



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

FIG Commission 5 Position and Measurement e Newsletter - June 2011

Dear Colleague,

Welcome to FIG Commission 5's June 2011 e-Newsletter. In this edition you will read about the activities of our Commission at the Working Week in Marrakech. Please feel free to distribute this newsletter to colleagues and friends.

FIG Working Week 2011 - Bridging the Gap between Cultures - Marrakech, Morocco, 18-22 May 2011



The Event Statistics

The Marrakech Working Week was organised in conjunction with the Moroccan surveying engineers' member association – "Ordre National des Ingénieurs Géomètres Topographes (ONIGT)". All plenary, and Commission 5 technical sessions and meetings were convened in the "Palais De Congrès." A record 1400 participants from 100 different countries (600 international, 500 Moroccans and 300 from Arab countries and Africa) attended this conference to actively listen and discuss the 500 plus papers presented in 90 technical sessions, meetings and forums. FIG Corporate sponsors and 54 booth exhibitors also provided delegates with the opportunity to examine a plethora of software, instrumentation, and a range of other surveying and spatial science services and products.

From a Commission 5 perspective, we facilitated 3 formal meetings and assembled 14 technical sessions to cater for 74 presentations and papers. There were also several Commission 5 papers out of 62 that were processed under the FIG's "peer review" regime.



Palais De Congres

Technical Program Précis

To view all papers and presentations submitted for the Marrakech Working Week please refer to website - <http://www.fig.net/pub/fig2011/techprog.htm>. The following are summaries of the Commission 5 technical sessions prepared by the Chair and Rapporteur of each technical session.

TS01A - AFREF in a Global Perspective

This technical session was comprised of primarily invited papers. Presenters provided an overview of the technical workings and status of the numerous regional reference frames projects, in particular AFREF (Africa), APREF (Asia Pacific) and EUREF (Europe). There were also other presentations on the role and function of global, regional and national geodetic / GNSS / CORS infrastructure. A highlight paper, presentation and recommended reading is 5339 by Prof. Chris Rizos – "Global and National Geodesy, GNSS Surveying and CORS Infrastructure".



TS02A - GNSS CORS Infrastructure and Standards

In this technical session delegates were given presentations that related to projects or applications that were aligned with or could be implemented by the African Reference Frame initiative AFREF. Technical presentations included topics on precise point positioning, analysis of reference frames, and product and services provide by the International GNSS Service. There was also a thought provoking presentation by Joel Van Cranenbroeck (4958) titled "AFREF – Lessons Learnt after the First GNSS Reference Station Launched".



TS02F - Remote Sensing I

Regrettably only three of the six scheduled speakers were present. However, those that did present spoke well and produced interesting presentations. The highlight was the variety in the three papers. One looked at the use of remote sensing for landslide monitoring, the next looked at recording cadastral boundaries and the third looked at law enforcement. This emphasised the diverse applications of remote sensing.

TS03F - Remote Sensing II

In this technical session only two speakers appeared, and they were papers 5242 and 5318, Mourad Bouziani (Morocco) and Serdar Bilgi (Turkey) respectively. Each had prepared and subsequently delivered a quality presentation. However the most notable "no show" was the peer reviewed paper 5113 by Rishiraj Dutta, from the Netherlands.

TS03G - GNSS CORS Networks Case Studies (flash presentations)

A variety of case studies were presented from around the globe. We listened to presentations about the status of GNSS CORS networks in Croatia, Indonesia, Turkey and Singapore. We also learnt about the development of GNSS CORS networks in countries Angola and Namibia. The first paper in the session by Eric Gakstatter addressed the development of GNSS receivers and chips and what could be the reality when high precision GNSS is inexpensive.

TS04A - National Geodesy I

The current statuses of national geodesy in various countries were presented in this session with examples from USA, Germany, New Zealand and others. A highlight paper was 4859 as it articulated the severe destruction to the geodetic infrastructure in New Zealand caused by two devastating earth quakes in the last year. The presentation by Graeme Blick and John Beavan also discussed how the damage will be managed and reconstructed.



