

European GNSS Agency  
**2012** Annual Activity Report



European GNSS Agency





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Annual Activity Report  
**2012**

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# Foreword by the Chair of the Administrative Board

The past year has – again – been a very busy one for all of us. To summarise just the major events that have taken place during 2012, I would like to start with the detection of the first operational signal from the Galileo satellites. These were launched in 2011 and, after in-orbit testing, transferred into the routine phase, operating successfully and broadcasting all Galileo signals.

In March, the Administrative Board adopted a new organisation chart of the GSA, based on the key principles of flexibility and short reaction time. These principles reflect the significant workload of the Agency and the expected growth in resources, as well as a focus on processes and workflow analysis. This new structure will govern the Agency over the next two years.

In May, the European Commission and GSA concluded a new delegation agreement covering, in particular, preparatory tasks for the exploitation of EGNOS and Galileo. A presentation of the agreement was made during the Administrative Board meeting in June.

As of the beginning of September, the GSA moved its offices to Prague. Thanks to excellent preparation, the relocation was smooth for the staff and the European GNSS programmes were not disturbed. The inauguration ceremony was a big event, with the participation of Vice-President Tajani and other high-ranking guests.

At the end of September, we witnessed the second launch of operational Galileo satellites from Kourou, French Guyana. Europe has now shown the world that its own global satellite navigation system is well on the way to providing the first Galileo services by the end of 2014, as planned.

In November, the Commission published a draft modification to the GNSS Regulation, in order to prepare the GSA for its new tasks in the context of the exploitation of EGNOS services and the upcoming availability of the first Galileo services. One of the key issues here was the clear allocation and separation of competences of GSA, the Commission and the European Space Agency. The new governance was not only discussed in Council and Parliament, but was also on the agenda of the ESA Ministerial meeting in Naples.

The highlight in December was without any doubt the 'European Space Solutions' conference in London, which featured user-specific mini-conferences, a business support area, and the European Space Expo.

Looking ahead into the year 2013, a lot of work remains to be done. Specifically, I would like to mention establishing the Galileo Security Monitoring Centre and the ramp-up of the GSA to get ready for the operation of EGNOS. The way ahead is still challenging, though, especially as regards providing the Agency with adequate staffing and budget. However, if GSA, the European Commission and Member States continue to work well together, I am confident that we will succeed.



A handwritten signature in black ink that reads "Sabine Dannelke". The signature is written in a cursive, flowing style.

Sabine Dannelke

# Foreword by the Chair of the Security Accreditation Board

In 2012, the Security Accreditation Board (SAB) engaged the programme management authorities in a demanding dialogue to improve and accelerate the overall security management processes, notably through better project control and qualification.

The European Commission took significant measures to streamline its management processes, leading notably to the long-awaited contracting of the security specifications, SSRS3.9. The European Space Agency established a much improved justification process centralised by its dedicated Galileo Security Office, and increased its monitoring of critical industrial activities.

In the same timeframe, the accredited programme infrastructures evolved from the minimal nucleus, supporting Launch#1, into the almost full In-Orbit Validation configuration by year's end. This included the addition of satellites 3 and 4 through the successful Launch#2, which took place on 12 October, and of several ground facilities worldwide.

Given the significant infrastructure already fielded, a Galileo Monitoring Security Centre nucleus and a security chain of command were also kicked off, as requested by the SAB. A number of additional treatment plans were also simultaneously implemented to reduce identified risks.

It is worth noting that the whole process was performed with limited impact on costs, mostly thanks to the significant efforts of all actors involved. We would like to take this opportunity to acknowledge their commitment to the success of the EU, even though much still remains to be done.

A major new area of activity for the SAB started in 2012, with the initial implementation of decision 1104/2011/EU of the European Parliament and the Council on the rules for access to the PRS, a key security feature of Galileo.

It is important to understand that the PRS User Segment, although it is mostly in the sovereign hands of the Member States, requires accreditations and a collective effort because any flaw within one party may have serious security consequences for the others. Its robustness is also a significant factor in the credibility of the EU in the international security arena.

The increased use of EGNOS, particularly by European commercial aviation, with its massive human safety and economic concerns, has meant that new security accreditation activities are also being initiated in this area.

By the autumn of 2012, the EC announced its plan to declare Galileo early services available as soon as 2014, before completion of the previously planned initial operational capability process. This positive step towards the success of Galileo also urgently requires new and accelerated accreditation activities, to ensure early operational security.



A handwritten signature in black ink, consisting of several fluid, overlapping strokes that form a stylized representation of the name Michel Iagolnitzer.

Michel Iagolnitzer

# Foreword by the Executive Director

With the move of its headquarters from Brussels to Prague on 1 September 2012, it has been a year of transition for the Agency. The move was made on time and within budget, which helped to keep the temporary loss of resources and staff availability to a minimum. None of this could have happened without our dedicated task force and the active support provided by the Czech government.

The Galileo Security Management Centre (GSMC) team is still in the Brussels office, which proved to be the right choice, given their growth and imminent move to France. This also enables us to capitalise on existing expertise and to offer newcomers an advantageous environment to develop their skills.

In 2012, we were also able gradually to prepare the European Union GNSS Programme exploitation phase through a Delegation Agreement between the European Commission and the GNSS Agency (GSA). Among other things, this agreement assigned to the Agency responsibility for the European Geostationary Navigation Overlay Service (EGNOS) Service Provider tendering process and for Galileo early service preparation. The agreement was a milestone for the Agency, marking a new phase in its relationship with the European Commission. This is reflected in the new EU GNSS Regulation that the Commission presented to the European Council and the European Parliament towards the end of 2012.

