participated in this working week. There are large representations from Finland, and Nigeria. About 350 presentations are given in the 3 plenary sessions dealing with themes 'In a Digitalised World': 'Living of Tomorrow', 'Professional behaviour' and 'The Contribution of our Profession' and in 65 technical sessions covering all FIG Commissions.

Technical Program Summary

Commission 5 had 8 technical sessions and was involved in 2 so-called Inspirational Short Sessions (ISS), too. The chairs and rapporteurs of each session have provided the summary and highlights. The sessions of Commission 5 are always well-attended, from 30 to 75 participants.

NavXperience Award of FIG Commission 5

For the first time Commission 5 decided to award the best Commission 5 paper of the FIG Working Week with the NavXperience Award. The award was donated by the company NavXperience GmbH Berlin, working in the field of navigation and location. The price consists of free registration for the next FIG Congress in Istanbul, a trophy, and 400 Euros cash.

This year the price was awarded to Hannu Koivula et al. for the contribution "Finish Permanent GNSS Network". The hand-over was realized in the 2nd GA to his wife Mirjam Bilker-Koivula, since he was not able to attend. It is planned to award the price on a yearly base.



Hand-over of the Commission 5 NavXperience Award

TS01C – Tectonic Movements

Chair: Nic Donnelly, New Zealand

Rapporteur: Kevin Kelly, USA

Three of the five papers in this session focused on the tectonic and seismic regime in Turkey. Excellent analyses were presented describing the complex fault system throughout Turkey along with robust analysis of GNSS and past earthquake data leading to a detailed velocity field in the region. Analysis of multi-directional InSAR data in Japan showed that cm-level three-dimensional crustal deformation monitoring is accomplished from ALOS-2 observations. This analysis portends the higher-accuracy and even greater spatial and temporal

resolution deformation monitoring that could result from the recently launched Sentinel-1 satellite system. Finally, analysis of long time-series at GNSS stations nearby to or collocated with tide-gauges highlighted the importance of separating vertical land motion from the tide-gauge records. Perhaps more importantly, the analysis revealed the necessity to account for seismicity in both data records to derive realistic measures of sea-level trends. The importance of repeat leveling also appears to be crucial to correct conclusions.

TS02C – UAV and Photogrammetric Methods

Chair: David Martin, France

Rapporteur: Kevin Kelly, USA

The session brought a welcome mix of UAV accuracy analyses, innovative multi-sensor technology applications along with more traditional uses of UAV for terrain and canopy mapping. Presentations highlighted the need for so-called rolling shutter camera calibrations for UAV mounted cameras, assessment of GNSS accuracy in UAV photogrammetric applications and a novel approach to camera calibration by filling a room with a fixed array of pre-designed coded targets. A laudable humanitarian application using UAV equipped with GNSS and ground-penetrating radar (GPR) sensors to perform non-invasive landmine detection was also presented. Another impressive presentation demonstrated a rapid indoor navigation and mapping technology using “buggy” mounted laser scanning and imagery sensors.

TS03C - UN Resolution on GGRF

Chair: Volker Schwieger, Germany

Rapporteur: Rob Sarib, Australia

The special session was designed to highlight the UN Resolution on Global Geodetic Reference Frames and the contribution of the geodetic community to global reference frames. Markku Poutanen, Finland, and Laila Loevhoeiden, Norway, leading persons within the world-wide GGRF working groups gave clear and forward-looking presentations. These were supplemented by high-level talks about the GGOS – Global Geodetic Observing System by Hansjörg Kutterer, Germany, as well as about the IGS – International GNSS Service by Ruth Neilan, USA. Finally, the importance of the UN resolution for the Pacific Islands countries was outlined by Asakaia Tabuabisataki, Fiji.



Presenters and Chair of Session TS03C

TS04C - Geodynamic Effects on Reference Frames

Chair: David Martin, France

Rapporteur: Nic Donnelly, New Zealand

Presentations covered the collection and organization of geodetic data as well as its analysis. A broad discussion was given on geodynamic effects around the world. Cases related to datum transformations were provided in European, and especially Baltic countries. Discussions concluded with practical applications to the unification of chart datums for the countries surrounding the Baltic Sea.

TS05C - Reference Systems and Frames

Chair: Nic Donnelly, New Zealand

Rapporteur: Dan Roman, USA

Discussion focused on the practical implementation of new datums, both geometric and geopotential, for several countries around the world. Existing standards are being updated to provide the tools and models necessary to move towards cm-level positioning for future datums. Particular focus was made on the implementation of ITRF2014 as the new positioning standard.



Active discussion in session TS05C

TS06C - Classical and Emerging Positioning Techniques

Chair: Kevin Kelly, USA

Rapporteur: Suelynn Choy, Australia

This session covered a range of presentations on classical and emerging positioning techniques. This includes total station measurements, levelling, LiDAR, calibration procedures for standard surveying; as well as indoor positioning methods using RFID, Wi-Fi and MEMS inertial sensors. Although GNSS received little attention, it was still an interesting session with a wide range of discussions on the different positioning techniques.

