

# Commission 5 Activities in the Future: 2002–2006 Work Plan

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**Key words:** calibration, Commission 5, geodesy, GPS, integrated systems, measurement, positioning, reference frame, standards, surveying, technology, work plan.

## ABSTRACT

Positioning and measurement are core disciplines of land surveying and are at the heart of claims by our profession to be a major player in all things *spatial*. They play a fundamental role in the development of any comprehensive spatial data infrastructure. Positioning and Measurement topics are the responsibility of Commission 5 of the International Federation of Surveyors (FIG). This paper summarises the Work Plan for Commission 5 for the period 2002 – 2006.

The work plan covers the development, use and integration of technologies for positioning and measurement and the associated issues of standardisation, best practice and reference frame. The three working groups outlined in the plan will pursue these issues. The plan also recognises that many positioning and measurement issues are global in nature and Commission 5, working with like-minded Sister Associations, is well placed to deal with them. FIG Council has asked the Commissions to cooperate with United Nations Agencies to address global problems such as sustainable development and humanitarian needs. The work plan also sets out how Commission 5 can contribute to the spatial aspects of these important global problems.

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## 1. INTRODUCTION

Commission 5 of the International Federation of Surveyors (FIG) is responsible for the topics of Positioning and Measurement. This paper summarises the Work Plan for Commission 5 for the period 2002 – 2006. Full versions of all Commission work plans are maintained on the FIG web site ([www.fig.net](http://www.fig.net)).

## 2. TERMS OF REFERENCE

- The science of measurement (instrumentation, methodology and guidelines).
- 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.

## 3. MISSION STATEMENT

- Focus on modern technologies and technical developments and assist individual surveyors, through guidelines and recommendations, to choose and utilise those methods, technologies and instruments that are most appropriate to different applications.
- Follow technical developments through collaboration with other FIG commissions and other international organisations; participation in appropriate meetings; and the preparation of appropriate publications.
- Support research and development and stimulate new ideas in the fields of expertise represented within the Commission.
- Collaborate with manufacturers on the improvement of instrumentation and associated software.
- Present and promote the work of the commission and its working groups on an on-going basis at FIG working weeks and other relevant technical meetings and in appropriate FIG and other media.

## 4. GENERAL

This work plan covers 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, working with like-minded Sister Associations, is well placed to deal with them. FIG Council has also asked the Commissions to cooperate with United Nations Agencies to address global problems such as sustainable development and humanitarian needs. The 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 and contribution to appropriate Continuing Professional Development programs.

## **5. WORKING GROUPS**

### **5.1 Working Group 5.1 – Standards, Quality Assurance and Calibration**

#### 5.1.1 Policy Issues

- Influence the development of standards affecting positioning and measurement instruments and methods, in collaboration with the FIG task force on standards and through participation in the relevant technical committees (TCs) of the International Standards Organisation (ISO) and other appropriate bodies.
- Acceptance controls, quality assurance and certification and their impact on the surveying profession.
- Checking and calibration of measuring instruments.
- Assist other Commission Working Groups to implement Standards from ISO TC211 as appropriate.

#### 5.1.2 Specific Project(s)

- Present and promote the use of standards and guidelines to the surveying community.
- Establish guidelines and recommendations for specific instruments.
- Guidelines and Recommendations for the ISO Guide to Uncertainty of Measurements.
- Review Standards coming from ISO TC211 for relevance to Positioning and Measurement.

### **5.2 Working Group 5.2 – Reference Frame in Practice**

#### 5.2.1 Policy Issues

This is a continuation of the previous WG5.5 but includes some of the work of the previous WG5.2. Policy Issues include the following:

- Work to bring together all organisations involved in defining or using reference frames to develop common approaches and avoid duplication. Such organisations include FIG, IAG, ISO, groups of national mapping agencies, other influential national agencies (such as the US DoD's NIMA) and alliances of commercial organisations (such as Open GIS Consortium and the European Petroleum Survey Group).
- Provide background technical information on relevant issues written in a way that is accessible to the surveying practitioners.
- Develop an inventory of approaches to reference frame issues in different countries (including transformation methodologies) that is accessible to surveying practitioners.

- Examine how surveying practitioners are changing how they access the reference frame, through less emphasis on networks of ground monuments and more emphasis on GNSS base stations.
- Examine the increased use of GNSS for height determination and the use of geoid models etc for connection to local height datums.
- Examine the increasing role of aerial and space based imagery in the realisation of reference frames.

