



Identifying ITS Opportunities for the HA Location Positioning Newsletter: November 2009

■ ITS RADAR INTERNATIONAL PROJECT

This project is providing intelligence for the Highways Agency on ITS developments in Europe and around the world. It is carried out by TRL and AECOM on behalf of the HA. The project summarises key information for decision makers and practitioners on activities related to Intelligent Transport Systems (ITS). The project covers specific areas of key interest to the HA.

Regular newsletters are being produced, covering information which is in the public domain. For more information about the project and the services provided, the web site can be reached at: www.highways.gov.uk/itsradar.

To contact us and let us know what you would like this project to deliver please email us at: ITSRadarInternational@trl.co.uk

■ ABOUT LOCATION POSITIONING

This newsletter covers key developments in positioning information relevant to ITS, such as GNSS (Global Navigation Satellite Systems), the Global Positioning System (GPS) and Geographical Information Systems (GIS).

The Galileo Programme is a joint initiative of the European Commission (EC) and the European Space Agency (ESA) to provide Europe with its own independent global civilian controlled satellite navigation system. This is a particular area of focus in ITS Radar International news on Location Positioning.

The Galileo system will allow users to pinpoint their location at any time to a high degree of accuracy, and will ensure Europe's competitiveness in a global market in satellite navigation products and services.

When fully deployed, Galileo will consist of a constellation of 30 satellites in 3 orbits offering unprecedented accuracy and reliability of positioning. This allows for a range of many applications, products and services to be developed for use in transport, telecommunications, fisheries and agriculture, civil protection, building, construction etc. Galileo was due to go live in 2008 but it is now predicted to be in operation by 2013.

■ MEETINGS

International symposium on GNSS/GPS 2009

Source: [Inside GNSS](#)

This year's event will be held over 4 to 6 November 2009, in Jeju Province, Korea. The event will cover topics including:

- GNSS modernisation
- Alternatives and Backup to GNSS
- Augmentation Systems: DGNS / NDGPS / HANDGPS / WAAS / LAAS.

Further information is available on the [GNSS/GPS 2009 event website](#).

ITS Radar International will monitor the outcome of the symposium

Invitation to visit GALILEO test bed and Galileo control centre

Source: [FP7 News](#)

The Galileo Test and Development Environment (GATE) is the open-air test and development site for ground-based Galileo applications. Organisations and small and medium sized enterprises (SMEs) will be able to test and certify their Galileo applications there.

Over 26-27 November 2009, companies and organisations with an interest in Galileo applications, including those in the automotive and ICT domains, are invited to visit GATE and the Galileo control centre, which are located in Bavaria, Germany. The event will also include presentations on aspects such as:

- Existing Galileo applications and some of those under development
- Timescales for the Galileo programme
- Conditions and procedures for testing and certification
- Services of the European Enterprise network and EU funding for SMEs.

Further information on the event and the programme can be found on the [FP7.co.uk web site](#). Registration forms should be submitted by 6th November.

The contact point for further information is the event coordinator:

zehnter@bayern-innovativ.de

HA recommended to consider attending

IGNSS conference 2009

Source: [Inside GNSS](#)

The 2009 International Global Navigation Satellite Systems Society (IGNSS) conference and trade exhibition will be held in Queensland, Australia over 1 to 3 December 2009.

Presentations during the event will address:

- System status
- Trends and technologies
- Policy issues
- Applications

- Non-satellite positioning methods.

More information about the event can be found on the [IGNSS 2009 website](#).

ITS Radar International will monitor the outcome of the conference

■ HOT TOPICS

LORAN-C on the brink of termination?

Source: [Inside GNSS](#)

A recently approved fiscal year 2010 appropriations bill for the U.S. Department of Homeland Security (DHS) allows for the termination of the LORAN-C signal on 4 January 2010.

In order for the programme to be shut down, two more signatures are required. One from the commandant of the U.S. Coast Guard confirming that the system is no longer required for navigation, and the other from the Secretary of DHS, confirming that the system is not required as a backup to GPS.

This action has come amidst numerous discussions for and against the continuation of the eLORAN programme and the 2006 recommendation of an Independent Assessment Team (IAT) that eLORAN could serve as a backup for GPS. The author argues that this terminating LORAN-C could affect the future of eLORAN.

The discussions on eLORAN's future and its role as a backup to GPS are covered in a previous [ITS Radar International article](#).

ITS Radar International will continue to monitor eLoran developments

Ground tests completed for second GPS IIF satellite

Source: [GPS World](#)

Boeing has recently completed ground test of GPS IIF Space Vehicle 2 (SV2). According to Boeing, SV2 successfully completed a consolidated system test (CST). The CST included system-level design verification and validation tests of:

- The space vehicle
- Ground based control segments
- User equipment.

In addition, GPS master control stations successfully commanded the space vehicle (SV) as they will do when the satellite is in operational orbit.

GPS IIF satellites are expected to have twice the navigational accuracy of heritage satellites, and more robust signals for commercial aviation and search and rescue.

The first of the GPS IIF satellites (SV1) is scheduled for a February 2010 launch, followed by SV2 in April 2010.

ITS Radar International will continue to monitor GPS developments

Launch of latest GLONASS-M satellites delayed

Source: [RIANOVOSTI](#), [GPS World](#) and [GIS News](#)

Last month's [ITS Radar International article](#) stating that three new GLONASS-M satellites were launched successfully into orbit was incorrect. The launch of the satellites was delayed due to an ongoing problem with signals coming from one of the previously launched GLONASS-M satellites that has been taken out of service in August.