TS07C – GNSS I

Chair: Suelynn Choy, Australia

Rapporteur: Volker Schwieger, Germany

This session dealt with challenges related to CORS networks and RTK-positioning. The presentation 'Finnish Permanent GNSS Network, FinnRef' by Hannu Koivula and his colleagues from Finland was selected as winner of the FIG Commission 5 NavExperience award due to the exceptional quality of the paper. Other important contributions were given by the Turkish and a Japanese colleague, e.g.. developing software for automatically eliminating potentially multipath-distorted GNSS signals in urban environments.

TS08C – GNSS II

Chair: Mikael Lilje, Sweden

Rapporteur: Suelynn Choy, Australia

This session has five presentations all related to GNSS and its applications, with specific focus on multi-constellation GNSS. Although it was the last session in the conference, the topics were up-to-date, relevant and educational.

ISS –Geodesy and Surveying Applications I and II

For the first time, so-called Inspirational Short Sessions (ISS) were organized within the Technical Program. They have the focus on up to ten or twelve special short messages given by the presenter (within 5 minutes) and should give the opportunity to discuss the topics. The session may be organized in panel format or as normal session. The two sessions of Commission 5 involved were chaired by the FIG Vice Presidents Rudolf Staiger and Mikael Lilje. Most of these inspiring topics in the positioning and measurement domain dealt with GNSS and Laser Scanning. The sessions were successful and attracted around 50 attendees.

For more information about all the technical sessions, please refer to website -

https://www.fig.net/fig2017/technical_program.htm

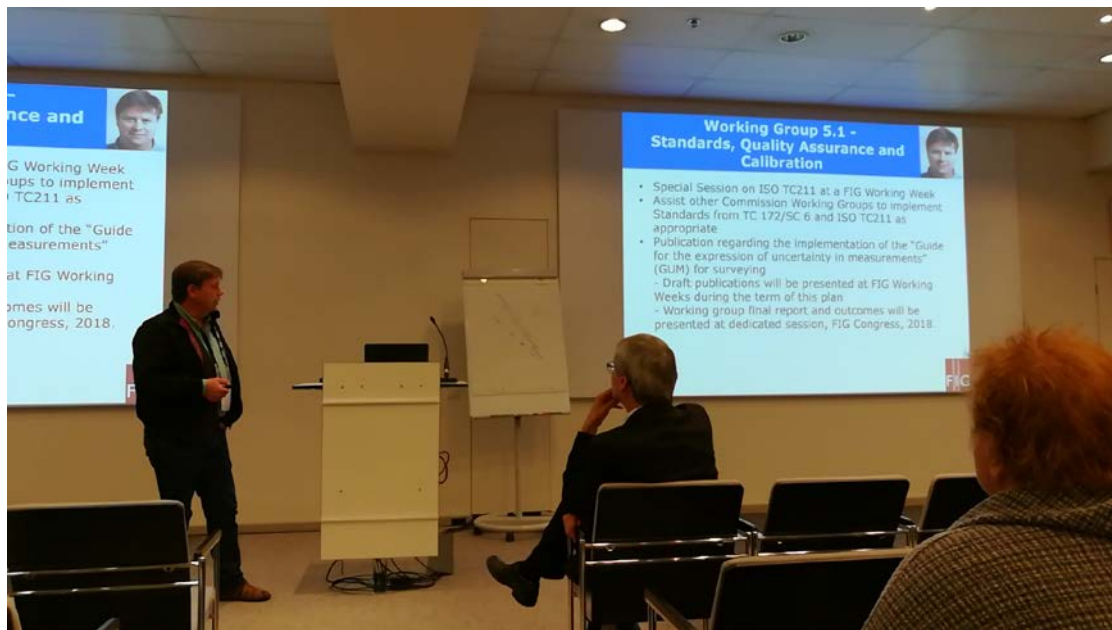
in order to review all the presentations and technical papers as well as the reports of the task forces.



Commission 5 delegates and famous former FIG Director Markku Villikka

Commission 5 Meetings

The **Commission 5 Open Meeting** was well-attended with about 50 participants. At the beginning Commission Chair Volker Schwieger introduced in general the FIG and Commission 5. The Working Group chairs then introduced their working groups, the content and working plan for 2015 - 2018. The audience showed great interest in participating in the commission. Commission 5 is continually developing the membership for their working groups; the contributions and the membership of WG are strongly welcome. The contacts will be collected, the participants could write down the WG which is of interest to them.