#### 5.2.2 Specific Project(s)

- Contribute to convening of a workshop of all organisations involved in defining or using reference frames to develop common approaches and avoid duplication.
- Continue development of Technical Fact Sheets that briefly explain basic concepts, practical applications and issues and which summarise the activities of organisations with specific responsibilities in the field.
- Continue development of Local Information Sheets to describe the current situation in individual countries. Emphasis is on the provision of a brief background with contact information and to be a conduit between practising surveyors and the information they require.
- Ensure terminology used in above publications conform to and give substance to the relevant Standards coming from ISO TC211.

### **5.3 Working Group 5.3 – Integrated Positioning, Navigation and Mapping Systems**

#### 5.3.1 Policy Issues

- While this is a new focus, it includes the topics covered by the previous Working Groups 5.3 and 5.4 and extends to cover technology generally.
- Issues associated with ongoing and rapid developments in Integrated Positioning, Navigation, and Mapping systems, including performance and applications of such systems and guidelines for their use.
- Ensuring FIG input to planning associated with programs of GPS Modernisation and GNSS Development.

#### 5.3.2 Specific Project(s)

- Report on the development, possibilities and limitations of new technologies.
- Prepare guidelines for practitioners on making the best use of systems to achieve the results required for particular applications.
- Develop FIG input to GPS Modernisation and GNSS Development.
- Collaborate with other Commissions and other international organisations (including IAG and ISPRS) and with equipment, software and service providers.
- Continue commitment to relevant inter-disciplinary events including the series of Symposia on Mobile Mapping (joint with IAG and ISPRS).

## **6. CO-OPERATION WITH SISTER ASSOCIATIONS**

Commission 5 is committed to cooperation with Sister Associations, especially those with which FIG has a Memorandum of Understanding. Commission 5 has specific liaison interest with the International Association of Geodesy (IAG) and the International Society for Photogrammetry and Remote Sensing (ISPRS). The Commission 5 Steering Committee will ensure that Working Group activities and Commission 5 events further these goals of cooperation with Sister Associations.

## **7. CO-OPERATION WITH THE UNITED NATIONS AGENCIES**

Commission 5 is committed to cooperation with United Nations Agencies. Targeting of activities, events and publications of the Commission will contribute to United Nations goals such as assistance to developing countries and sustainable development. Other activities (outlined in the next Section) will also contribute. Commission 5 will work with other Commissions on topics aimed at Developing Countries such as Low Cost Surveying Technology and appropriate Continuing Professional Development programs.

## **8. OTHER ACTIVITIES**

### **8.1 Inter-Commission Activities**

Commission 5 will be involved in Joint Working Groups (JWG) on:

- *Low Cost Surveying Technology and Techniques for Developing Countries.* Joint with Commissions 3 and 7 and led by Commission 5. The JWG will concentrate initially on a dedicated technical session at an appropriate symposium or Working Week and ensure broad circulation of outcomes and papers. The topic will then be assessed to see if a full JWG work plan is warranted for the longer term.
- *Location Based Services.* Joint with Commission 3 and led by Commission 3.
- *Ocean Governance.* This topic deals with the management of rights and responsibilities in marine areas. Joint with Commissions 4 and 7 and led by Commission 4.

### **8.2 Continuing Professional Development**

Commission 5 will also work with Commission 2 to contribute to Continuing Professional Development Programs for FIG member organisations, especially in developing countries where the resources may not be available locally.

### **8.3 Special Topic Activities**

Commission 5 will also undertake special topic activities as required. The topics will be those identified as important for the Commission or for the over-arching priorities of FIG Council and its Work Plan but that do not warrant a full Working Group. The activities may take the form of special publications, conference sessions or dedicated workshops on the topics and which one or two key people can be invited to pursue.

Commission 5 will make its contribution to the FIG World Report on Best Practices launched by the Council in its work plan for 2003–2006.

#### **8.4 Liaison with Equipment, Software and Service Providers**

Commission 5 will continue to build relationships with Equipment, Software and Service Providers to ensure relevant standards and best practices are incorporated into new products.

#### **8.5 Steering Committee**

As in the previous term, there will be a Steering Committee to set direction and oversee the general management of the Commission. It will be made up of all Working Group Chairs (as Commission Vice-Chairs, in line with the emerging FIG structural arrangements) and will be led by the Commission Chair.