The relocation to Prague affected the smooth functioning of the Security Accreditation Board (SAB), as we lost some key resources. In fact, the SAB has suffered from the relocation more than other teams, but, thanks to a major, Agency-wide effort, the difficulties were kept to a minimum. This led to a successful Authorisation to Launch (ATL2) for the second launch, which completed the In-Orbit Validation (IOV) phase and provided the first positive results on system performances.

The Public Regulated Service (PRS) user segment yielded important results in 2012, first by starting the complex procurement of the first integrated PRS receiver and, secondly, by completing the tendering process for a prototype development, combining professional mobile radio and PRS. Together, these represent a key step forward in PRS market uptake.

The Agency's Market Development Team also produced significant results in 2012, not only by managing about 80 FP7 Projects, but by also by remaining acutely aware of the market:

- In the Aviation market, there are now over 130 EGNOS-enabled approach procedures. These include both Localiser Performance with Vertical Guidance (LPV) approaches and Approach Procedures with Vertical Guidance (APV), using a barometric altimeter.
- There is significant satellite-based augmentation system (SBAS) penetration in the precision agriculture sector and in the surveying/mapping sector.
- There are both shared and common objectives with toll road associations.
- Over 70% of receiver models are now EGNOS-enabled and nearly 35% are Galileo-enabled.

So, 2012 was a positive step forward for the 'new' GSA, laying the foundations for the expected developments to come, through a series of concerted steps that should lead to us obtaining ISO 9001 certification in the near future.

There are many challenges ahead of us and key milestones, such as the transfer of the exploitation of the EGNOS programme and the availability of the Galileo early services, are fast approaching. Thanks to a dedicated and fast-growing team, the Agency is totally committed to making EGNOS and Galileo true European successes.



A handwritten signature in black ink, appearing to read 'Carlo des Dorides'. The signature is fluid and cursive, with a long horizontal stroke at the end.

Carlo des Dorides





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# 1. The Agency



By developing a new generation of Global Navigation Satellite Systems (GNSS), Europe is opening new doors for industry development, job creation and economic growth. With Europe in the driver's seat, Galileo has the potential to become a cornerstone of the global radio-navigation positioning system of the future.

Given the strategic nature of European satellite positioning and navigation programmes, (which include Galileo and EGNOS) the European GNSS Agency, a European Union Regulatory Agency, was established in 2004. The Agency is responsible for a range of activities, including:

- Ensuring the security accreditation of the system and the operation of the Galileo Security Monitoring Centres (GSMCs);
- Accomplishing other tasks entrusted to it by the European Commission (EC), such as managing EU GNSS Framework Programme research, promoting satellite navigation applications and services, preparing for the successful commercialisation and exploitation of the systems, aiming for smooth functioning, seamless service provision and high market penetration, and ensuring that the systems' components obtain certification.

Staffed by skilled professionals, who bring relevant experience from both the public and private sectors, the Agency is in a unique position to contribute to one of the most important and ambitious projects ever undertaken by the European Union. The Agency has the motivation and expertise to help ensure that Europe fully accomplishes its GNSS aims and truly reaps the benefits of the EGNOS and Galileo for its citizens.

## Europe's Satellite Navigation Programmes: EGNOS and Galileo

Galileo is the future of the European Global Navigation Satellite System (GNSS). In the future, GNSS users in Europe will no longer be dependent upon the US Global Positioning System (GPS) or the Russian Glonass system for their satellite positioning, navigation and timing needs. While European independence is an important reason for undertaking the Galileo programme, by being interoperable with GPS and other international systems, it will also be a cornerstone of a truly global navigation satellite system that will be under civilian control. With its state-of-the-art technology and full complement of satellites, Galileo will open the door to a new era of higher positioning accuracy, better coverage and reliability, new services and increased resistance to interference.

### EGNOS - It's there: use it.

EGNOS (European Geostationary Navigation Overlay Service) is Europe's first concrete venture into satellite navigation. It already delivers valuable services by augmenting and improving GPS signals and retransmitting them to users via geostationary satellites.

EGNOS renders GPS signals suitable for safety-critical applications – such as guiding aircraft during approach or other safety-relevant procedures, or navigating ships through narrow channels – and increases the accuracy of existing satellite positioning services. It also provides a crucial 'integrity message', informing users in the event of problems with the satellite signals.



Along with valuable transport applications, the increased accuracy and reliability of EGNOS also supports users on the ground, for example in precision agriculture and mapping.

### Supporting the use of EGNOS and Galileo

Satellite navigation has made massive inroads in many areas of society, affecting business, public services and consumer behaviour in increasingly profound ways. As well as delivering economic benefits to innovative service providers and related businesses, satellite navigation devices – which are now integrated within a wide variety of transport systems as well as handheld devices like smartphones – have changed the way we manage the mobility, safety and security of people and goods.

The GNSS market, including upstream infrastructure and downstream user applications, has been growing at double-digit rates over the past decade. This growth is expected to accelerate as new satellite systems with superior performance, such as EGNOS and Galileo, become operational and increase the number of applications on offer.

The Agency plays a key role in the development of commercial markets for EGNOS and Galileo services. Today, the Agency's market development activities focus on:

- Marketing EGNOS to high-potential user sectors (for example, aviation, road and high-precision applications);
- Managing EU-funded research on innovative satellite navigation applications and technologies;
- Promoting the use of EGNOS;
- Supporting the EC in the preparation of the Galileo exploitation phase;
- Monitoring the GNSS market and forecasting future developments.