TS04J - Geodetic Applications in Various Situations

The first two papers of this session examined the effects of ionospheric delay and a multi-GNSS environment on precise point positioning measurements. Both were academic in nature and attracted general queries with respect to the techniques and outcomes. The final presentation was a joint effort from two young surveyors that outlined the numerous positioning techniques via a mobile device and GIS concepts implemented in the operations of viticulture.



TS05D - National Geodesy II (flash presentations)

The subject of this technical Session was National Geodesy. It provided an overview about the status and issues of geodetic activities in different countries. Although this was a flash session, all presentations were very interesting and well presented. Each paper is certainly worthy of a read. There were however 2 "no shows" out of the 7 presentations listed in the program. It was a pity that due to the large numbers of papers submitted for Commission 5, papers of this quality were only allocated into a flash presentation session.

TS06G - GNSS and Land Deformation (flash presentations)

This session focused on the measurement of deformation using GNSS and covered the theory of measurement, determining precise measurements for deformation monitoring, and some actual projects. Of particular note was paper (4784) on the measurement of Land Subsidence in Bandung Basin, Indonesia. Here metres of subsidence have occurred as a result of extracting ground water. Damage to housing and increased risk of flooding due to the subsidence has resulted from the deformation. Analysis of atmospheric corrections to improve accuracy for deformation surveys also highlighted issues around determining accurate heights using GNSS for deformation monitoring.



TS07C - Geoid and GNSS Heighting

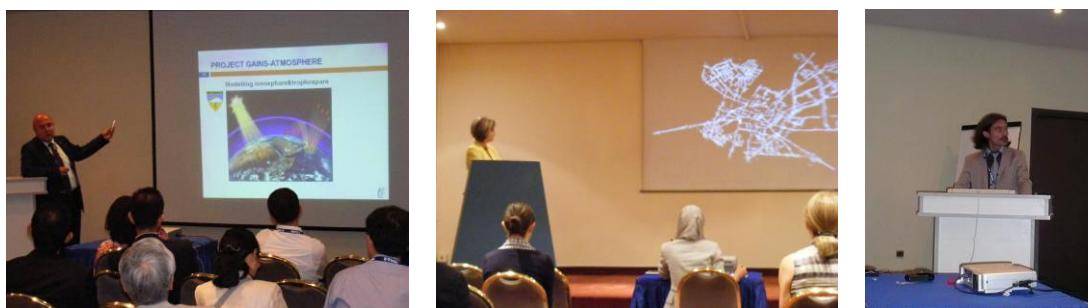
Presentations in this session featured interesting and innovative methods for improving geoid height and geopotential determination. The emphasis was on refinements that yield more accurate determination of orthometric heights using GNSS, although one presentation (5023) focused on the unification of vertical datums, an important international topic. Another noteworthy presentation (5239) showed how artificial neural networks can be used with GPS and leveling to improve modeling of geoid undulations, with possible applications to other geodetic problems. The presentations featured contributions from Greece, Morocco, Turkey, Syria, and the United Kingdom. All presentations were professionally delivered, and each was followed by discussions. Of the five papers scheduled, unfortunately one (5115) was not delivered because the authors were not present.

TS07F - Mobile and Asset Mapping Systems

The presentations in this session focused on the delivery of mobile mapping solutions based on an integration of technologies, including augmenting GNSS in difficult operating environments as well as the use of video imaging to deliver appropriate data products for a range of applications. An important aspect of the presentations in this session was the successful collaborations between industry and academia in developing these solutions.

TS08F - Adjustment and Coordinate Transformation

The presentations in TS08F were dedicated to adjustments of geodetic measurements, coordinate transformations and map projections. All 3 presenters were interesting and presented well. A highlight paper is 4980 by Moya El-Ayachi, who developed an interesting and comprehensive method to understand map projections.



TS08I - GNSS Processing and Analysis

This session focused on processing techniques and corrections to improve the accuracy of GNSS data. There were several papers that addressed the issue of determining accurate GNSS heights, an area where further research is still required.

