

# The New IAG Structure

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## Preamble

The Statutes and By-Laws of the Association, as they were accepted by the IAG Council at the IAG Scientific Assembly 2001 in Budapest, are included in this new edition of the Geodesist's Handbook 2004. Consequently, these introductory remarks concerning the IAG Structure 2003-2007 are redundant, by definition. The only excuse to write these lines resides in the experience that many colleagues – geodesists, surveyors and geophysicists – start yawning when reading expressions like "Statutes" and "By-Laws".

The author of this "Explanatory Supplement" hopes to have extracted the essence of the new IAG in a less formal, but still informative way. As the full text of the Statutes and By-Laws is available in this Volume, it is allowed to mention only the more relevant elements and facts, subsequently.

The restructuring process 1999-2003 was deep and fundamental. The key elements were:

- the new structure should have a focus
- the new structure should be based on the three pillars of modern geodesy, namely the geometric shape of the Earth, the Earth's gravity field, and the orientation of the Earth in space.
- the new structure should (better) incorporate the very

successful IAG services, among other by a representation in the IAG Executive Committee.

It is very interesting to look at the "new IAG" from the perspective of history. This was done by Beutler et al. (2004), also included in this Volume.

## 1. The road from Birmingham (1999) to Sapporo (2003)

The new IAG structure was developed after the IUGG General Assembly in Birmingham in summer 1999. Between the summer 1999 and the summer 2001 a thorough review of the IAG work and structure was performed by the so-called IAG Review Committee, the work of which is documented by Beutler et al., (2002). The list of authors of this document also is identical with the list of members of the IAG Review Committee.

The report was presented to the IAG Scientific Assembly in Budapest in September 2001 in Budapest. The proposed new structure was accepted by the IAG Executive Committee and later on by the IAG Council, which held an extraordinary meeting on September 8, 2001 in Budapest. At the same meeting Rummel et al. (2002) proposed to create the the Integrated Global Geodetic Observing System (IGGOS) as IAG's first project. After the Budapest Scientific Assembly the IAG Review Committee was abolished and the IAG Committee for the Realization of the New IAG Structure was created. It was in essence composed of the IAG Executive, augmented by few experts from services and regions. The committee members were:

- Gerhard Beutler (IAG first Vice-President, Chair of Committee)
- Fernando Sanso (IAG President)
- Christian C. Tscherning (IAG Secretary General)
- Alan Dodson (President Section I)
- C.K. Shum (President Section II)
- Michael G. Sideris (President Section III)
- Bernhard Heck (President Section IV)
- Klaus Peter Schwarz (Past President of IAG)
- Ruth E. Neilan (Director IGS Central Bureau)
- John Manning (Representative of Southern Hemisphere)

The work of mapping the old structure into the new one, of creating the planning group for the Inter-commission Committee (ICC) on Theory, and of issuing the call for proposals for the Outreach Branch was given to the IAG Committee for the Realization of the new IAG structure. It was decided furthermore that the creation of a planning group for the IAG Project called IGGOS (Integrated Global Geodetic Observing System) should be left to the initiative of Reiner Rummel and Gerhard Beutler (see Beutler et al. 2004). The IAG Committee for the realization of the new IAG structure held three meetings (on September 6, 2001 in Budapest, on December 11, 2001 in San Francisco, and on April 26, 2002 in Nice).

## 2 The essence of the new IAG Statutes and By-Laws

The IAG statutes say: "The Mission of the Association is the advancement of geodesy, an Earth science that includes the study of the planets and their satellites. The IAG implements its mission by advancing geodetic theory through research and teaching, by collecting, analyzing, and modeling observational data, by stimulating technological development and by providing a consistent representation of the figure, rotation, and gravity field of the Earth and planets and their temporal variations".

The mission statement is very broad by including our Moon, the planets of the solar system, and perhaps even satellites of other planets (than the Earth) into the sphere of interests and activities of the Association. We will see below that this broad understanding is reflected by the new structure.

The Association's objectives are stated in the IAG Statutes, as well (please consult this document for more information). The scientific work of the Association is further specified in greater detail the new IAG By-Laws: The scientific work of the Association shall be performed within a component-structure consisting of:

- Commissions
- Services
- Inter-commission Committees
- the Communication and Outreach Branch, and
- IAG Projects,

hereafter called the Association components or components. When comparing the previous with the new structure we find that the Services are mentioned for the first time as IAG components on the same level of the hierarchy as the Commissions. The new structure was simplified insofar as the old "section-level" was abolished.

The Communication and Outreach Branch, Inter-commission Committees (ICCs), and IAG project(s) are new structure elements. Let us briefly browse through these elements. We only include the general definitions and remarks. The Terms of Reference of the components for the time period 2003-2007 may be found in this Volume, as well.