### Ensuring the Security of European GNSS Programmes

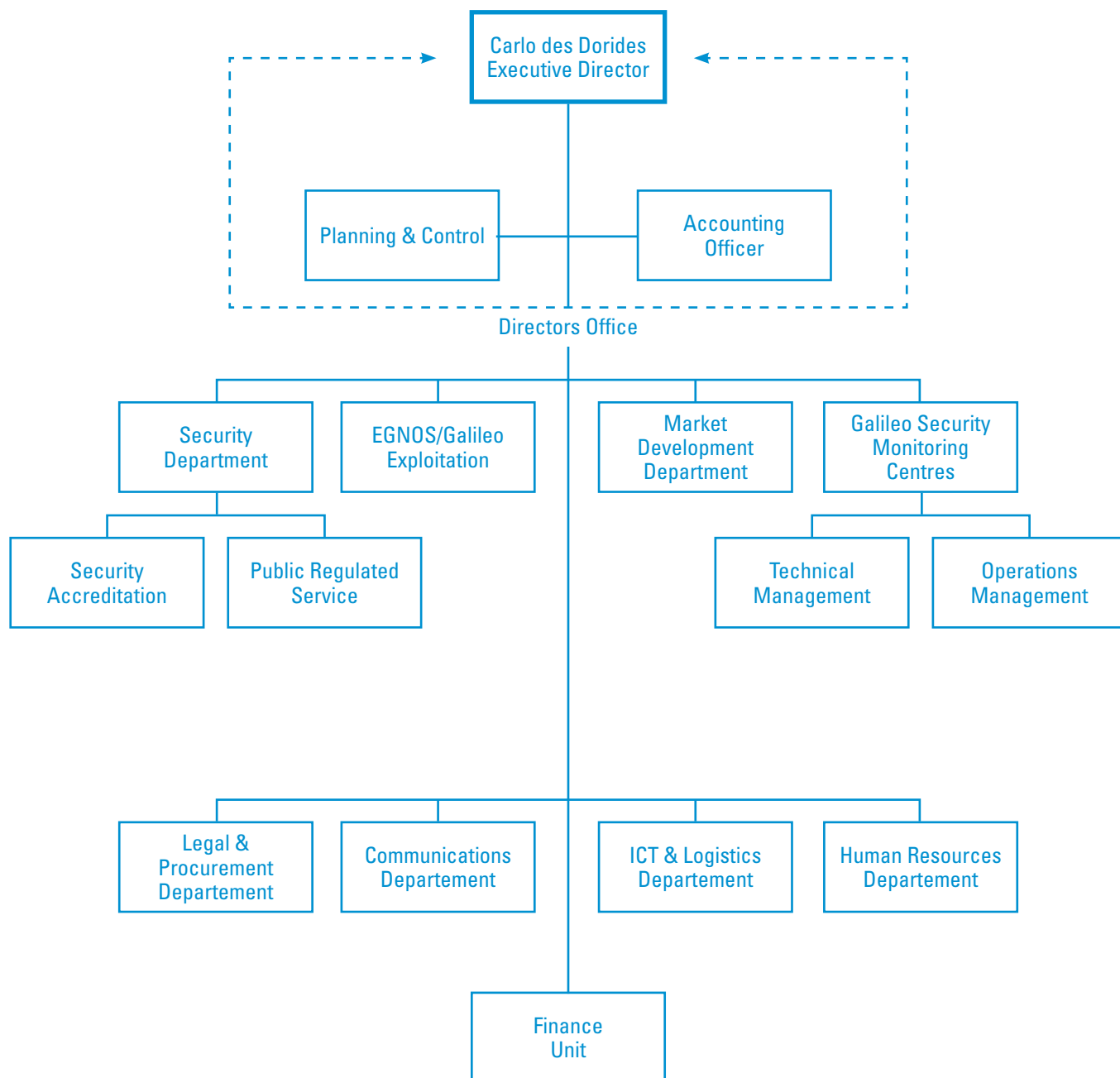
To make sure that the Galileo system and services function properly, a range of highly sophisticated and state-of-the-art security measures, facilities and plans have to be put in place now. The European GNSS Agency's (GSA) Security Department and the Galileo Security Monitoring Centre handle a range of matters relating to the safety and security of GNSS systems.

In 2012, the Agency's security development activities focused on three key areas:

- Ensuring security accreditation for GNSS – by carrying out independent security reviews, including the consultation of the GNSS Security Accreditation Panel, and taking decisions at the [Security Accreditation Board](#), regarding both system accreditation, site accreditation, component accreditation and PRS user segment accreditation;
- Preparing for the Galileo Security Monitoring Centre (GSMC) – as the hub of European GNSS security, the GSMC will allow the Agency to monitor the security-related status and performance of EGNOS and Galileo and the operation of the Public Regulated Service (PRS), as well as ensuring that sensitive information relating to the use of the PRS is suitably managed and protected;
- Support the Commission on security-related tasks, in particular concerning the commercialisation and exploitation of the systems, by contributing to the development and preparation of the PRS User Segment and the Pilot Project activities.



## 2. Organisational Structure



# 3. Overview of Activities in 2012

The Agency performs a number of tasks under delegation from the European Commission. There are various delegation agreements in place to cater for specific activities. The list below shows which delegation agreements are currently in force (The numbers in brackets refer to the section number or numbers in this report)

1. The Public Regulated Service (PRS) delegation agreement, signed in 2011 (Sections 3.1.2, 3.1.3, 3.1.4 and 3.1.6)
2. The Exploitation Delegation Agreement, signed in 2012
  - Tasks related to Programme Exploitation (Section 3.4)
  - Tasks related to the Application Action Plan (Sections 3.2.1 – Aviation and Road are the only two set of tasks that are not delegated, 3.2.2, 3.2.3 and 3.2.5)
  - Tasks related to Communications Activities (Section 3.3.2 – Specifically, those tasks related to Galileo Exploitation, The European Space Expo and the European Space Solutions event)
3. The FP-7 delegation agreement, signed in 2011 (Section 3.2.4)

## 3.1. Security

The European GNSS (EGNSS) programmes (Galileo and EGNOS) provide global services with a strategic dimension, while maintaining and protecting the security and interests of the EU Member States (MS). The EGNSS security doctrine supports an overall system policy that enables the European Union to maintain full control of EGNSS at all times.