TS09A - Alternatives and Backups to GNSS

All the papers presented in this session were complementary reflecting the shared vision internationally for the need and availability of GNSS backups. Three of the papers presented were generated from the activities of working group 5.5 (collaborative with IAG working group 4.2.5) and reflects the level of international participation and support for this working group. Highlights of this session included, Prof. Chris Rizos' interesting presentation on the status and role of Locata as a backup for GNSS (paper 4917) and Christian Lukianto and Harald Sternberg's comprehensive overview of current indoor navigation techniques (paper 5102).

Meetings

Open Commission Meeting

A Commission 5 open meeting for all new, old and interested Commission 5 delegates to express their views and thoughts about the proposed Work Plan for the term 2011-14, and more importantly what the Commission could be doing better, was held on the afternoon of 18 May in Karam 2 of the Palais des Congress. There were almost 30 delegates from numerous countries and organisations who attended this meeting.



The main queries raised and comments received related to the Commissions working program with respect to GNSS standards / best practices and reference frames. All participants at this meeting will be emailed a copy of the overview presentation compiled by the Commission Chair – Mikael Lilje, and the Vice Chairs of each of the respective working groups.

Standards Network Meeting

The FIG Standards Network group met on the Friday 20 May in room MR2 of the Palais des Congress. The Standards Network was formed in 2002. It works within Commission 1 and is composed of representatives from each of FIG's Commissions. It is chaired by Commission 5 Vice Chair of Working Group 5.1 (Standards, Quality Assurance and Calibration), Dr David Martin. This group meets annually to discuss the following:

- liaison and relationships with standardisation bodies and other NGOs,
- FIG priorities related to standardisation activities, and
- relevant standards information for distribution to FIG Members, Delegates and Commission Officers.

This year the meeting was open to all people interested in standards. There were 14 attendees. Nine of the ten Commissions were represented. Unfortunately, Wafula Nabutola from Commission 8 was unable to attend due to illness.



FIG Standards Network group

The meeting opened with an introduction, and the terms of reference of the Standards Network were noted. This was followed by a roundtable discussion of standards issues relevant to each of the Commissions. The main Commission 5 items are ISO standards being prepared or under revision. These standards are followed by Technical Commission (TC) TC172 SC6 concerned with Geodetic and surveying instruments and TC211 the commission responsible for establishing a structured set of standards for digital geographic information. One of the most important items in the FIG standards is the ISO/DIS 19152 Geographic information - Land Administration Domain Model (LADM) presented by Christiaan Lemmen of Commission 7.

At the meeting in Marrakech it was decided that the Standards Network meeting minutes would be distributed to the FIG national delegates to help give more attention to, and provide more dialog on standards.

Meeting - Revision of FIG Publication No. 9 Recommended Procedures for Routine Checks of EDM

A meeting to discuss the possible future action on FIG publication No. 9 Recommended Procedures for Routine Checks of Electro-Optical Distance Meters -

(http://www.fig.net/pub/figpub/pub09/FIG-Publication_Nr9_english.pdf) was held on Friday 20 May in room MR2 of the Palais des Congress. The forum was chaired by Commission 5 Vice Chair of Working Group 5.1 (Standards, Quality Assurance and Calibration), Dr David Martin. The attendees of the meeting were provided with background information to the subject document and then primarily focused their discussion on the scope and the following review options:

- maintain the guide as it is,
- re-edit it with minor or major modifications,
- consider withdrawing it definitively; and
- depending on what option chosen, how FIG should proceed.

At the meeting in Marrakech it was decided that the publication should be revised with additions for recommendations for hand held distance-meters and reflector-less instruments.

