

The IGS Real-time Working Group Terms of Reference

Introduction

Many very demanding applications and systems now require GPS raw data and products with greatly reduced delays. The requirement for real-time data and products is inevitable and it now seems prudent for the IGS to establish real-time systems. Non-IGS near/real-time networks are emerging without standards to insure compatibility, integration, access, and sharing. To fully serve the multi-disciplinary scientific user community the IGS must work towards enhancing its standards for infrastructure and data and product availability. This will place the IGS in a position to, as soon as practical, serve real-time user's needs.

Having a real-time vision is not new to the IGS. Members of the IGS have been discussing for several years the creation of a real-time component to the IGS. For example, the Annapolis Network Workshop held in 1998 included a number of presentations on the topic, topics that were further discussed in 2000 at Oslo. Also, the IGS community does not lack real-time experience as demonstrated by the existence of specialized real-time GPS networks operated by several member agencies in Europe, Asia and North America. At the 16th IGS Governing Board meeting last December there was a strong consensus from Board members that the IGS should establish a Real-time Working Group (RTWG) to assess and address issues involved in the IGS moving towards real-time infrastructure and processes.

The following is a proposed charter for the IGS Real-time Working Group.

IGS Real Time Working Group (RTWG) Charter

The IGS Real-time Working Group (RTWG) will assess and address issues that pertain to the IGS developing real-time infrastructure and processes. In addressing these issues the RTWG will cooperatively work towards a functional and scaleable model which demonstrates the real-time delivery of raw data and the dissemination of products to real-time analysis centers and simulated or actual real-time users respectively. The activities of the RTWG will consist of the required planning, designing and implementing stages necessary for a prototype infrastructure and processes. A pilot project will be recommended following the completion of activities.

The RTWG will plan, design and implement a prototype system for the support of precise real-time positioning guided by the principles of robustness, sustainability and acceptance. The primary products of such a system will be GPS/GNSS station data and satellite orbits and clocks, made available to the user by Internet and other economical and available streaming technologies. Potential user groups include from among others; geodetic agencies mandated to provide access to a globally consistent reference frame for all position applications, precision navigation users (LEO), agencies involved in natural

hazards monitoring, prediction, warning and response, structural engineering monitoring, near/real-time atmospheric monitoring for weather prediction, real-time earthquake seismology (simultaneously with seismological analysis), and time transfer and dissemination.

The requirements for the system will impact all components of the IGS and it will therefore be imperative that the RTWG receive cooperation and participation from all components with frequent and ongoing communication and meetings as required.

With the goal to maximize potential global acceptance and effectiveness the RTWG will:

In phase 1:

- Consider user requirements through consultation with real-time user representatives. These consultations will be used as a guide for developments and to maximize wide acceptance of the standards and specifications that are developed.
- Research globally the existing Internet infrastructures and report on the suitability for real-time data delivery in various regions of the globe.
- Investigate and adopt a real-time data format.
- Investigate, adopt and demonstrate a communications strategy for real-time data acquisition and dissemination.
- Work with interested members who wish to be involved in the refinement of phase 1 deliverables.
- Assist in coordinating and contribute to a “Towards Real-time” workshop aimed at developing plans to accommodate the changes required for a real-time component of the IGS.

In phase 2: (Parts may occur in parallel with Phase 1)

- Investigate, adopt and demonstrate a real-time communications strategy for product creation, combination, validation and dissemination.
- Develop the real-time combination of orbit, clock and ionosphere products.
- Develop a real-time robustness and reliability/integrity monitoring methodology.
- Work with interested members who wish to be involved in the demonstration and refinement of phase 2 deliverables.

Ongoing:

- Communicate plans and seek input from beneficiary or complementary agency representatives including IGS WG's, GPS/Met, Timing, Space Weather etc.

Expertise within the RTWG membership reflects the necessary background to deal with the issues in both phases 1 and 2. (Additional representation will be sought as required to help achieve the goals)