It has two objectives:

- To protect the system from accidental or deliberate attack that could result in disruption of the service
- To mitigate subversive use of the system against the interests of EU Member States

In order to achieve these objectives, Member States and EU institutions have to satisfy the associated security requirements and to develop the following capabilities:

- A regulatory link with the **Security Accreditation Board** (SAB) for European GNSS, established within the European GNSS Agency. It acts as the Security Accreditation Authority for the EGNSS systems and for manufacturers of receivers containing technology related to Public Regulated Service (PRS).
- An operational chain of command with the Council of the EU as political authority and with the **Galileo Security Monitoring Centre** (GSMC), to be operated by the Agency. The GSMC acts as an executive body and ensures interfaces with Member States' governments and with the EGNSS operators for all aspects related to security and access to governmental applications.



# 3.1.1. Security Accreditation



According to Article 16 (a) of the GNSS Regulation, the Agency shall ‘initiate and monitor the implementation of security procedures and perform system security audits’ related to the security accreditation of the EU GNSS.

As laid down in Article 11(2) of the GNSS Agency Regulation, the Security Accreditation Board shall take security accreditation decisions, in particular regarding:

- approval of the security accreditation strategy
- authorisation to launch satellites
- authorisation to operate the systems in their different configurations and for the various services
- authorisation to operate the ground stations, including sensor stations located in third-party States
- authorisation to manufacture receivers containing PRS technology and their components

As laid down in Article 5 of the PRS Decision,<sup>1</sup> the competent PRS authority of a Member State shall ensure that a body established on the territory of that Member State may only develop or manufacture PRS receivers or security modules if such a body:

- has been duly authorised by the Security Accreditation Board in accordance with Article 11(2) of Regulation (EU) No 912/2010
- complies both with the decisions of the Security Accreditation Board and with Article 8 and point 2 of the Annex, regarding the development and manufacture of PRS receivers or security modules, in so far as these relate to its activity.

According to Article 7 of the PRS Decision, the Security Accreditation Board may revoke at any time the authorisation it has granted to such a body to manufacture PRS receivers, or the associated security modules, if these measures have not been complied with.

On 1 December 2010, the Agency established a **Security Accreditation Board for European GNSS** to act as the Security Accreditation Authority (SAA) for the EU GNSS systems and for receivers containing PRS technology.

The SAB set up special subordinate bodies, acting on its instructions, to deal with specific issues:

- The **GNSS Security Accreditation Panel** (GSAP) to conduct security analysis reviews and tests. These are used as the basis for the relevant risk reports in order to assist the Board to prepare its decisions;
- The **Crypto-Distribution Authority** (CDA) to assist the Board with questions related to the distribution of crypto-material, especially Flight Keys.

In this context, the Agency carries out a number of technical tasks at different levels:<sup>2</sup>

- **SAB secretariat:** including the provision of the organisational secretariat, as well as coordinating and preparing relevant files for accreditation decisions.
- **GSAP management:** including the provision of the chair, the technical secretariat and the organisational secretariat.
- **CDA management:** including the provision of the chair, the technical secretariat, organisational secretariat and the organisation of Flight Key Cell (FKC) activities for each launch campaign.

<sup>1</sup> Decision 1104/2011/EU of the European Parliament and of the Council of 25 October 2011 on the rules for access to the public regulated service provided by the global navigation satellite system established under the Galileo programme

<sup>2</sup> EGNOS accreditation is an additional task introduced during 2012. GSA introduced the basis for EGNOS accreditation in the context of the GSAP. This will be developed starting 2013.

- **System level:** perform system design reviews and system audits to verify that all Galileo security requirements are met.
- **Local sites level:** support audits and on-site inspections in order to ensure that the sites hosting Galileo stations meet (a) local security requirements derived from the Galileo security requirements mentioned above, and (b) national security rules and regulations.
- **Security components level:** review the security requirements (security targets) of system components that implement security functions and follow the component evaluation and certification process.
- **PRS User Segment level:** define and implement the Galileo PRS receiver certification, evaluation and accreditation process, as well as the accreditation process for Galileo PRS manufacturers.

### 3.1.1.1. Objectives for 2012

The main objectives for the year 2012 were the following:

- Authorisation To Launch (ATL2, Q3 2012);
- Authorisation for IOV Start Endorsement;
- Support to the Crypto Design Authority and to the Flight Key Cell;
- Provide the chair, organisation and technical secretariat of the GSAP;
- Provide the organisation and technical secretariat of the SAB.

The following tasks were associated with these core objectives:

- Carry out SAB secretariat duties;
- Provide all required support to the SAB according to the work plan (management plan) approved by the SAB;
- Coordinate, chair and provide technical secretariat for the work of the GSAP;
- Coordinate, chair and provide the technical secretariat for the work of the CDA;
- Define the FKC operations and implement them for the IOV launches;
- Participate in the Galileo procurement reviews on accreditation-related matters;
- Support the implementation of the Galileo System Security Accreditation Strategy (SAS);
- Review the technical documents needed for Galileo security accreditation at the system, segment and element levels;
- Assess and review the security of the system design, system deployment and associated risks and produce the respective accreditation reports;
- Prepare the site security strategy and conduct site security accreditation inspections;
- Define and prepare independent testing activities regarding the security of the Galileo system;
- Participate in and analyse the results of the security audit (statements of compliance) at system, site and component levels;
- Define the framework for PRS receiver accreditation and PRS manufacturer accreditation.

