A strong position

Antonella di Fazio on a European Project that has dangerous goods best practice at its core

The road sector is among the largest markets for GNSS (Global Navigation Satellite Systems) applications. Satellite navigation technology is widely used in the automotive market, for mass-market and professional applications.

EGNOS (European Geostationary Overlay Service) is the first European GNSS system, and has been operational since 2009. EGNOS improves the GPS position accuracy up to 3-4 metres and provides integrity information over Europe.

A European Research and Development project called SCUTUM launched the European best practice for the operational adoption of EGNOS services in the transport of dangerous goods by road. SCUTUM, SeCUring the EU GNSS adopTion in the dangeroUs Material transport, is a European project managed by the European GNSS Supervisory Authority (GSA) through the EU FP7 funds.

In the framework of the SCUTUM project, eni, a leading oil company, had the opportunity to prove EGNOS's added value compared to GPS alone and validated the relevant operational benefits in terms of higher safety and efficiency in the transport of dangerous materials. Based on the trials' results, eni has decided to use EGNOS in real operations to track and trace its transport fleet throughout Europe.

With intention to extend monitoring, eni uses EGNOS to track and trace more than 300 tankers carrying hydrocarbon and chemical products in Europe

Today more than 300 eni tankers transporting hydrocarbon and chemical products in Europe (Italy, France, Austria, Slovakia, Hungary, Romania, and Czech Republic) are tracked and traced with EGNOS. Moreover, eni plans to gradually extend the use of EGNOS to also monitor the transportation of chemicals and aviation products, and to other European countries (Germany and Switzerland in 2012).)

MAINTAINING INTEGRITY

EGNOS and Galileo are the two systems implementing the European strategy. Galileo will be Europe's own global navigation satellite system that will provide highly accurate, guaranteed positioning services. EGNOS is the first European GNSS system and has been operational since 2009. EGNOS is a Satellite-Based Augmentation System (SBAS) that augments the GPS signal and provides more precise positioning services (up to 3–4 metres) over Europe. In addition, it gives users information on the reliability of the GPS signals ('integrity data'), thus rendering it suitable for commercial and professional applications requiring very accurate and guaranteed positioning. These characteristics of EGNOS enable a range of services for commercial purposes, mainly linked to the transport field for professional and regulated applications. For the tracking and tracing of vehicles and in particular for the transport of goods, EGNOS added value lies in its ability to provide a more precise and reliable localisation when compared to GPS alone (figure 1). Generated benefits are in higher safety and efficiency of operations.

A European Research & Development project called SCUTUM which ran from February 2010 until December 2011, launched the operational adoption of EGNOS to track and trace the road transport of dangerous goods. In fact, following the SCUTUM's successful trials, eni decided to use EGNOS to monitor its fleet transporting oil and gas products by installing EGNOS-enabled devices on the trucks transporting dangerous goods in Europe (figure 2). The reason for such a decision was due to the fact that the EGNOS characteristics enable a more precise localization and reliable tracking and tracing of the trucks (figure 3), and thus ensure higher safety of transport operations.

SCUTUM STANDARDIZATION

SCUTUM also developed a technical standardization through a CEN (European Committee for Standardization) >>>

"It gives users information on the reliability of the GPS signals, thus rendering it suitable for commercial and professional applications requiring very accurate and guaranteed positioning"

CHARACTERISTICS OF EGNOS

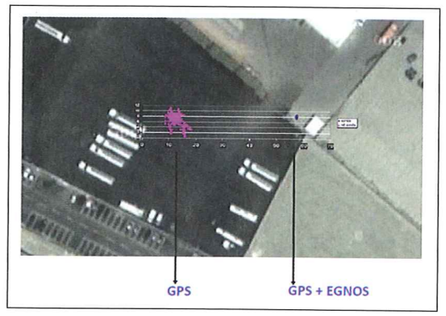


Figure 1: EGNOS can provide a more precise and reliable localisation when compared to GPS alone, resulting in higher safety and efficiency of operations

Figure 2: EGNOS-enabled devices fitted to vehicles allow eni to monitor its fleet accurately when carrying dangerous goods

"[The CWA 16390 agreement] is flexible, so as to cope with different architectures, ensure its applicability in ITS systems and various mobility-related applications (including traffic information and personal mobility applications)"

Workshop. The result is a CEN Workshop Agreement, CWA 16390, specifying the European technical specification standard for the implementation of products, services and applications based on EGNOS.

