



GSA brings European GNSS closer to the Mapping and Surveying Community

The European GNSS Agency (GSA) is tightening its connection with European Surveyors. The role of GSA is to support the European Commission's objectives to achieve the highest return on European investment in European GNSS (EGNSS): EGNOS and Galileo. To this end, GSA took part in the General Assembly of the Council of European Geodetic Surveyors (CLGE), articulating the benefits of EGNSS for the surveying community. During the event, the launch of a dedicated special prize for EGNSS-related achievements in the CLGE students' contest was announced.

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What does European GNSS bring to the surveying community?

Since the 1980s, terrestrial surveying techniques have gradually been replaced by satellite positioning technologies based on GPS. With the advent of EGNOS and with the impending arrival of Galileo and its proposed interoperability with the other GNSS constellations, the precision and accuracy of survey and mapping-related operations will be further enhanced. Subsequently, related operations will be easier to carry out.

EGNOS (European Geostationary Navigation Overlay Service) is Europe's SBAS (Satellite Based Augmentation System) and it represents Europe's first tangible venture into satellite navigation. EGNOS uses geostationary satellites and a network of ground stations to receive, analyse and augment, and then re-transmit GPS, Glonass and, in due course, Galileo signals.

EGNOS increases the accuracy of existing satellite positioning signals, whilst providing a crucial 'integrity message'; informing users in the event of signal problems. For many mapping applications, the meter level accuracy given by EGNOS is sufficient. The use of GPS for similar or lower accuracy levels requires additional infrastructure, which substantially increases the costs (e.g., equipment, software, services). Conversely, EGNOS is free at the point-of-use and requires no installation costs: the only use requirement is an EGNOS-enabled system and most of the receivers on the market are already EGNOS-enabled.

Applications which can benefit from EGNOS include thematic mapping for small and medium municipalities, forestry and park management, surveying of utility assets and infrastructure.

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In the surveying world, the use of EGNOS is already providing meter accuracy and will be complemented with the global availability of Galileo to provide benefits for more demanding applications and meet the high accuracy requirements.

Europe's Galileo system is under civilian control and will comprise of a total of 30 satellites by the year 2020. Following the successful launch on the 27th March this year, two more satellites joined the six already in place, resulting in a total of 8 Galileo satellites orbiting the Earth. During 2015, four more satellites are going to be launched with subsequent launches predicted for the coming years.

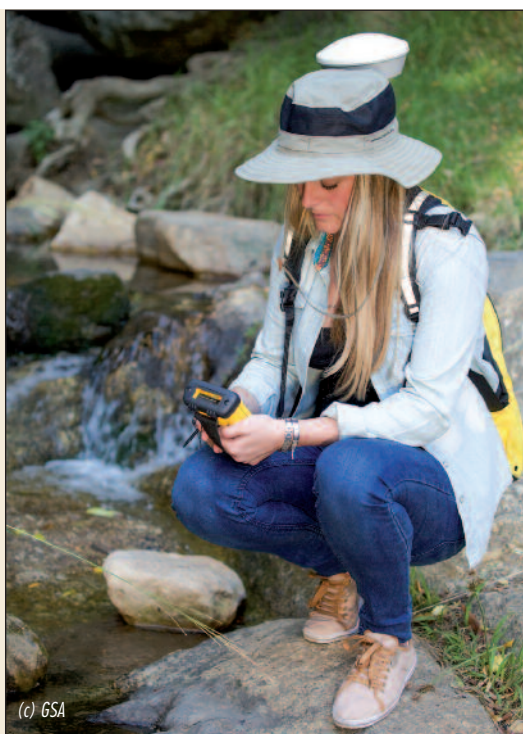
Galileo will improve positioning performance around the globe by two envisaged services that will be of interest to surveyors: the open service and the commercial service.

Galileo Open Service will be completely functional with both single and dual-frequency (E1, E5). The usage of Galileo OS will be interoperable with GPS III L1/L5 and thus a dual-constellation solution will enable reaching global coverage earlier than with a single constellation only. The open service signal is specifically designed to mitigate multipath errors, therefore ensuring better performance in urban canyons and under tree canopy. By using Galileo, the users will benefit from superior availability, due to the presence of a greater number of GNSS satellites (Galileo and other constellations) in the line-of-sight and also in difficult environments. Additionally, the positioning will be substantially improved in Northern latitudes.

The Galileo Commercial Service (CS) is tailored for even higher accuracy needs and is envisaged to provide benefits such as PPP (Precise Point Positioning) service available worldwide (via Galileo E6 channel). The CS will ensure faster convergence time than existing PPP solutions (via triple-frequency capability) with achievable accuracy comparable to RTK. Last but not least, the corrections will be available directly through signal in space without depending on geostationary satellites.