### 3.1.1.2. Achievements

All the objectives were achieved by the end of the year 2012, with the following remarks and complements:

#### System level

- The SAB Authorisation To Launch (ATL) decision was taken by the SAB on 26 September 2012, based on the ATL2 report which had been endorsed by the GSAP in August 2012;

- The IOV Start Endorsement was postponed to 2013 due to programme scheduling.
- Review of risks analysis (system security plan (SSP) and preliminary risk assessment (PRA));
- Review of system implementation (through the review of the GSAP data packs);
- Test witnessing: e.g. key generation and loading into real satellite (part of System Compatibility Test Campaign);
- Independent testing in July 2012;
- Definition of the site authorisation to operate (SATO) process and its approval by SAB;
- Establishment of the GSAP Formation 5 for EGNOS accreditation.

### Local Sites level

- Fourteen sites were subject to site accreditation reviews (SAR) or site accreditation missions (SAM) in 2012
- This led 11 sites to receive a Site Authorisation To Operate (SATO) by the Security Accreditation Board

### Security Components level

- Establish Council approval of second party evaluation.

### Public Regulated Services User Segment level

- The GSAP Formation 4 (GF4) was set-up to address user segment security accreditation activities;
- A 'Security Accreditation Strategy for the PRS User Segment' was drafted;
- The first authorisations of PRS manufacturers were issued by the SAB.

### Flight Key Cell level

- Extensive and urgent work was carried out to implement the Flight Key Cell (FKC). This enables Member States involved in the Galileo programme to remain confident that keys and crypto initialisation parameters are handled adequately, ensuring the security of Galileo satellites, including the security of communications with ground stations. Members of the FKC are the Member States hosting Galileo facilities that support flight keys security operations (France, Germany and Italy) and the Agency.
- The Agency participated in the Launch Campaign to ensure the security of the satellites and related operational keys on October 12.

### GNSS Security Accreditation Panel level

- The Agency organised and chaired nine **Galileo Security Accreditation Panel** meetings, each lasting an average of two days, including three group sessions ('formations') on different themes.<sup>3</sup> GSA also organised and chaired two additional GSAP meetings of the GSAP Formation 4 group. With Agency support, the GSAP achieved these tasks at system, site and component levels. In addition, the GSAP contributed to the preparation and submission of SAB Framework Documents for approval, including the SAB Management Plan and the PRS User Segment Security Accreditation Strategy.
- The **expertise framework support contract** – awarded by the GSA to the company, QinetiQ, in December 2010, for a total of four years – continued its support to the Agency accreditation team. Due to a lack of resource availability, specific external technical support was needed to perform all the described tasks, especially those requiring in-depth technical skills. This support is provided through specific framework contracts, enabling the GSA to deliver the skills required to meet the accreditation goals. In 2012, the following main tasks were achieved through this contract:

<sup>3</sup> Plenary Session, Formation 1: System activities, Formation 2: Site activities, Formation 3: Components and crypto.



## SAB level

The Agency organised and provided the SAB with the administrative and technical secretariat to hold five day-long meetings. The SAB achieved its tasks at launch, system, site and component levels, thanks to the Agency's support.

To ensure that the PRS can be used as soon as Galileo is operational, the GSA proposed the concept of a PRS Pilot in 2008, specifically to target the validation of PRS user functions and to accelerate preparatory activities in Member States.

The overall objective of the PRS Pilot is to perform an optimised, pre-operational validation of all PRS user functions within a single framework.

The PRS Pilot is intended to provide a work programme to help Member States in setting up joint projects, validating and optimising a PRS infrastructure and to enable synergies between the PRS activities of different Member States.

Activities to be performed by the Agency on PRS Pilot project support have been defined in the EC-GSA Working Arrangement on the PRS Pilot Project and in the 2011 Delegation agreement on PRS and GSMC. To support Member States in their PRS Pilot project activities, a dedicated position within the Security Department is helping to raise PRS awareness (e.g. through workshops), while supporting PRS participants in the implementation of pilot projects and demonstration activities, in preparation for the PRS service declaration.

### 3.1.2.1. Objectives 2012

The main objectives set for 2012 were:

- Support the preparation of calls for tender, selection, negotiation and award of contracts related to the implementation of the PRS Pilot Project, notably P3RS1;
- Perform the budget implementation tasks delegated by the Commission to the Agency in accordance with Article 54(2)(b) of the Financial Regulation in 2011, on further PRS Pilot Project contracts – notably P3RS2, for the development of the first generation of PRS pre-operational receivers;
- Ensure the implementation of the PRS Pilot Project, to validate PRS operational and user functions and accelerate preparatory activities in Member States. This activity aims to make sure that PRS-specific infrastructure (e.g. the GSMCs, Point of Contact platforms and national organisations) will be ready to support the PRS service;
- Prepare documents such as minutes, technical notes, analyses, draft statements of works, draft contracts or draft Document Change Notices, as required, depending on the topics.

### 3.1.2.2. Achievements

The main achievements can be summarised as follows:

- Contribution to the evaluation of P3RS-1 proposals
- Phase I evaluation, preparation and launch of Phase II of P3RS2
- Coordination with Member States and other potential PRS Participants, EU Agencies and International Organisation (EEAS, DG ECHO, Eurocontrol)

## 3.1.2. PRS Pilot Project



## 3.1.3. PRS User Segment Support



- Drafting and updating the PRS Pilot Project Call for Engagement
- Organisation of a PRS industry workshop in Brussels (June 13), in collaboration with the Commission
- Organisation of a PRS workshop in Warsaw, at the request of the Polish administration.