Anyone interested in assisting in this revision is encouraged to contact David Martin (martin@esrf.fr)

Steering Committee Meeting

The Commission 5 Steering Committee held their first official meeting for the term 2011–14 on Tuesday 18 May in room Karam 2 of the Palais des Congress. All Vice Chairs and / or their representatives were present. To review the discussions of the Steering Committee please refer to the minutes of the meeting which are located at website –

http://www.fig.net/commission5/steering_committee/steeringcommittee.htm

Steering Committee Chair – Mikael Lilje and Vice Chair of Administration – Rob Sarib also attended the Advisory Committee of Commission Officers (ACCO) meeting on behalf of Commission 5 on Tuesday 17 May. For an overview of the topics discussed that related to Commission 5 please refer to minutes of the Marrakech Steering Committee meeting at website location –

http://www.fig.net/commission5/steering_committee/steeringcommittee.htm



FIG 2011-14 Commission Chairs

General Assembly

Two sessions for the Marrakech FIG General Assembly were convened on the Wednesday 18 May and Sunday 22 May. The General Assembly is an opportunity for member associations and other FIG membership organisations to consider, discuss and action items related to the workings of FIG. The highlights on the General Assembly agenda to note were –

- At roll call there were 49 and 47 membership associations eligible to vote on Wednesday and Sunday respectively.
- The FIG membership presently has representation from 124 countries, comprising of -
 - 102 Member Associations
 - 40 Affiliate Members

- 92 Academic Institutions
 - 30 Corporate Members
- New membership to the above categories was accepted by the General Assembly from organisations located in Senegal, Nigeria, China, Cyprus, Kosovo, Sri Lanka, Turkey, Norway, Kazakhstan, Saudi Arabia, and Morocco.
- Reports for the 2007-10 term from the Past FIG President, FIG Council and Commissions were recorded and adopted.
- The General Assembly appointed Prof. Stig Enemark as an Honorary President of FIG as a result of a nomination sent by the Danish Association of Chartered Surveyors.



- Reports from –
 - Permanent Institutions such as the International Office of Cadastre and Land Records, International Institution for the History of Surveying and Measurement,
 - FIG Foundation, and
 - Task Forces on Africa Task Force and Spatially Enabling Society were recorded and adopted.
- The General Assembly recorded reports relating to FIG's co-operation and liaisons with the United Nations, World Bank, and other international professional organisations. From a Commission 5 perspective these are IAG, ION, ISPRS and the International Committee on GNSS (ICG).
- Work plans for the 2011-14 term from the FIG Council and Commissions were considered by the General Assembly and were adopted.
- Two new FIG task forces were established-
 - Surveyors and Climate Change – Chaired by Prof. John Hannah-
http://www.fig.net/admin/ga/2011/agenda/app_18_tf_climate.pdf
 - Property and Housing – Chaired by FIG Vice President Chryssy Potsiou-
http://www.fig.net/admin/ga/2011/agenda/app_19_tf_property.pdf
- According to the FIG President, Teo CheeHai, the FIG "power house" or "engine room" now comprises of –
 - 40 working groups
 - 6 study groups
 - 4 task forces
- It appears the FIG account is in surplus by 4000 Euro.
- The following FIG subscription rates for 2013 were adopted by the General Assembly –
 - 4.48 Euro per member up to a maximum of 5500 members
 - low or lower middle income countries listed by the World Bank will pay 2.24 Euro per member up to a maximum of 5500 members
 - Minimum fee – 20 members or 50 Euro (whichever is greater)
 - Maximum fee – 5500 members (24640 Euro)
- Membership Voting Rights – this topic was openly discussed by the members at the General Assembly on both days, and during a "break out" session convened on Friday 20 May. There were many useful and

constructive comments on the “voting rights” topic especially in relation to-

- the size of the member association,
- number of member associations from one country,
- structural issues with membership associations,
- the question whether there is a need to change,
- reasons and implications of change,
- possible voting models, and
- how the process of discussion and further action shall be managed.

It was decided by the General Assembly that a small work group shall develop a discussion paper for the 2012 Working Week in Rome. The working group shall comprise of membership associations of varying “membership sizes, regions and economy” from New Zealand, Germany, Lebanon, Hong Kong, South Africa, Denmark, Ireland, USA, Canada, Belgium, Netherlands, Kenya and Italy.