### 2.1 Commissions

*Commission 1: Reference Frames*  
(President: Hermann Drewes)

The objectives of Commission 1 are:

- a. The establishment, maintenance, improvement of the geodetic reference frames.
- b. Advanced terrestrial and space observation technique development for the above purposes.
- c. International collaboration for the definition and deployment of networks of terrestrially-based space geodetic observatories.
- d. Theory and coordination of astrometric observation for reference frame purposes.
- e. Collaboration with space geodesy/reference frame related international services, agencies and organizations.

*Commission 2: Gravity Field*  
(President: Chris Jekeli)

The objectives of Commission 2 are:

- a. Terrestrial, marine, and airborne gravimetry.
- b. Satellite gravity field observations.
- c. Gravity field modeling.
- d. Time-variable gravity field.
- e. Geoid determination.
- f. Satellite orbit modeling and determination.

*Commission 3: Earth Rotation and Geodynamics*  
(President: Véronique Déhant)

The objectives of Commission 3 are:

- a. Earth Orientation (Earth rotation, polar motion, nutation and precession).
- b. Earth tides.
- c. Tectonics and Crustal Deformation.
- d. Sea surface topography and sea level changes.
- e. Planetary and lunar dynamics.
- f. Effects of the Earth's fluid layers (e.g., post glacial rebound, loading).

*Commission 4: Positioning and Applications*  
(President: Chris Rizos)

The objectives of Commission 4 are:

- a. Terrestrial and satellite-based positioning systems development, including sensor and information fusion.
- b. Navigation and guidance of platforms.
- c. Interferometric laser and radar applications (e.g., Synthetic Aperture Radar).
- d. Applications of geodetic positioning using three dimensional geodetic networks (passive and active networks), including monitoring of deformations.
- e. Applications of geodesy to engineering.
- f. Atmospheric investigations using space geodetic techniques.

Each Commission has a Steering Committee, with a maximum of twelve voting members, who define the appropriate sub-structure of the Commission, which may consist of the following components:

- a. Sub-commissions,
- b. Study Groups.
- c. Commission Projects

The Commissions were encouraged to set up inter-commission components and components together with the ICCs.

## 2.2 Services

All services somehow associated with the IAG in the past were invited to become official IAG Services under the new structure. The following services decided to follow this invitation in the sense defined by the new IAG Statutes and By-Laws:

- IERS (International Earth Rotation and Reference Systems Service)
- IGS (International GPS Service)
- ILRS (International Laser Ranging Service)
- IVS (International VLBI Service for Geodesy and Astrometry)
- IGFS (International Gravity Field Service)
- IDS (International DORIS Service)
- BGI (International Gravimetric Bureau)
- IGES (International Geoid Service )
- ICET (International Centre for Earth Tides) (Belgium)
- PSMSL (Permanent Service for Mean Sea Level)
- BIPM (Bureau International de Poids and Measure - time section)
- IBS (IAG Bibliographic Service).

The IAG services work in a relatively independent way. Their decision to join the IAG as services in the sense of the new Statutes and By-Laws could not be "enforced" by the IAG. They are represented in the IAG Executive Committee by three members. This implies that the three representatives do not represent all the services.

IAG has a mix of very old and very young services. Their history is very interesting. Consult Beutler et al. (2004) for more information.

## 2.3 Inter-commission Committees.

The establishment of Inter-commission Committees (ICCs) was not a trivial task. The idea of ICCs emerged when discussing the future of Section IV "General Theory and Methodology" of the old IAG structure. The construction was triggered on one hand by the insight that "theory" should not (and cannot) be handled within one theory-oriented Commission only, but that theory must be an integrated part of all Commissions. It was also clear, on the other hand, that there are disciplines related to theory which cannot be dealt with within one Commission, but which are relevant to all Commissions. For problems of this kind a coordinating entity seemed to be necessary. The opinion of the IAG Committee on the New Structure and (later on) of the IAG Executive Committee (old and new) is very well captured by the definition given in the By-Laws:

"Inter-commission Committees handle important and permanent tasks involving all Commissions. Each Inter-commission Committee shall have a steering committee consisting of the following membership:

- a. President appointed by the IAG Executive Committee.
- b. Vice-president appointed by the IAG Executive Committee.
- c. One representative from each Commission.

The terms of reference for each Inter-commission Committee shall be developed by a planning group appointed by the IAG Executive Committee. The Inter-commission Committees report to the IAG Executive Committee. The Inter-commission Committee will be reviewed every eight years."

When reading the Terms of Reference of the ICCs, one might get the impression that the above definition is not (always) literally observed. There are, e.g., purely internal Working Groups in in the ICC on Theory. This exception was approved by the Executive Committee.