Commission 5 Vice Chairs Suelynn Choy and David Martin presenting

Commission 5 Steering Committee Meeting

The Committee Meetings were held to discuss past and future technical seminars and to do the last preparations on the technical sessions and the open meeting. A summary of the discussions from the **steering committee meeting** can be found in respective Minutes, and are available via the web location – <http://www.fig.net/organisation/comm/5/index.asp>

General Assembly and ACCO Meeting

As per other Congresses or Working Weeks, the 40th FIG General Assemblies (GAs) was split on two days, before and after the technical program. The presentation of the Commission 5 Annual Report at the GA was appreciated by the council and the audience:

http://www.fig.net/organisation/general_assembly/agendas_and_minutes/2017/agenda/app_11_com_5_report_2016.pdf

http://www.fig.net/organisation/general_assembly/agendas_and_minutes/2017/minutes/11_05_comm.pdf



Commission 5 Chair Volker Schwieger presenting during GA

The main outcomes or highlights from the GAs were:

- Regarding the hosting of FIG WW 2021, the election was between two strong bids from Ghana and Poland. Both destinations were creative and inspiring in their promotion of the destination, and both destinations were praised for their motivating and stimulating campaigns to promote the cities and countries. This was also reflected in the final voting which was quite equal. Finally, Ghana received 47 votes against Poland with 39 votes.



Ghana celebrating the voting result

For more details about the General Assemblies, please refer to the FIG website:
http://www.fig.net/news/news_2017/05_ga_report.asp

The yearly ACCO (Advisory Committee of Commission Chairs) Meeting of the Commission Chairs and the FIG Council takes place just before the first General Assembly.



Commission Chairs during ACCO-Meeting

Social Activities

There were several social events organized for the delegates –

Welcome Reception, Opening Ceremony, Foundation Dinner and Gala Dinner

All these activities were very well-organized and showed the large spirit of Finnish hospitality as well as the Finnish cultural strength. The events took place e.g. at the City Hall of Helsinki and the famous Finlandia Hall.



Commission 5 and Vice Presidents after the Welcome Reception

Commission 4, 5, 6 Dinner

The traditional Commission 4, 5, 6 Dinner was held at Restaurant Zetor in the City Centre of Helsinki. It was a good occasion to get to know many experts and share knowledge with them and discuss in a pleasant atmosphere.



Commission 5 and 6 members during dinner

Upcoming events

UN GGIM AP / IAG / FIG Technical Seminar on Reference Frame in Practice Workshop, 29 - 30 July 2017, Kobe, Japan

Intergeo, 26 - 28 October 2017, Berlin

Web: <http://www.intergeo.de/>

14th International Conference on Location Based Services, 15 - 17 January 2018, Zürich, Switzerland

Web: <http://lbsconference.org/>

GeoSiberia, April 2018, Novosibirsk, Russia

Technical Seminar on Reference Frames in Practice, 04 - 05 May 20??, Istanbul, Turkey

Web: <http://www.fig.net/>

FIG XXVI Congress 2018, 06-11 May, 2018, Istanbul, Turkey

Web: <http://www.fig.net/>

FIG Working Week, 2019, Hanoi, Vietnam

Web: <http://www.fig.net>

FIG Working Week, 2020, Amsterdam, The Netherlands

Web: <http://www.fig.net>

How to Participate in Our Commission

Commission 5 Chairs of the working groups are continually developing the membership for their working groups. There is still opportunity for you to join any of the working or joint working groups.

People interested in being involved in one of the working groups should contact the Chair of the relevant Working Group and send a copy to the Vice Chair of Administration – Li Zhang li.zhang@ingeo.uni-stuttgart.de.

All responses should include a one or two paragraph biography of your professional career to date.

There is also another way to assist Commission 5 with their work and that is to become a National Delegate to Commission 5. Please note, we recommend that before you consider this option you will need to check with your FIG member association whether they already have a National Delegate for Commission 5 and if it has been officially listed on our website, location <http://www.fig.net/organisation/comm/5/delegates/index.asp>.

Briefly, the role of a National Commission Delegate is to -

- establish networks within their countries to communicate information and obtain feedback for the Commission,
- be actively involved in commission activities, including responding to questionnaires or correspondence and identifying topics and authors of papers for Commission symposia and FIG congresses,
- seek and encourage funding support to attend FIG activities, including commission meetings, and
- write at least one annual report for publication in a local newsletter or technical journal or for dissemination by some other means to individual members of their member association or organisation.

If you wish to be a National Delegate for Commission 5, your FIG member association must formally submit in writing to the FIG Office the name, professional title, address, telephone and fax numbers and email address of the nominated person.

Commission 5 looks forward to your response and please do not hesitate to ask any questions or contact us if you have any further queries.

FIG Commission 5 e-Newsletter

If you would like to circulate Commission 5 NEWS to all our members please email your item for consideration to the

- Vice Chair of Administration – Li Zhang li.zhang@ingeo.uni-stuttgart.de or
- Chair of Commission 5 - Volker Schwieger volker.schwieger@ingeo.uni-stuttgart.de

More Information can be found in

Web: <http://www.fig.net/organisation/comm/5/>