- Reports on the progress for future Working Weeks in Rome (Italy), Abuja (Nigeria) and Kuala Lumpur (Malaysia) were recorded for information.
- It was also acknowledged by the General Assembly that the decision on the venue for the 2015 Working Week will be postponed till 2012 Rome General Assembly, and also New Zealand will be bidding to host the 2016 Working Week.

Young Surveyors Network and Commission 5

The Young Surveyors Network (YSN) of FIG was established to -

- encourage and improve the number of young surveyors participating within FIG,
- facilitate networking opportunities for the enhance of their careers, and to
- increase co-operation and more interaction between FIG Commissions and young surveyors.

This important initiative has been welcomed and supported by Commission 5. Several meetings between the YSN representative Kate Farlie, our Commission Chair - Mikael Lilje, our Vice chair of Administration – Rob Sarib and IAG incoming President – Prof. Chris Rizos occurred at the Marrakech Working Week. The discussions primarily focused on the YSN being involved in Commission 5 activities such as –

- positioning and measurement workshops on reference frames, geoids, instrumentation, and GNSS, and
- development of website to include “social networking or media” services.

The implementation of such projects may occur in Rome at either the next FIG Working Week or in conjunction with the YSN Conference that is to be held on 4-5 May 2012, prior to the Working Week. It was also noted and endorsed by the General Assembly that the FIG Foundation will be sponsoring 4 young surveyors to attend their Rome conference, and in the future YSN conferences will most likely occur every two years.

In addition, Commission 5 would like to sincerely thank all the young surveyors and students from Morocco who assisted with organisation and everyday operations for the Marrakech Working Week. Their work, support and manner were excellent.

Social Events

There were several organised social events that were attended and enjoyed by Commission 5 delegates –

- Welcome Reception at the Mansour Eddahbi Hotel.
- Moroccan Evening and FIG Foundation Dinner at the restaurant Palais des Jbilates.
- Commission Dinner combined with Commissions 4 and 6 at the restaurant Al Baraka, Place Jemaa El Fna.
- Conference Gala Dinner at the venue Le Pacha.



At all of these events we were treated with scrumptious and tasty Moroccan food, and entertained with colorful Moroccan culture such as harems of "belly dancers", musicians and singers, in unique Moroccan settings.



Summary of Marrakech Working Week

Commission 5 expresses their thanks and gratitude to the Moroccan surveying engineers' member association – "*Ordre National des Ingénieurs Géomètres Topographes (ONIGT)*" for hosting a memorable event. All aspects of the event ranging from delegate safety and security through to the warm friendly Moroccan hospitality were brilliant. From a technical program perspective, Commission 5 was acknowledged by participants as having one of the most interesting, informative and well prepared programs at the working work, despite the issues of "no shows" and technical glitches with facilities. This overall compliment however can be attributed to the efforts of the authors and presenters, but more importantly the active participation of delegates at the technical sessions and ensuing discussions. Commission 5 therefore thanks all those who attended our technical sessions and forums and look forward to seeing you all again in Rome, May 2012.



Commission 5 with FIG President Teo CheeHai and Vice President Rudolf Staiger

FIG Work Week Rome 2012

Commission 5 is now beginning preparations for the Working Week to be held in Rome, Italy on the 6-11 May 2012. We are therefore seeking, from our delegates, "hot topics" and any ideas that will assist us to develop and deliver an attractive technical program. Please email any concepts or proposals to either our Chair – Mikael Lilje, or Vice Chairs facilitating the working groups. The theme of the Rome Working Week is "*Knowing to manage the territory, protect the environment, evaluate the cultural heritage*" and more information can be found at the website - www.fig.net/fig2012



Overview of Our 2011-14, Work Plan

The work plan for the term 2011–14 was endorsed by the General Assembly at Marrakech. A précis of our approved work plan is below.

General

FIG Commission 5 is about the development, use and integration of technologies for positioning and measurement and the associated standardisation, best practice and fundamental reference frame issues.

Many of the issues are global in nature and Commission 5 is well suited to tackle the technological challenges that we face. Commission 5 is tasked to address global problems such as climate change, sustainable development and humanitarian needs, where disciplines covered by Commission 5 are at the heart of delivering solutions for the spatial aspects of these important global problems.