Activities to be performed by the Agency on the PRS User Segment were defined in the EC-GSA Working Arrangement on the PRS User Segment and the 2012 Delegation Agreement on Exploitation.

### 3.1.3.1. Objectives for 2012

The following main objectives were set for PRS User Segment support:

- Contribute to the development of technologies, architectures and standards for the PRS User Segment, based on the preliminary definition of a global PRS User Segment Technological Roadmap.
- Support the Market Development Department's work on the PRS User Segment, by providing expertise and support for market research in various application areas (e.g. homeland security and emergency services).
- Support the EC and related market development activities in the PRS awareness process aimed at Member States, industry, European organisations and user communities, including the organisation of workshops and information days, disseminating study results etc.

### 3.1.3.2. Achievements

The main achievements can be summarised as follows:

- Update (bottom-up) of market analysis on PRS for Defence and Public Safety and Security User Communities
- Support for the elaboration of a market development study on the use of PRS for critical infrastructure
- Elaboration of the PRS Technological Roadmap in support of funding for the 2014-2020 PRS User Segment
- Support the EC in the organisation of dedicated workshops:
  - PRS for Civil Use (Rome)
  - PRS workshop during the UK Space solution conference (London)
- Participation in and contribution to conferences, seminars, events and workshops
  - Professional Mobile Radio (PMR) Summit 2012 in Barcelona (including private reception)
- Elaboration of a work plan for PRS-related engineering activities, to be carried out under a Specific Support contract in 2013/2014
- Elaboration and signature of a Memorandum of Understanding with the Joint Research Centre
- Supporting the Early Service Task Force in the definition of early PRS service concepts
- Signature of a Framework contract for support to PRS User Segment development. This contract is intended to support the EC and GSA in all the engineering and technical tasks needed to ensure adoption of the PRS in Member States and relevant user communities (e.g. through technical studies, drafting of guidelines, standardisation activities, technological monitoring, advances in secondary channel concepts, etc.).

### 3.1.4.1. Objectives 2012

The main objectives for 2012 were:

- Provide expertise and support to the GNSS Security Board (SB) Working Group PRS (WG-PRS), regarding the definition of the PRS implementation plan and the definition of Common Minimum Standards (CMS) and guidelines for the management of PRS in Member States.
- Contribute to the reporting and the technical secretariat of the WG-PRS, the Working Group for National Expert Teams (WG-NET), or any other ad-hoc group created under the GNSS Security Board, upon request by the EC;

### 3.1.4.2. Achievements

During the year, the GSA responded to all of the EC's requests to support the GNSS SB working groups, especially the WG-PRS and WG-NET.

The main achievements can be summarised as follows:

- Support to the preparation of all agendas and relevant documents for WG-PRS
- Drafting of minutes of WG-PRS meetings and associated Working Group for Common Minimum Standards (WG-CMS) meetings;
- Regular reporting to the WG-PRS on the progress of all PRS related contracts that the GSA manages, namely: P3RS2, PROPHET, PROTECTOR, PROGRESS, FORTRESS, PRS4PMR, ULTRA, PREMISE, ARMOURS
- Regular reporting to the WG-PRS on the PRS Pilot Project including the definition of guidelines and rules on the PRS
- Provision of technical secretariat to the WG-NET for the preparation of the CMS
- Participation and provision of the technical secretariat for meetings on the Risk Assessment of the PRS User Segment (RAPUS)
- Review of the PRS Implementation Plan

Due to the strategic nature of Galileo for the European Union, European legislation has established a framework to ensure that threats to the Galileo infrastructure and signals, as well as protection against unauthorised use of the navigation signals, are addressed. This enables the European Union to maintain full control of the system at all times, with two key objectives:

- To protect the system from accidental or deliberate attack that could result in disruption of the service.
- To mitigate subversive use of the system against the interests of EU Member States

The Point of Contact (POC) platform (POCP) provides the interface between user communities, through a national POC and the GSMC. Each Member State, as well as authorised EU bodies and third nations, may have a POC, and therefore a POCP. The managers of PRS user communities communicate with the GSMC via the POCP when coordinating PRS use by individual entities (e.g. an emergency service headquarters). The high-level mission of the POCP is to enable a POC to interact with the GSMC as required, allowing users to utilise the Galileo services effectively (in particular the PRS), as well as supporting European GNSS security.

## 3.1.4. GNSS Security Board And Associated Working Group



## 3.1.5. Galileo Security Monitoring Centre (GSMC)

The GSMC is required to deliver the following specific missions:<sup>4</sup>

- Galileo Security and System Status Monitoring;
- Implementation of Joint Action instructions;
- Management of PRS access;
- Provision of PRS and GNSS security expertise and analysis on request;
- Support for the operation of the crypto-distribution authority (CDA) and the Flight Key Cell (FKC);
- PRS service support.

### 3.1.5.1. Objectives for 2012

The broad mission of the GSMC is to develop the capacity to deliver all of its IOC missions, essentially via four types of activity:

- **GSMC Nucleus:** provide early security monitoring and reaction capabilities (only in the interim period until fully operational). The capabilities of the GSMC Nucleus will be implemented as a phased approach, with incremental increases in the capabilities provided.
- **GSMC Organisational Design:** ramp-up the size and capabilities of the GSMC, designing its organisation and processes, and obtaining operational validation/accreditation.
- **Contribution to Operational Equipment Developments:** as a future user of Galileo IT operational equipment, contribute to design specifications and reviews, in order to ensure that the GSMC equipment (and the information it receives from or contributes to the rest of the Galileo system) is appropriate for the long-term missions.
- **Hosting Infrastructure Agreement:** ensure that the building infrastructure to be provided by the host countries, France and the United Kingdom, is appropriate for the long-term missions and establish the appropriate long-term relationship agreements to this end.

