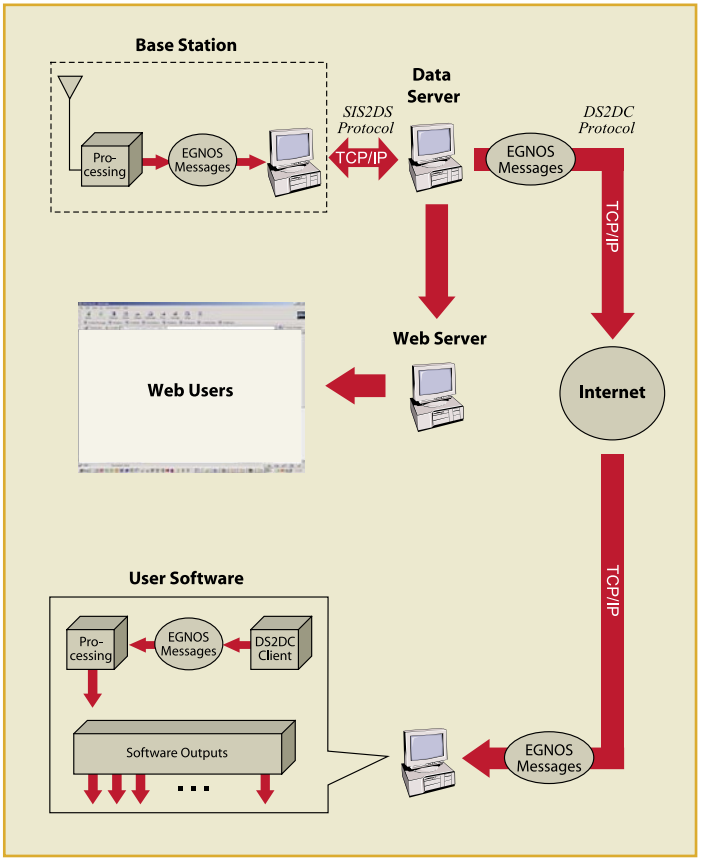
EGNOS FACT SHEET

5: SISNeT - ENHANCING EGNOS FOR LAND-MOBILE USERS

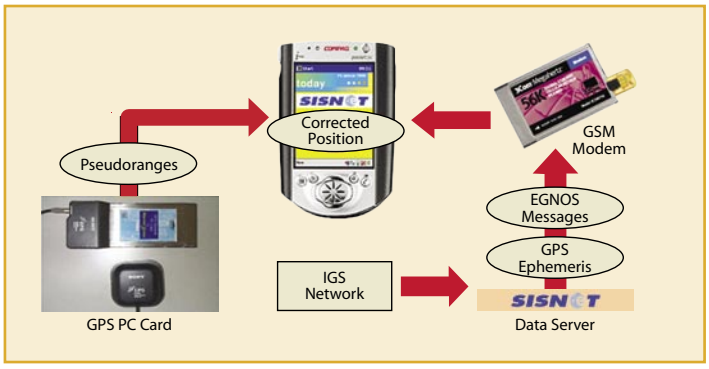


SISNeT System Architecture

SISNeT allows users to access the EGNOS signal-in-space over the Internet in real-time, improving the availability of EGNOS data in urban and other challenging environments.

EGNOS will broadcast through three geostationary (GEO) satellites, and the user has to maintain contact with at least one of them. This is fine for many users (e.g. aviation and maritime), but others (e.g. land mobile) may experience service outages in, say, urban canyons. This is particularly significant because ESA has shown that an EGNOS solution is more robust in these environments with higher mask angles, and that using the WAD corrections can deliver a few meters of accuracy (95%) with a high level of availability.
Consequently, since 2001, ESA is pursuing activities that aim to exploit fully the potential of EGNOS by investigating complementary transmission link options for EGNOS. SISNeT (Signal In Space through the interNeT) is an internal ESA project that aims to provide access to the ESTB messages over the Internet, in real time.
The SISNeT concept is illustrated opposite and comprises a Base Station, Data Server and the User Applications. The Base Station can acquire the EGNOS messages either from an EGNOS receiver or from the ESTB Central Processing Facility. These are provided in real-time to the Data Server that implements all the extra services provided by SISNeT to users (e.g text messages, ephemeris information,GPS ionospheric model parameters, etc.) and transmits these to a large number of connected users.

ESA has published a comprehensive SISNeT User Interface Document for those interested in developing SISNeT User Applications. The data rate is very small, typically 500 bit/s, and hence there is plenty of scope for embedding SISNeT on Personal data Assistants (PDAs) and other devices aimed at the land mobile market.
ESA developed a number of SISNeT applications to demonstrate the power of this new technology including real-time monitoring of the ESTB performance over the World Wide Web. ESA has also placed a number of contracts to develop EGNOS-SISNeT receivers and to demonstrate its potential including: the development of an integrated SISNeT receiver based on a GPS receiver and a GSM/GPRS modem; the development of a handheld SISNeT receiver based on an iPAQ PDA; Blind pedestrian navigation in urban areas; dissemination of EGNOS data obtained from SISNeT via Radio Data



SISNeT User Concept

ESA Navigation Web Page:
www.esa.int/navigation

ESA EGNOS Web Page:
www.esa.int/EGNOS/

ESA EGNOS for Professionals Web Page:
www.esa.int/navigation/egnos-pro

ESA ESTB Web Page:
www.esa.int/ESTB

ESA EGNOS Help Desk:
EGNOS@esa.int

ESA Galileo Web Page:
www.esa.int/Galileo

EC Galileo Web Page:
http://europa.eu.int/comm/dgs/energy_transport/galileo/

FAA GPS Product Team:
http://gps.faa.gov/

Galileo Joint Undertaking:
www.galileoju.com

System (RDS) and Digital Audio Broadcast (DAB) signals; and demonstrations of SISNeT receivers in cars and buses.

The real benefits of SISNeT are clear:

- The EGNOS signal is available even if the EGNOS Geostationary satellites are not visible;
- The SISNeT data rate is less than 1 kbps, and hence can be accessed through wireless networks like GSM or GPRS;
- You no longer need an EGNOS receiver to obtain the EGNOS data - only a connection to the Internet is required; and
- Pedestrian or land-mobile users will benefit from improved performance at higher mask angles in urban environments.

A SISNeT account can be requested by sending an email message to SISNeT@esa.int. Each account consists of a username, password and the IP address/port of the SISNeT Data Server.

ESA plans to release version 3.0 of the SISNeT platform (currently available in test version) in the short-term. Some benefits of the new version are the following:

- You can benefit from a reduced receiver Time-To-First-Fix (TTFF) of 10 - 20 seconds, with respect to the typical 3 - 5 minutes needed by an SBAS receiver.
- You can relax message reception rate, optimising communications bandwidth usage. Since GPS Selective Availability (SA) is off and SISNeT is not intended for safety-of-life applications, the frequency of reception of certain SBAS messages (e.g. fast corrections) can be significantly reduced. SISNeT allows requesting recently broadcast messages “a la carte”, just when they are needed.
- On the other hand, messages that are broadcasted with a low frequency (e.g. ionospheric corrections) can be quickly acquired via SISNeT when needed, without having to wait several minutes to get them from the Signal-In-Space.