Specific activities aimed at developing countries include examination of Low Cost Surveying Technologies, assistance with implementation of modern Geodetic Reference Frames and associated infrastructure and contribution to appropriate Continuing Professional Development programs.

Our Terms of Reference

1. The science of measurement (instrumentation, methodology and guidelines).
2. The acquisition of accurate and reliable survey data related to the position, size and shape of natural and artificial features of the earth and its environment and including variation with time.

Our Commission 5 Chair for the 2011-14 Term

Mikael Lilje (Sweden), email: mikael.lilje@lm.se

Our Mission Statement

The FIVE " F " missions of Commission 5 are:

1. Focus on modern technologies, technical developments and assist surveyors, engineers and GIS/LIS professionals through guidelines and recommendations, to choose and utilise those methods, technologies and instruments that are most appropriate to different applications.
2. Facilitate and follow technical developments through collaboration with other FIG Commissions and other international organisations; participation in appropriate meetings; and the preparation of appropriate publications.
3. Foster and support research and development and stimulate new ideas in the fields of expertise represented within the commission.
4. Formulate and formalise collaboration with manufacturers on the improvement of instrumentation and associated software.
5. FIG Events - present and promote the work of the Commission and its working groups on an on-going basis at FIG Working Weeks, FIG Regional Conferences and other relevant technical meetings and in appropriate FIG and other media.

Working Group 5.1 – Standards, Quality Assurance and Calibration

Vice Chair - David Martin (France), e-mail: david.martin@esrf.fr

Few people question the fact their banking card works when they use it to withdraw money from a banking machine. However this confidence would not be possible without standards. While driving we stop at hexagonal, not round or square-shaped stop signs. These are just two of a myriad of standards that impact on our everyday lives.

Surveyors as professionals must fulfil certain legal, regulatory and/or accuracy requirements for their clients. Typically they will strive to do this in an optimal cost effective way and with the most appropriate equipment for the job at hand. Naturally this requires a good understanding and assurance in the instrumentation employed. Clients want the most from what they pay for. Legislative authorities as well as private and public companies require confidence that the services rendered are in conformity with globally accepted best practice rules. Generally this involves the application of internationally recognized standards.

Working group 5.1 deals with standards, quality assurance, best practice and calibration aspects of surveying. We present and promote the use of standards and guidelines to the surveying community through workshops and technical sessions at FIG events. We also provide an interface with ISO on standards related to positioning and measurement.

Working Group 5.2 – Reference Frames

Vice Chair - Graeme Blick (New Zealand), e-mail: gblick@linz.govt.nz

Today more than ever we live in a global society that is making greater use of information and knowledge. An important component of this information is the accurate spatial relationships among places, resources and people at local, national and global levels. The world we live on is also a dynamic and changing place due to the forces of plate tectonics, the movement of the sun and earth and other forces. We are becoming more aware of this dynamic world and the need to monitor changes to it, such as changing sea levels.

To enable accurate measurements to be made to monitor global change and to enable the collection and management of data within a consistent spatial framework, we need stable spatial reference frames and systems. In this dynamic world it is important to have stable reference frames that can identify, and if necessary, accommodate changes in the environment. A focus of the "Reference Frames" working group is to study how we might model effects such as plate tectonic motions and earthquakes, and accommodate them into our reference frames so that they accurately reflect positions in the physical world.

In this working group we aim to bring together participants and organisations interested in sharing knowledge and developing a common approach on establishing regional reference frames. We also plan to provide information in printed material and via the web on reference frames, as well as explain basic concepts, and list activities in this field. If you are interested in these topics we would welcome your input and membership of this working group.

Working Group 5.3 – Geodetic and Positioning Infrastructure

Vice Chair - Neil D. Weston (USA), e-mail: Neil.D.Weston@noaa.gov

With the advent of GNSS and its increasing popularity with numerous traditional and non-traditional users, the role of surveyors in the geodetic and positioning infrastructure arena has been amplified. Surveyors are now required to be the specialists with - positioning services using GNSS CORS, positioning techniques / practices / standards using GNSS, automated positioning software via the WWW, GNSS CORS real time networks, and the effect of GNSS advancements on the geospatial community. To address these trends this working group will develop specific projects or publications, and facilitate workshops and technical sessions at FIG related events. So if any of these topics are of significance to yourself or your organisation then you should consider becoming an active member of this working group.