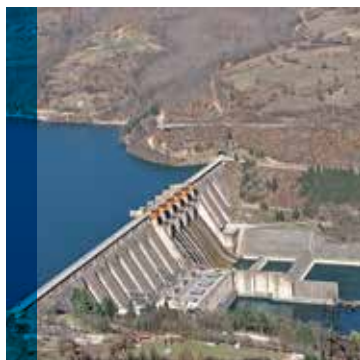
### 3.1.5.2. Achievements

The main achievements can be summarised as follows:

#### GSMC Nucleus

- The GSMC maintained Nucleus readiness in accordance with the GSMC Nucleus Operations Management Plan, with over 95% availability throughout the year. The GSMC Nucleus was maintained within normal alert response times for 100% of the year.
- The GSMC Nucleus organised and ran a series of simulations as part of the preparation for Launch 2. These simulations raised important issues related to the organisation of the Mission Director Activation Phase and also to Galileo operations. The simulations enabled these points to be corrected prior to Launch 2.
- The GSMC Nucleus was able to deploy a member of staff as part of the ESA SMC Launch and Early Operations Phase (LEOP) team to the LEOP Control Centres (LOCC) in Toulouse during the launch and LEOP phase for FM3 and FM4. This allowed the GSMC team to gain an understanding of the role performed by the SMC team in preparation for future GSMC operations.
- The GSMC organised a series of workshops with Member States participating in the chain of command. The aim was to help the EC to develop the chain of command and increase the involvement of Member States.

<sup>4</sup> As formally defined in the PRS Decision 1104/2011



- The GSMC reported all security incidents to the GSAP in line with the IOV role of the GSMC Nucleus. In addition, the GSMC delivered a short analysis of security incidents received.
- The GSMC will become operational from the third Operational Service Readiness Review (OSRR3) onwards. Before this, a ramp-up phase is foreseen with roles and responsibilities including the GSMC Nucleus activities, pre-operational GSMC activities and the fully-operational capabilities. Accordingly, in 2012, the GSMC developed a concept in the 'Galileo Security Facility Operations Management Plan' document explaining which roles are associated with the GSMC during the different phases of the programme and the roles during the ramp-up foreseen in the pre-operational phase. The practical implementation of this concept will start in 2013 with the participation of the GSMC Nucleus in the 'Participant to PRSTrials in IOV' (PPTI) test campaign.
- FKC meetings in preparation of 2013 Launches were organised after the temporary leadership by France for the October 2012 launch. Resource support commitments were received from France, Germany and Italy.

### GSMC Organisational Design

- The GSMC prepared an updated draft of the GSMC Concept of Operations (CONOPS), which was circulated to ESA and WP2 for comments.
- The GSMC supported the preparation of the GSMC for Early Service by supporting the SSRSTask Force in analysing the SSRS compliance requirements for early services.
- The GSMC launched the procurement of a Framework support contract<sup>5</sup> and evaluated the offers. The Evaluation committee, chaired by the GSA, made its final recommendation on the selection of the winning bidder in November 2012.
- The GSMC contributed to the overall Quality Early Assessment and Planning phase.

### Contribution to Operational Equipment Developments

- The GSMC submitted hundreds of review item discrepancies (RIDs) to the Galileo Security Facility (GSF) critical design review (CDR) and participated in both the panel meetings and board meetings. As a result of the GSMC contribution to the review, a number of changes were made to the design of the GSF equipment.<sup>6</sup>
- The GSMC team took part in two Man-machine interface (MMI) workshops with the GSF development team in order to provide comments and feedback on details of the GSMC MMI design. As a result, there have been significant improvements regarding search, selection and usability, as well as developments in key tools (e.g. bandwidth simulation).

### Hosting Infrastructure Agreement

- The GSMC has carried out a comprehensive review of the design of GSMC sites, both for France and UK. This has been released officially to the EC in order to identify issues that could have an effect on the operational capability of the GSMC<sup>7</sup>.
- The GSMC has agreed with France<sup>8</sup> on a way forward in the setup of four different working groups (*building construction*, *security* – including both accreditation and Critical National Infrastructure, *cost sharing*, and *legal* – including the preparation of an administrative arrangement), with monthly progress meetings and a high-level understanding of what needs to be achieved. The deployment of the GSMC in September 2013 was agreed as the right overall target needed to drive the different activities forward.

<sup>5</sup> 'GSA/OP/04/12 - 'Security Support Services for GSA',

<sup>6</sup> 'WP2 GSF CDR Panel Report', ref. GAL-RP-ESA-SEC-X/0050, dated 15 October 2012

<sup>7</sup> 'Review of the Galileo Security Monitoring Centre (GSMC) sites designs', ref. GSA/2012/SEC/OED/D635083, dated 4 May 2012; 'GSMC Site Final Design Assessment', ref. GSA/GSMC/638617, dated 23 May 2012.