#### **8.6 Communications**

Commission 5 will develop and maintain a web page with linkages to other relevant web pages to keep commission delegates, other FIG members, users of surveying services and the public involved in and informed about the work of the Commission.

### **9. CALENDAR OF EVENTS**

The Events in the Calendar below have been classified according to the type of Commission 5 involvement as follows:

- FIG WW: The main meetings each year for Commission 5 Delegates and for the Steering Committee will occur at the FIG Working Week or Congress.
- Strategic FIG Event: FIG Council sees these as events for furthering its strategies. These often involve liaison with United Nations. Given that the Working Weeks are concentrated in the Mediterranean region in 2003, 2004 and 2005, Commission 5 will also concentrate effort toward FIG Events in other regions (see below) and encourage participation of Delegates in those regions. As many Steering Committee members as possible will also be encouraged to participate in those events.
- C5 Event: These are directly associated with Commission 5 Working Groups.
- Inter-Commission Event: Event that furthers Inter-Commission cooperation and has Commission 5 involvement.
- Liaison Events: These further Commission 5 goals for Liaison and will be attended by the Commission Chair or an appropriate member of the Steering Committee.
- UN Committees on GIS: Commission 5 is also interested in developing better liaison with UN Committees on GIS and their Working Groups which deal with issues of relevance to Commission 5 (eg Geodesy Working Group). Many of these Committees and their Working Groups have annual meetings but have not been included below. While it would difficult for Commission 5 officers to attend all such events, an effort will be made to

establish some liaison and to attend a subset of meetings. Of particular interest are those Committees covering developing countries, including:

- African Spatial Data Infrastructure Initiative – Africa SDI, CODI
- Permanent Committee on GIS Infrastructure for Asia & the Pacific – PCGIAP
- Permanent Committee on SDI for the Americas – PC IDEA.

## **2002**

- GIS'02 – International Symposium on Geographic Information Systems, 23-26 September, Istanbul, Turkey (Inter-Commission Event)
- Workshop on Reference Frame in Practice (see WG5.2 Work Plan above), probably in France in late 2002 (C5 and Liaison Event).

## **2003**

- International Seminar on Development of Land Management in the Mekong Region, February, Phnom Penh, Cambodia (Strategic FIG Event)
- FIG Working Week and XXVI General Assembly, 19–23 May, Eilat, Israel (FIG WW)
- IUGG 23rd General Assembly, June – July 2003, Sapporo, Japan (Liaison Event)
- 4th International Conference on Mobile Mapping Technology, Mid-August, Kuming, China (C5 Event)
- Conference for the Arab and Francophone Countries in Morocco in October 2003 / 2004 (Strategic FIG Event)
- The 7th South East Asian Surveyors Congress, 3-7 November, Hong Kong, China (Liaison Event).

## **2004**

- FIG Working Week and XXVII General Assembly, 23-28 May, Athens, Greece (FIG WW)
- XX ISPRS Congress, 12-23 July, Istanbul, Turkey (Liaison Event)
- Conference in Colombia, October (This may be an Inter-Commission Event or it may develop as the Strategic FIG Event for 2004)
- Commission 5 convened event on Applications of Permanent GPS/GNSS Networks, in late 2004 in Brisbane, Australia. Ideally, this will be joint with IAG. (C5 and Liaison Event).

## **2005**

- FIG Working Week and XXVIII General Assembly, 7-12 May, Cairo, Egypt (FIG WW)
- Possibly Africa (Strategic FIG Event).

## **2006**

- FIG XXIII Congress and XXIX General Assembly, August - September, Munich, Germany (FIG WW).

## ACKNOWLEDGMENT

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## BIOGRAPHICAL NOTES

**Matthew B Higgins** is a Senior Surveyor with the Queensland Resource Registry of the Department of Natural Resources and Mines, Queensland, Australia. He received Bachelor and Masters degrees in Surveying in 1983 and 1988, respectively. He is presently undertaking a part time PhD at the University of New South Wales working in GPS Heighting. Matt is Vice Chair of FIG Commission 5 on Positioning and Measurement for the period 1998 to 2002 and will be its Chair for 2002 to 2006. He is a past member of the Editorial Advisory Board of GPS World Magazine. He is also a member of the Geodesy Sub-Committees of both the Australian Academy of Sciences and the Inter-Governmental Committee on Surveying and Mapping for Australia and New Zealand. Matt is also a fellow of the Institution of Surveyors Australia.