One may be moreover amazed to find not only the ICC on Theory (chaired by Peiliang Xu), but also proposals for an ICC on Planetary Geodesy and for an ICC on Geodetic Standards. The IAG Council authorized the IAG Executive Committee to set up the two ICCs, provided the planning groups could finalize the preparatory work. Currently, the planning groups for both ICCs are finalizing their preparatory work. Intermediary reports of the planning groups are contained in this Volume.

The ICC on Planetary Geodesy is an excellent example for an ICC in the spirit of the above definition: The exploration of the Moon and of planets (other than the Earth) using geodetic techniques is, in particular in view of the "race to Mars" of the prominent space agencies taking place currently, a hot topic and should undoubtedly be addressed by IAG. It is also crystal clear that the topic involves all IAG Commissions. The same is also true in the case of the ICC on Standards: IAG must make available fundamental constants, etc., and speak with one tongue in such questions. This task shall be delegated to the ICC on Standards. In order to accomplish the task, the ICC has to maintain very close links to the Commissions, but in this case also to the IAG Services; in particular to the IERS, maintaining the well-known IERS Conventions.

## 2.4 The IAG Project

The new structure allows it to create IAG projects. IAG projects are, as a matter of fact, a (and perhaps the) essential element to realize a focus in the work of the Association. Let us again quote the IAG By-Laws:

"IAG Projects are of a broad scope and of highest interest and importance for the entire field of geodesy. These projects serve as the flagships of the Association for a long time period (decade or longer).

The IAG Executive Committee shall appoint planning groups for the creation of each IAG Project. Each IAG Project shall have a Project Steering Committee consisting of the following membership:

- The project chair appointed by the IAG Executive Committee
- One member from each Commission appointed by the Commissions'
- Steering Committees
- Two Members-at-Large proposed by the members of the Project
- Steering Committee and approved by the IAG Executive Committee
- Chairs of the IAG Project sub-groups (if any).

In the IAG Structure 2003-2007 there is exactly one project, the IGGOS, standing for Integrated Global Geodetic Observing System. A planning group for the IGGOS was set up at the IAG Scientific Assembly in Budapest, a first meeting was held in May 2002 in Washington, a second one in October 2003 in Munich. The terms of Reference of the IGGOS project are contained in this volume, as well. More information concerning IGGOS and its importance from the perspective of history may be found in Beutler (2004).

The IGGOS project is chaired by Christopher Reigber from the GeoForschungsZentrum (GFZ) in Potsdam. With this appointment the IAG goes back, at least geographically, to its roots: Friedrich Robert Helmert, the first director of the IAG Central Bureau, was residing in Potsdam as well – as a matter of fact in the same building and at the same desk as the IGGOS president. We of course all assume that the "genius loci" will make IGGOS a great success.

## 2.5 Communication and Outreach Branch

Nowadays, Communication and Outreach are of eminent importance, not only in politics, but also in science. This aspect shall be in particular dealt with by the so-called IAG Communication and Outreach Branch.

Let us again quote the relevant definition from the IAG By-Laws: "The Communication and Outreach Branch provides the Association with communication, educational/public information and outreach links to the membership, to other scientific Associations and to the world as a whole.

The responsibilities shall include the following tasks:

- Promote the recognition and usefulness of geodesy in general and IAG in particular.
- Publications (newsletters)
- Membership development.
- General information service and outreach.

The Communication and Outreach Branch may also assist the IAG Central Bureau in the following tasks:

- Maintenance of the IAG Web page,
- Setting up Association schools,
- Setting up meetings and conferences,
- Maintaining the Bibliographic Service.

A Call for Proposals was sent out in fall 2002. IAG was very lucky to be able to make its final selection from various excellent proposals. Eventually, the proposal of the Budapest University of Technology and Economics was accepted. Jozsef Adam is the director of the Communica-

tion and Outreach Branch. The address of the new IAG homepage is "www.iag-aig.org".

### **3. Individual Membership**

The Membership of the Association consists of Countries, Candidate Members, Individual Members and Fellows. The individual membership is a new element of the new IAG structure. It is the attempt of the Association to improve the "IAG esprit de corps". The rights and privileges of individual members are listed in the IAG By-Laws. The membership lets you take part more actively in the life of the association. It is accompanied by a modest annual fee, which, in the good old IAG tradition is used primarily to support our young colleagues and our colleagues from developing countries. Membership forms may be downloaded from the IAG homepage ([www.iag-aig.org](http://www.iag-aig.org)). You also find a specimen attached to this report.

