20: EGNOS DATA ACCESS SYSTEM (EDAS)

Today, EGNOS relies on three geostationary satellites to disseminate wide area differential corrections and integrity messages to users. From late 2005, the EGNOS Data Access System will allow EGNOS to offer the proven SISNeT (Signal In Space over the interNeT) service as well as making available a much greater variety of EGNOS data.

EGNOS is being developed to augment the US Global Positioning System (GPS) and Russian Federation GLONASS system and will become operational from mid-2005. It broadcasts a GPS look-alike signal modulated with Wide Area Differential (WAD) corrections and integrity data from three geostationary satellites and the user needs to maintain contact with at least one of them. This is fine for many users (e.g. aviation or maritime), but others (e.g. land mobile) may experience service outages in, say, urban canyons. As a result, ESA has investigated a number of complementary communications links for EGNOS including the Internet, DAB (Digital Audio Broadcast) and RDS (Radio Data Service).

In 2001, ESA launched the first version of its SISNeT (Signal In Space over the interNeT) product based on data from the prototype EGNOS System Test-Bed (ESTB). This has successfully demonstrated: how EGNOS services can be provided over the Internet and wireless networks and that the impact of the EGNOS corrections in challenging environments (e.g. urban canyons) is much greater than in simple environments with open skies. SISNeT has since been trialled successfully by blind pedestrians as well as in cars and buses.

SISNeT's success has prompted ESA to find a way of providing a similar service based on the operational EGNOS system. This has led to the EGNOS Data Access System (EDAS): a significant evolution of SISNeT that will make available to multi-modal service providers in real time a much wider range of EGNOS data products with guaranteed latency, security and safety performance parameters. These can then be exploited to support the development and delivery of innovative services to end-users.

EDAS is illustrated in FIGURE. It will be linked to the operational EGNOS system through an interface that provides real-time data including:
• all wide area differential corrections and integrity data;and
• raw RIMS data.
This is the only place where data can be extracted directly from EGNOS in real-time and with guaranteed performance parameters. EDAS will then convert the EGNOS products to internationally-accepted open standards and make them available to an almost unlimited number of users.

EDAS will comprise two software components: the server itself and client software resident at the external multi-modal service provider. From there, the service provider will add its own value-added content to support or enable user applications.
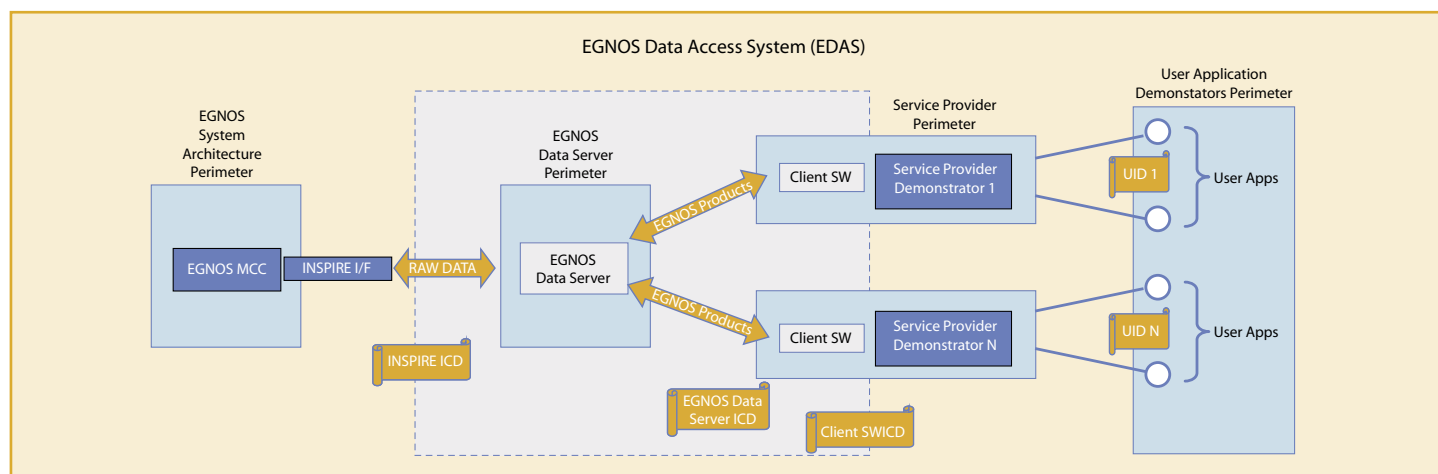
EGNOS Data Access System (EDAS) Architecture

Initial analyses have shown that EDAS has huge potential: at one level, this will open up the market for differential services by allowing new or existing service providers to extend or augment their existing services; and at another, it will provide a cost-effective source of differential corrections and integrity information to fleet management centres in all transport sectors. There are also real opportunities for supporting policy delivery and in the scientific sector.

EGNOS itself is a huge milestone for Europe marking, as it does, the first European satellite navigation services. When EDAS becomes operational in late 2005 it will herald the start of a new and user-driven approach to GNSS service delivery: value-added GNSS services based on European-wide and quality-assured data and delivered over the most appropriate communications links. Finally, it will help to prepare users for the new Galileo services that are expected at the end of this decade.