CWA 16390 specifies:

- The data (and relevant format) from GPS/EGNOS receivers, in order to generate EGNOS added value services. An example of these services is the provision of EGNOS corrections via terrestrial networks and the calculation of position confidence level, i.e. maximum error;
- The type/format of the added value services.

CWA 16390:

- Is suitable for GPS/EGNOS receivers available on the market for automotive applications;
- Is architecture-and technology-independent;
- Is flexible, so as to cope with different architectures, ensure its applicability in ITS systems and various mobility-related applications (including traffic information and personal mobility applications).

CWA 16390 was endorsed by several European stakeholders from industries, institutions and research sector.

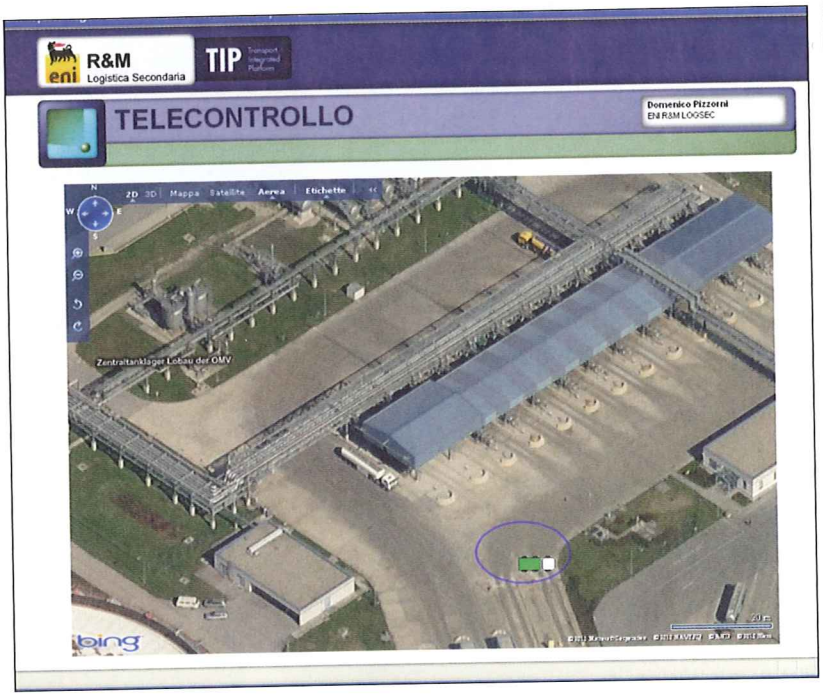
The CWA 16390 is published by CEN and it is freely available on the CEN website at the link http://www.cen.eu/cen/Sectors/Sectors/ISSS/Pages/SCUTUM.aspx. CEN 16390 can be adopted on a voluntary base, for example, by those ITS products/solutions developers and integrators, interested to exploit EGNOS added value in transport and mobility applications for which accuracy and confidence on the position enable to guarantee higher safety and security.

CWA 16390 can also be endorsed at national level by national authorities. For example, it was validated by the Ministries of Transport in Italy and France, partners in the SCUTUM project, in the perspective of the ITS Directive and as part of a shared vision for EGNOS adoption and exploitation.

SCUTUM's results and CWA 16390 principles are in line with the European Directive for the deployment of Intelligent Transport Systems, the Directive 2010/40/UE (ITS Directive), that specifically recommends the use of EGNOS/Galileo to provide positioning services, and notably for the tracking and tracing of freights along their journey and across modes of transport.

CHARACTERISTICS OF EGNOS

Trucks transporting dangerous goods can be tracked and traced to a more precise location with EGNOS, allowing safer transport operations



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