The launch has been rescheduled for February 2010, however, no further information has been provided regarding the problem with the signal generator of the previously launched GLONASS-M satellite. It is still unclear whether launch of three more GLONASS-M satellites scheduled for 25 December 2009 will go ahead.

Six GLONASS-M satellites are required to raise the numbers to the 24 fully operational GLONASS satellites that are needed for a worldwide service; three of those are expected to be launched before the end of 2009.

ITS Radar International will continue to monitor GLONASS

EGNOS Open Service is now available

Source: [ESA](#)

As of 1 October 2009, the EGNOS Open Service was declared operational and is now available to all users with EGNOS-compatible receivers. The EGNOS service is free of charge and is capable of increasing the accuracy of GPS signals to within 2m.

EGNOS is a satellite based augmentation system that improves the accuracy of satellite navigation signals over Europe by relaying information on the accuracy and reliability of the signal to its users. The system will also be compatible with Galileo when it is launched.

ITS Radar International will continue to monitor EGNOS

GIOVE-A repositioned as launch of future GIO satellites is delayed

Source: [GPS World](#) and [GPS World \[2\]](#)

The first Galileo In-Orbit Validation Element (GIOVE-A) has been repositioned in order to make way for the future Galileo operational satellites.

GIOVE-A has achieved all of its mission objectives since its launch in December 2005 and has remained operational in excess of the planned 2 year life span. The test satellite has secured the Galileo frequency filings with the International Telecommunication Union (ITU), facilitated the experimental reception of navigation signals from Medium Earth Orbit (MEO) and collected data to characterise the MEO environment using two different radiation-monitoring instruments. The mission has also flight-proven the main technologies developed for Galileo such as the highly accurate atomic clocks.

GIOVE-A is one of two Galileo test satellites currently in orbit that are the foundation of the future Galileo satellite navigation system. GIOVE-A remains fully operational and has sufficient propellant remaining to undertake further manoeuvres if required.

Launch of the next four In-Orbit Validation (IOV) satellites, originally scheduled for an early 2010 launch, has been delayed. The launch is now anticipated to be carried out in two stages with two satellites being launched in November 2010 and two more in 2011.

For more information on GIOVE-A please see previous [ITS Radar International article](#).

ITS Radar International will continue to monitor Galileo

■ PROJECTS

GAARDIAN project announced

Source: [GPS World](#)

A new project, GAARDIAN (GNSS Availability, Accuracy, Reliability and Integrity Assessment for timing and Navigation), has been announced by Chronus Technology. The project consortium also includes University of Bath, General Lighthouse Authorities, BT, Ordnance Survey, National Physical Laboratory, and Imperial College London.

The project team will be researching the necessary data that will be required to develop a system for mission and safety critical applications that will certify the accuracy, reliability, integrity, and continuity of Positioning, Navigation and Timing (PNT) systems: GPS, the new enhanced LORAN (eLORAN), GALILEO and GLONASS.

The project is aiming to create a network of PNT (Position, Navigation and Timing) interference detection and mitigation sensors (IDMs). These sensors will monitor the integrity, reliability, continuity and accuracy of the locally received GPS (or other GNSS) and eLORAN signals on a 24x7 basis and report back to a central server. Anomalies in either one of the PNT signals will be reported in real time. The advantage of this method is the ability to identify the nature of interference to the PNT signal more precisely than by analysing only of the signals, as has been done previously.

The project is scheduled to run from 2009 to 2011.

ITS Radar International will monitor GAARDIAN

■ RECENT PUBLICATIONS

No new publications

■ GLOSSARY

CST	Consolidated System Test (for GPS satellites)
DGNSS	Differential GNSS uses a network of fixed, ground-based reference stations to broadcast the difference between the positions indicated by the satellite systems and the known fixed positions thereby increasing the overall accuracy of the signal
DHS	Department of Homeland Security
EC	European Commission
EGNOS	European Geostationary Navigation Overlay Service

eLORAN	enhanced LORAN Range Aid to Navigation
GAARDIAN	GNSS Availability, Accuracy, Reliability and Integrity Assessment for timing and Navigation project in the UK
GATE	GALileo Test and Development Environment
GIOVE-A	The first Galileo In-Orbit Validation Element
GLONASS	Russia's GLOBAL NAVIGATION Satellite System
GLONASS-M	Second generation GLONASS satellites, designed to be lighter and to have longer lifespan
GNSS	Global Navigation Satellite Systems
GPS	Global Positioning System
GPS IIF	Follow on block II GPS satellites, last block II satellites to be deployed before the introduction of next generation GPS satellites - GPS III
HANDGPS	High Accuracy-Nationwide Differential Global Positioning System - NDGPS system in development that will be able to provide positioning data accurate to within 10 cm within the coverage area.
IAT	U.S. Independent Assessment Team
IDM	Interference Detection and Mitigation
ITS	Intelligent Transport Systems: "The integration of information and communications technology with transport infrastructure, vehicles and users" [ERTICO]
ITU	International Telecommunication Union
LAAS	Local Area Augmentation System is an all-weather aircraft landing system based on real-time differential correction of the GPS signal
LORAN-C	Long Range Aid to Navigation
MEO	Medium Earth Orbit
NDGPS	Nationwide Differential Global Positioning System. The U.S. Department of Transportation DGNS
PNT	Positioning, Navigation and Timing
SME	Small and Medium-sized Enterprise
SV1/SV2	Space Vehicle 1 and 2 (first of the GPS IIF satellites)
WAAS	Wide Area Augmentation System for GPS