



Identifying ITS Opportunities for the HA Location Positioning Newsletter: March 2010

■ 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 2014.

■ MEETINGS

GeoForm+ 2010 /GeoWAY to be held from 30 March 2010

Source: [Inside GNSS](#)

The first of four GeoForm+2010 exhibitions is called GeoWay and will take place at the Crocus Exposition Centre in Moscow, Russia over 30 March to 2 April 2010.

GeoWay will cover Intelligent Transport Systems and satellite navigation, topics will include:

- Navigation software and hardware
- Satellite technologies
- Intelligent transportation systems and automobile navigation
- Control systems for car fleets and municipal transports.

More information can be found on the [GeoForm+2010 event website](#).

EFTF 2010: European Frequency and Time Forum 13 – 16 April 2010

Source: [Inside GNSS](#)

The 24th European Frequency and Time Forum - EFTF 2010 - will take place at the European Space Agency (ESA/ESTEC) in Noordwijk, the Netherlands over 13 to 16 April 2010.

The annual international conference covers recent advances in time and frequency scientific research, industrial development and end-user applications. The associated industry exhibition features new products in those areas.

More information can be found on the [EFTF 2010 website](#).

■ CALLS FOR PROPOSALS

No new calls for proposals to report on.

■ HOT TOPICS

New EGNOS satellite contract

Source: [RIN](#)

The EC has awarded a contract to SES satellite fleet operator to host a navigation payload aboard an SES spacecraft already under construction. SES will place an L-band European Geostationary Navigation Overlay Service (EGNOS) navigation payload on its Astra 5B direct-broadcast television satellite, under construction by Astrium and scheduled for launch in mid-2013.

This follows a 2009 contract for an identical navigation payload to be placed on SES's Sirius 5 satellite, under construction by Space Systems/Loral and scheduled for launch in late 2011. The two payloads will be the core orbital asset of Europe's EGNOS service. Currently, the EGNOS service is provided by an ageing mobile communications satellite operated by Inmarsat of London

and by Europe's Artemis data-relay satellite. Both of these spacecraft are scheduled to be retired in the next three years.

ITS Radar International will continue to monitor EGNOS

GPS Control Software Glitch

Source: [GPS World\(1\)](#) and [GPS World\(2\)](#)

Following the announcement by the GPS Wing of the U.S. Air Force (USAF) to start repositioning GPS satellites to a new a "24+3 configuration" to improve accuracy, the GPS Wing has also released a software update.

The software update is part of the GPS modernisation effort and will add new capabilities such as:

- Telemetry
- Tracking
- Commanding for the new GPS IIF space vehicle
- Security improvements.

However, the live introduction of new functions is causing problems, with some receivers intermittently failing to track Y-code signals.

The GPS Wing has issued the following Notice Advisory to Navstar Users (NANU):

"On 11 January 2010, the GPS Master Control Station loaded new operational control system software to support future GPS modernization capabilities and signals. The software has been in operational soak and the GPS Master Control Station has received a few user concerns related to the software update. Military users can find additional information at the GPSOC SIPRNet website at <http://gpsoc.afspc.af.smil.mil>. The GPS Master Control Station is preparing to complete soak of the new software in preparation for final install. In support of the final install decision, the GPS Master Control Station requests that operational military and civil users provide any impacts encountered that are believed to be related to the new software or started after the 11 January 2010 install. Military or civil users please contact the GPSOC (military) or NAVCEN (civil) at the numbers listed below no later than 29 January 2010. Any user impacts will be presented at the decision brief for final install of the new GPS Master Control Station software."

ITS Radar International will continue to monitor GPS developments

U.S. and Japan reaffirm GNSS cooperation

Source: [GPS World](#)

The U.S. and Japan convened a plenary meeting at the Department of State in Washington, D.C., to review and discuss cooperation in the civil use of the Global Positioning System (GPS) and GPS augmentations, including Japan's Multi-functional Transport Satellite (MTSAT) Satellite-based Augmentation System (MSAS) and Quasi-Zenith Satellite Systems (QZSS).

Both governments summarised recent redevelopments for their respective GNSS systems and highlighted their international GNSS-related co-operational activities. Both governments reaffirmed the importance of

providing open access to space-based positioning, navigation, and timing (PNT) services for peaceful purposes, free of direct user fees.

