3.7 IERS Working Groups

3.7.1 Working Group on Site Survey and Co-location

After the positive response of the IERS Directing Board to P. Sarti's proposal to initiate a co-chair of the working group with Dr. John Dawson (Geoscience Australia), from January 2012 the co-chair became effective. The Charter of the working group was revised by the new chairs and the Terms of Reference and goals were re-written as follows.

Terms of Reference

The combination of space geodetic solutions is critically reliant on the availability of local tie vectors, which are the relative positions of the reference points of co-located space geodetic instruments determined by some survey technique. Tie vectors enter the combination of space geodetic solutions effectively as a fifth technique and are not only necessary for rigorous terrestrial reference frame realization but also serve to highlight the presence of technique- and/or site-specific biases.

With the ultimate objective of improving the accuracy of tie vectors as well as the consistency of space geodetic solutions, the Working Group (WG) will provide an authoritative source of surveying methodology advice, promote technical discussion, provide a forum for the evaluation of existing and new procedures and analysis strategies, and support the exchange of relevant information across GGOS and between the IAG technique services. The WG will also support new survey activities with advice and advocate for re-survey where necessary.

Goals and objectives

Research:

- Revise existing local tie procedures
- Revise existing tie vector estimation processes
- Develop and define new methods

Coordination:

- Liaise with IERS combination centres
- Liaise with IAG technique services
- Direct research towards the investigation of technique specific systematic effects

Outreach:

- Remotely support local tie operations and tie vector estimation
- Spread the know-how
- Set guidelines

2012 WG Meeting

The annual meeting of the *IERS Working Group on Site Survey and Co-location* took place on April 25th, 2012 at the Vienna International Centre, room SM6, during the EGU2012, 13:30-15:00. As it is usual, the meeting was very well attended: the list of 38 participants is given in Table 1.

The large number of attendees evidently confirmed the strong interest related to the investigations promoted by the working group.

A presentation given by Pierguido Sarti summarized the last three years of activity of the WG, highlighting the major achievements and the problems that still remain unsolved. The presentation can be found at the WG web site in the “documents” section and in the 2012 meeting sub-section.

A long standing goal is the preparation of a handbook containing local tie procedures and tie vectors computation guidelines, easy to use for surveyors and other interested users. The task is far from being trivial as the procedures implemented at each observatory are usually site dependent and largely rely on the know-how of the local surveyors. Though, a document containing general guidelines is still highly desirable and should be prepared and endorsed by the WG.

The IERS DB has approved the creation of an action group (AG) to actively face some stringent requirement related to the archiving, standardization and availability of the local tie data. The AG will be operatively supported by the IGN (France) and will be formed by people working at IGN with an advisory board created by a selection of members of the WG. IGN also aims at continuing the local tie survey activity once per year. Additionally, NGS (USA) has the same commitment for the future years.

A presentation was given by X. Collilieux to illustrate the design of the web site developed at IGN to archive and format the local survey data. IGN aims at establishing a permanent service to access the relevant information and the metadata for each co-location site. The presentation is available on the IERS web page dedicated to the WG activities, under the “documents” section and in the 2012 meeting sub-section.

A major shortcoming in the magnitude of the discrepancies between tie vectors and space geodetic solutions is related to space geodetic techniques systematic errors. Jim Ray presented a comprehensive overview of the state of the art on this topic. It is obvious that an improvement of the combination residuals requires a tight cooperation between all four IAG space geodetic services and the agencies/surveyors in charge of the local ties. The WG can serve here as efficient common forum.

It was proposed to organize a new workshop/school on local ties and tie vector computation after 10 years from the first one held in 2003. Proposed locations were Matera (Italy) or Paris (France) in a period shortly before or after the IERS Directing Board retreat.

Table 1: 2012 working group meeting participants list.

Participant name	***Institution***	***e-mail***
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Web site The WG's web site <http://www.iers.org/WGSiteSurvey> is maintained by the IERS Central Bureau with input from the WG Chair. In 2012, new documents were added.

Pierguido Sarti