Working Group 5.4 – Kinematic Measurements

Vice Chair - Volker Schwieger (Germany), e-mail: volker.schwieger@ingeo.uni-stuttgart.de

Most surveyors can operate and manage their instruments if no movements occur. But what happens, if the instrument or the surveyed object is moving? New problems arise like e.g. synchronisation of the measurements and modelling of the movement. These and other related tasks, investigations and practical solutions are summarised under the term "kinematic measurements". Multi-sensor-systems and their application play an important part for kinematics.

If you are interested in this topic related to monitoring as well as machine guidance, then you should definitely join this group to share your experience or learn from others. We will organise sessions at FIG events, participate at symposia on related topics e.g. "Machine Guidance and Control" and "Mobile Mapping" and facilitate the interchange of knowledge among practitioners and researchers.

Working Group 5.5 – Ubiquitous Positioning

Co-Vice Chairs - Allison Kealy (Australia), FIG, e-mail: a.kealy@unimelb.edu.au
& Guenther Retscher (Austria), IAG, email: guenther.retscher@tuwien.ac.at

The challenge of delivering ubiquitous positioning capabilities i.e. geopositioning in all environments, has raised numerous philosophical, technical and operational questions, many of which are currently under investigation by a vast, multi-disciplinary, international research community. This working group has been established as a response to these questions and aims to draw together these international efforts under a common umbrella project of "ubiquitous positioning".

In this working group we are keen to understand the scope of existing research programs in this area and to provide a forum through which the outcomes of these initiatives can be aggregated, and used in defining a current and future research agenda towards achieving the common goal of ubiquitous positioning.

We see this approach as minimising the duplication of research efforts internationally as well as facilitating more rapid progress in this area by providing access to software, algorithms, data and other relevant resources.

Participation in this working group is open to those currently involved in the development of ubiquitous positioning systems, but extends to anyone with an interest in indoor/outdoor positioning, alternative positioning sensors and the broader philosophy underpinning the definition and use of ubiquitous positioning systems.

Co-operation with other FIG Commissions and Sister Organisations

Commission 5 also interacts and works with -

- Commission 4 – Joint working groups on the revision of FIG Publication 37 and a Vertical Reference Surface for Hydrography
- Commission 6 - Study Groups on Laser Scanning and Machine Guidance and Control
- ICG (organised under UNOOSA) ; IAG ; ISPRS ; ION ; and PCGIAP - on topics such as
 - AFREF - African Reference Frame
 - APREF - Asia Pacific Reference Frame
 - Reference systems/ frames
 - GNSS infrastructure and CORS
 - IGS products and services
 - Mobile mapping technology
 - Kinematic measurements and Multi-sensor-systems
 - Optical 3-D measurement techniques
 - Deformation measurement
 - Ubiquitous positioning
 - Vertical reference systems

How to Participate in Our Commission

Commission 5 Vice Chairs of the working groups are now busy developing the membership for their working groups. There is still opportunity for you to join any of the previously mentioned working or joint working groups. If you are interested then there are two levels in which you could actively contribute and they are –

- The first level of participation is as a "core member" of a working group contributing directly to discussions, publications, meetings, and facilitates technical sessions, etc.
- The second level of participation is as part of a "reference group" to review publications, technical papers, provide feedback on issues and general assistance, etc.

People interested in being involved in one of the working groups should contact the Vice Chair of the relevant Working Group and send a copy to our Vice Chair for Administration, Rob Sarib (Australia) email: robert.sarib@nt.gov.au.

All responses should indicate the desired level of participation, either as a "core member" or as part of a "reference group" and also 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/comm/natdel5.htm>.

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 hesitate to ask any questions or 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 Administration – robert.sarib@nt.gov.au