### **4. Concluding Remarks**

The IAG Review and restructuring process was long and (to a certain extent) exhausting. The result is interesting and promising. The new structure is, of course, also a compromise of (at times very) different positions, attitudes, and opinions. Be this as it may: The time of restructuring is

over. We now have to bring the Association, within the new framework, to life and to work.

I am personally looking forward to four years of hard, but also rewarding work. It will be in particular of greatest importance that the interface between commissions and services is defined properly, that frictions between Commissions and Inter-commission Committees are minimized, and, last but not least, that the IGGOS actually develops into the proud IAG flagship – as it is supposed to be according to the IAG By-Laws.

### **References:**

Beutler G, Brunner F, Dickey J, Feissel M, Forsberg R, Mueller I I, Rummel R, Sanso F, Schwarz K-P (2002) The IAG review 2000-2001: Executive summary. International Association of Geodesy Symposia, Vol. 125: 603-608.

Rummel R, Drewes H, Beutler G (2002) The IAG review 2000-2001: Executive summary. International Association of Geodesy Symposia, Vol. 125: 603-608.

Beutler G, Drewes H, Verdun A (2004) The new structure of the International Association of Geodesy (IAG) viewed from the perspective of history. Geodesist's Handbook 2004. Journal of Geodesy, this Volume.



## Membership Application Form 2004

Please complete and send to: IAG Central Bureau, c/o University of Copenhagen,  
 Department of Geophysics, Juliane Maries Vej 30, DK-2100 Copenhagen O, Denmark.  
 Fax: +45 35365357 <http://www.gfy.ku.dk/~iag/>

|                     |               |                   |
|---------------------|---------------|-------------------|
| For office use only | Date received | Membership number |
|---------------------|---------------|-------------------|

Please use BLOCK CAPITALS

### Personal details

|   |  |             |  |                               |                             |
|---|--|-------------|--|-------------------------------|-----------------------------|
| Surname/Last/Family Name                                |  | Other Names |  | Title<br>(Prof/Dr/Mrs/Ms etc) | Date of Birth<br>dd/mm/yyyy |
| Address<br>(to which<br>correspondence<br>will be sent) |  | Telephone   |  |                               |                             |
|   |  | Fax         |  |                               |                             |
|   |  | E-mail      |  |                               |                             |
| Postcode/zip  |  | Country     |  |                               |                             |

### Class of membership (tick one)

|                                     |                          |  |  |   |                          |
|-------------------------------------|--------------------------|--|--|---|--------------------------|
| Individual<br>one year (USD 50)     | <input type="checkbox"/> | Individual<br>four year (USD 150)                      | <input type="checkbox"/>                   | Individual at reduced fee<br>Application submitted separately       | <input type="checkbox"/> |
| Free<br>Student                     | <input type="checkbox"/> | University/College and<br>signature of department head |  |   |                          |
| Free<br>Retired                     | <input type="checkbox"/> | upon accepting e-mail communication only               |  |   |                          |
| Concessionary –<br>Retired (USD 30) | <input type="checkbox"/> | upon requesting communication by regular mail          |  |   |                          |
| I represent<br>the institution      | <input type="checkbox"/> | Institution name:                                      | and I want to pay for<br>the membership of | persons, the names of which will be<br>submitted by special letter. |                          |

### IAG Fund (voluntary)

|                                       |              |                          |                 |                          |                 |  |
|---------------------------------------|--------------|--------------------------|-----------------|--------------------------|-----------------|--|
| I wish to contribute to the IAG Fund: | Annual basis | <input type="checkbox"/> | One-and-for-all | <input type="checkbox"/> | Amount<br>(USD) |  |
|---------------------------------------|--------------|--------------------------|-----------------|--------------------------|-----------------|--|

### Payment details (tick one)

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| <input type="checkbox"/> | Cheque             |  |  |                      |                                     |                               |
| <input type="checkbox"/> | Credit Card Number |  |  | Expiry date          |                                     | Security<br>Code              |
| <input type="checkbox"/> | Name on card       |  |  | Credit card<br>type: | MasterCard <input type="checkbox"/> | VISA <input type="checkbox"/> |
| <input type="checkbox"/> | Bank transfer      | Bank: Den Danske Bank, Borups Have 117 2000 Frederiksberg, Denmark<br>Account No.: 3785 070518 |  |                      |                                     |                               |

### Benefits of individual membership

I wish to subscribe to the Journal of Geodesy at a reduced price

I wish to become a member of the IAG Commission:

1. Reference Frames       2. Gravity Field   
 3. Earth Rotation and Geodynamics       4. Positioning and Applications

I wish to be admitted as a member of the International Association of Geodesy (IAG) because I am/have participated in IAG activities   
 and/or I work in geodesy

|           |  |      |  |
|-----------|--|------|--|
| Signature |  | Date |  |
|-----------|--|------|--|