Representatives of both governments reviewed the ongoing work of the GPS/QZSS Technical Working Group (TWG), which was established to foster close cooperation during the development of QZSS. The installation of the QZSS monitoring station on National Oceanic and Atmospheric Administration (NOAA) premises in Guam, as reported in a previous [ITS Radar International article](#), was also highlighted. A QZSS Monitoring Station and a Two-Way Satellite Time and Frequency Transfer station at a NASA facility in Hawaii is also nearing completion.

Sat-nav devices face big errors as solar activity rises

Source: [BBC News](#)

The sun is reportedly heading towards another period of high activity. It is expected that during this period GNSS-based navigation devices are likely to have larger errors than under normal solar conditions.

According to NASA, the next maximum in solar activity is predicted for June 2013. During this time GNSS-based navigation will be affected by two separate sources of error.

One will come from solar flares, which will send out a large amount of Electro-Magnetic radiation and charged particles towards the Earth. The majority of GNSS receivers on Earth will not be able to distinguish the relatively weak GNSS signals from satellites amongst the increased background radiation. This is likely to result in short periods, of approximately a few minutes in duration, when GNSS receivers will not be able to receive any signals.

The second source of error will come from the ionosphere. The increased solar activity will affect the number of ionised particles in the ionosphere, which in turn will affect the speed with which GNSS signals travel through it. This will create errors in the position calculations. The magnitude of errors is likely to vary depending on the location and time of day, but in the UK it is likely to be in the region of 10 metres.

All GNSS-based equipment is likely to be affected by errors resulting from the increased solar activity.

Number of operational GLONASS satellites increases to 19

Source: [Inside GNSS](#)

A combination of launches in December, [reported in a previous ITS Radar International article](#), and other satellites being returned to operational status following maintenance, has resulted in the total number of active GLONASS satellites being increased to 19.

GLONASS is the Russian satellite positioning system which is currently providing Russia-wide coverage, with a global coverage requiring 21 operational satellites. The next GLONASS launch, of the GLONASS Block 40 satellites were originally scheduled to be launched last September but were returned to the factory because of problems with the signal generator. The launch of the three satellites is now scheduled for 2 March 2010.

ITS Radar International will continue to monitor GLONASS

China launches third Compass satellite

Source: [GPS World](#)

Third Compass navigational satellite was launched in January. The Completed Compass navigation system is expected to consist of 30 satellites and 5 Geostationary satellites, and is anticipated to provide Global coverage by 2020.

Compass' open, free of charge service is expected to provide positioning accuracy of 10 meters, timing accuracy of 10 nanoseconds, and velocity accuracy of 0.2 meters / second. The authorised service is expected to provide a more secure position, velocity, timing, and communication services as well as a higher level of integrity.

ITS Radar International will continue to monitor COMPASS

Loran-C transmitters close across the U.S, and Canada

Source: [RIN\(1\)](#) and [RIN\(2\)](#)

As of 8 February 2010 majority of Loran-C Transmitters across the U.S. have been terminated. This termination does not affect US participation in the handful of chains shared with Canada and Russia - but these are expected to close by 1 October 2010.

The Canadian Coast Guard (CCG) has also announced that it is planning to terminate all of its Loran-C transmitters in 2010. No specific date was provided but it is expected to be by 1 October 2010, in line with the U.S. plans.

More information on the termination of Loran-C in the U.S can be found in [previous ITS Radar International News](#).

■ PROJECTS

No new recent publications to report on

■ RECENT PUBLICATIONS

No new recent publications to report on

■ GLOSSARY

Compass	The Chinese global navigation satellite system
CCG	Canadian Coast Guard
ESA	European Space Agency
EFTF	European Frequency and Time Forum
EGNOS	European Geostationary Navigation Overlay Service
Galileo	The European contribution to the Global Navigation Satellite System; full operational capability expected from 2014
GLONASS	Russian satellite positioning system
GNSS	Global Navigation Satellite Systems: a general term given to all navigation satellite systems, it includes systems such as GPS, GLONASS, Compass and Galileo
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 - GPSIII
GPSOC	GPS Operations Centre
Loran-C	The latest iteration of LOnG Range Aid to Navigation prior to the introduction of eLoran
MSAS	MTSAT Satellite-based Augmentation System
MTSAT	Japan's Multi-functional Transport Satellite
NANU	Notice Advisory to Navstar Users
NASA	National Aeronautics and Space Administration (U.S.)
NAVCEN	U.S. Coast Guard's Navigation Centre
NOAA	National Oceanic and Atmospheric Administration
PNT	Position Navigation and Timing
QZSS	Japan's Quasi-Zenith Satellite Systems
TWG	Technical Working Group
USAF	U.S. Air Force