EGNOS FACT SHEET

18: MAKING GUIDE DOGS REDUNDANT

We are all used to seeing guide dogs helping blind people to find their way around city streets, but will the latest EGNOS trials challenge their supremacy? Read on …

Cities are probably the most demanding environments for satellite navigation systems. Urban canyons block some signals to degrade service continuity and reflect others to degrade signal accuracy. This results in erratic position fixes with an accuracy that can be little better than 30 or 40 m. As a result of this, the current GPS system provides neither sufficient accuracy nor sufficient continuity of service to guide pedestrians in cities.

We can improve GPS using inertial systems, but today these are relatively expensive and hence unsuitable for the mass market. However, EGNOS is a more cost-effective solution. It broadcasts GPS corrections and integrity data from geostationary satellites to improve GPS accuracy to a few metres, making it sensitive enough to locate obstacles in the street. But the urban canyons can also block the EGNOS signals, and this is why ESA has developed its complementary SISNET technology that relays the EGNOS signal in real-time over the Internet and wireless networks.

ESA has been working to test EGNOS and SISNET with the Tormes personal navigator for the blind developed by GMV Sistemas and ONCE, the Spanish national organisation for the blind. Tormes is based on the Sonobraille platform that includes a Braille keyboard and a voice synthesiser. It also includes a GPS receiver. TORMES not only provides users with their position but also with routing and guidance.

Valladolid city in Spain is the location for the EGNOS trials. These have been defined by ONCE, and will quantify the improvements provided by EGNOS and SISNET by comparing the upgraded Tormes against the previous version in three representative districts: Parquesol (peripheral residential zone), Rondilla (central residential zone) and downtown. The flexible data processing approach means that the results can be analysed graphically and statistically.

TORMES Trials In Valladolid

Upgrading Tormes with EGNOS and SISNET is potentially very powerful. It allows the blind user to navigate using a map in a similar way to a sighted person. Moreover, the internet connection can be exploited to contact a control centre to ask for directions or help if there has been an accident.

This is just one of the ways that EGNOS can improve the accuracy of GPS to demonstrate new uses for satellite navigation. The benefits outlined here will be extended when Galileo, the future European satellite navigation system, becomes operational. On its own, Galileo will deliver an independent, civil controlled positioning service worldwide with metre-scale accuracy. Together with GPS, Galileo will significantly improve continuity of service in urban environments.

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