Geophysical Research Abstracts, Vol. 9, 03263, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-03263

GGSP: Realisation of the Galileo Terrestrial Reference Frame

W. Soehne(1), G. Gendt(2), M. Rothacher(2), GGSP Prototype Team

(1) Bundesamt fuer Kartographie und Geodaesie, Frankfurt am Main, Germany, (2) GeoForschungsZentrum Potsdam, Germany (wolfgang.soehne@bkg.bund.de)

The European Global Navigation Satellite System (GNSS) Galileo is going to be built up within the next years. A first test satellite GIOVE-A (Galileo In-Orbit Validation Element) has been launched at the end of 2005, the start of a second one is actually scheduled for late 2007. The In-Orbit-Validation (IOV) phase with at least four operative satellites is planned to begin at the end of 2008.

The Galileo Geodetic Service Provider (GGSP) is a project funded within the sixth framework programme of the European Union. Under the lead of GeoForschungsZentrum Potsdam (GFZ) a consortium of seven institutions has been established to set up a GGSP prototype. The main function of the GGSP prototype is the realisation and maintenance of a highly precise and stable Galileo Terrestrial Reference Frame (GTRF) which will be the basis for all Galileo products and services. This GTRF shall be a realisation of the International Terrestrial Reference Frame (ITRF) on a position precision level of 3 cm (2 sigma).

Since the potential Galileo tracking stations (Galileo Sensor Stations (GSS)) do not (yet) form part of the ITRF coordinate set, it is only possible to determine a separate GTRF on the basis of the actual data from the Galileo tracking network and connect this GTRF to the ITRF via well-known geodetic techniques, like local ties to ITRF stations. The GTRF will already be required by the time when the first Galileo signals are going to be emitted. Therefore, initial realisations of the GTRF have to be based on other station positioning data, notably GPS. It will be demonstrated by the GGSP prototype that this GTRF can be maintained by including the Galileo Signal-in-Space (SIS) once Galileo reaches its operational stage. To achieve the highest possible quality the GGSP prototype will aim for a broad integration of the GSS with other geodetic

station networks, i.e., IGS and ITRF.

In addition to the GTRF, the GGSP prototype will establish a service with products and information for the potential users, such as Earth Rotation Parameters, satellites orbits, clocks for satellites and stations, which can be used to monitor the accuracy of the corresponding Galileo Mission Segment (GMS) products and which are offered to the user community to have most precise access to the GTRF.

Although the schedule for Galileo has been delayed the prototype of the GGSP is going to built up in time. The presentation starts with an overview about the project facing the main topics and first steps. The strategy for the GTRF realisation following the “state of the art” TRF implementation will be described. Results to be expected from the GGSP prototype and considerations for the future will be discussed.