GSA's role in E-GNSS

The European Commission is the owner and programme manager of E-GNSS. The European GNSS Agency (GSA) has been delegated by the European Commission to support achieving the highest return on European investment. This will be done by designing and enabling services which will respond to user needs, whilst continuously improving the European GNSS services and infrastructure in a cost-efficient manner. Via the R&D projects such as H2020, GSA is engaging market stakeholders to develop innovative



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and effective applications, value-added services and user technology which will promote the achievement of full European GNSS adoption.

The GNSS Market Report

GSA is publishing the GNSS Market Report, which is a comprehensive source of knowledge and information on the dynamic, global GNSS market. The report is released on average every 15 months, with the last edition published in March 2015. CLGE took part in the first market report, including the High Precision Sector in 2012.

The GNSS Market Report covers global trends and developments in terms of shipments, revenues and installed base of GNSS devices and applications in the key GNSS market segments – both consumer and professional. The publication is available free of charge. Each edition is downloaded by thousands of readers and it has developed into a key resource and forecasting reference for companies and organisations looking to build their market strategies in relation to GNSS.

Of particular interest to the surveying community, the March 2015 edition is reporting main trends as construction and cadastral surveying activities in Asia-Pacific, Middle-East and Africa (driven by strong economic growth and rapid urbanisation). Other driving trends are handheld construction applications and the large market value of machine control driving GNSS uptake as well as a "democratisation of mapping": reduction of GNSS receiver prices and increases in accuracy are transforming mapping into a more accessible activity. Additionally, the

uptake of Unmanned Aerial Systems (UAS) for civil applications offer new opportunities for both imagery and topographic data. Hazardous or difficult to access areas can be surveyed without the need for human access.

GSA and CLGE: closer cooperation

Speaking at the CLGE's 2015 General Assembly in Limassol, Cyprus, GSA's Market Development Team spelled out the new opportunities that EGNOS and Galileo can open-up for surveyors. Of particular focus was the vital role played by surveying data in meeting a wide range of business requirements – across the private and public sectors and from land, water, marine, construction, built environment to heritage, tourism, transport, planning, natural environment, and more.

Participants at the CLGE General Assembly noted a "very high interest" in Galileo. A sizeable part of the European reference network station providers confirm that they are getting Galileo-ready and that they are looking forward to signal availability. Additionally most surveying-related GNSS receivers are also now Galileo-ready.

GSA Supports CLGE Student Contest

Every year, CLGE organises a students' contest aimed at rewarding young people for their work in various surveying-related areas. This year, for the first time, with the support of GSA a fourth category has been added; Galileo, EGNOS and/or Copernicus in order to encourage research in the field of practical applications of the European investment in GNSS and Earth Observation. The work can address one or more of these topics. The winner will receive a cash prize of €1000 and will be invited to attend the special awards event. Students must submit their papers by Monday 3rd August 2015, with prizes being awarded at the INTERGEO conference on Tuesday, 15th September 2015.

GSA's Questionnaire for Surveyors

In its quest to understand the surveying community's needs with respect to EGNOS and Galileo, GSA has launched a questionnaire for professional surveyors and for reference network providers. This questionnaire can be found on the GSA website. Visitors to CLGE's website will also be directly linked to the questionnaire. You are invited to support your community by completing this survey

<http://www.gsa.europa.eu/gsa-questionnaire-about-egnos-services-and-adoption-surveying-domain>



President Maurice Barbieri with past vice president Pedro Ortiz, taking part in the awarding ceremony 2014.

Apply for the CLGE Students' Contest 2014 - 2015!

Leive Bjarte Mjoes, CLGE delegate from Norway and Chair of the vetting committee, invites you to this new edition of our now traditional contest.

We are inviting all European Bachelor and Master Students to take part in the CLGE Students' Contest. The full regulations can be found on our website www.clge.eu/events/details/178 (questions: contest@clge.eu). Worthwhile prizes are on offer. You can win a €1000,- award, supplemented by participation in a major European or Worldwide event organized by one of our main sponsors. Moreover, the presentation of the awards takes place during INTERGEO in Berlin and we will sponsor your travel expenses and accommodation for one night. This year THREE academic categories are available. The traditional two in Geodesy / Topography and GIS / Mapping / Cadastre.

A totally new category was added in cooperation with the European GNSS Agency GSA. The fourth category concerns student engagement, or attracting young people to the profession. In this category students may apply, but the competition is also open to young surveyors. This means that anyone 35 years old or less on 31st December 2016 may send in their proposal. In this category, there is also an award of €1000,-. In addition, the winner can be appointed for the implementation of the project that he or she has designed.