<sup>8</sup> 'GSMC France – Kick-Off of coordination at SGDSN', 16 October 2012

## 3.1.6. Security Research & Development



- The GSMC has supported the Commission in the negotiation of Host Agreements with France and the United Kingdom. These agreements set out the main provisions for hosting the GSMC on the respective national territories.
- The GSMC started to provide input to the respective local agreements with France ('Convention de Site' and UK (Lease agreement)).<sup>9</sup>

The main objectives for the Agency's Security Department, as regards PRS research and development, were:

- Management and close-out of the last FP7 second call tenders (FORTRESS, PROPHET);
- Launch and management of security-related collaborative grants under FP7 third Call;

### 3.1.6.1. Management of FP7 Second Call Contracts

The FP7 second call contracts (tenders) on security and PRS completed in 2012 were:

- The anti-tampering technologies demonstrator for the PRS receiver security module (FORTRESS)
- A PRS management simulation tool to support the PRS pre-operational phase (PROPHET).

### 3.1.6.2. Achievements

The closeout of the two FP7 tenders on PRS and security led to some achievements that could be re-used later in the development of the PRS User segment.

The FORTRESS Final Acceptance review was held in October 2012, with the participation of experts from Member States. Lessons learnt from the benefits and limitations of this technology have been integrated into proposals to the Commission for a PRS receiver technology roadmap.

The details about these two projects are summarised in this table:

Project	Results by Dec 2012
PROPHET	<p>New Simulation Tool</p> <p>This tool explains the functioning of a complex system like the PRS, and allows users to refine the way the PRS can be managed. Its use will bring significant benefits: firstly, in the development of the implementing acts of the Decision 1104 on the PRS access rules; secondly, in the refinement of the GSMC policies and procedures.</p>
FORTRESS	<p>Foreground IP</p> <p>The project resulted in the development of a set of secure analogue IPs, which is now owned by the GSA and which are available for use by European industry, under specific licensing conditions. The first licence was already granted.</p>

<sup>9</sup> In 2013 split into Lease Agreement and Operational Agreement

### 3.1.6.3. Launch of FP7 Third Call Contracts

Three FP7 collaborative grants were signed and started in 2012: PREMISE, ULTRA and ARMOURS<sup>10</sup>.

The evaluation of a tender for a service contract to develop a demonstrator of the integration of the PRS for mobile radio (PRS4PMR) has been carried out.

### 3.1.6.4. Achievements

The three collaborative projects were kicked off in the first quarter of 2012. The activities are progressing according to schedule.

PRS4PMR award is pending signature, scheduled for the beginning of 2013.

## 3.2. Market Development

The GSA's activities in the field of market development focus on market entry and business development actions, in line with different exploitation scenarios of the Commercial Service.

Our activities also contribute to the GNSS Application Action Plan<sup>11</sup> (GNSS APPAP), adopted by the European Commission in June 2010.<sup>12</sup> They are coordinated with the relevant activities undertaken by the European Space Agency (ESA) and the EC and, where appropriate, inscribed in the joint annual GNSS Communication Strategy of the three organisations. The GSA activities are implemented in close coordination with the Galileo units of the EC.

### Contribution to the Preparation of System Commercialisation

Important benefits of the European GNSS programmes will come from both the market and industry. The GSA has been contributing to the market take-up of GNSS systems in order to achieve maximum benefit from the systems. This role has been divided into three main axes of activity:

- Foster and support the progress of European GNSS systems:
  - EGNOS, which reached full operational capability through the declaration of availability of the EGNOS Open Service on 1 October 2009 and the declaration of Safety-of-Life service on 2 March 2011.
  - Galileo Early Services are expected for late 2014. This implies the need to prepare market entry for Galileo.
- Understanding the potential and main trends of the GNSS market, i.e. assessing the environment in which satellite navigation applications can develop, including downstream markets, assessing the various options for improving the dynamics of the market and making suitable recommendations to the Commission;

<sup>10</sup> For more information about these projects, please see Annex V.5.10

<sup>11</sup> List of actions established by the European Commission in order to foster the development of the applications of Galileo and EGNOS.

<sup>12</sup> COM(2010)308, 14.6.2010

- Contributing to the development of the market with actions to encourage the take-up of European GNSS services, leveraging FP7 application projects with a particular focus on supporting small and medium enterprises (SMEs) and promotional initiatives.

## 3.2.1.

# EGNOS Marketing



### 3.2.1.1. Objective and Scope

The adoption of EGNOS in specified market segments has been identified as having the greatest short-term or medium-term potential. The development of penetration in EGNOS target segments will leverage the FP7 activities that the Commission delegated to the GSA.

Three priority sectors are being targeted for GSA EGNOS market entry activities, selected based on their respective potential in terms of economic benefits and maturity: aviation, road and high-precision segments such as agriculture and mapping. Interest in GNSS is also growing in other sectors, such as maritime, rail and surveying, all attracting the Agency's attention for future growth. The promotion of EGNOS requires extensive contributions to the work being coordinated by the Commission with Member States, user communities and all agents of the value chain.

In 2012, one of the key pillars was the **aviation market**. The objective was to fine-tune the EGNOS market entry strategy for aviation, in line with the Application Action Plan. The Agency targeted its promotion of adoption schemes for aviation at operators and airports, leveraging FP7 projects and partnerships with major stakeholders, such as Eurocontrol, the European Aviation Safety Agency (EASA) and manufacturers of avionics and aircraft.

The actions in the **road transport segment** were meant to increase the adoption of EGNOS in road pricing. In particular, this meant preparing industry and service providers for EGNOS and Galileo adoption in new emerging tolling schemes and in the new pan-European tolling service. At the same time, the Agency started focusing on other Intelligent Transport System sub-segments, such as safety systems, including the emergency call (eCall), assistance to the driver and specialised logistics.

The marketing of EGNOS in **agriculture** continued in 2012, with a focus on Eastern and Central Europe, where EGNOS performance improvements were expected. Additionally, the Agency supported the EC in cooperating with the Joint Research Centre (JRC) regarding the Common Agriculture Policy. Marketing of EGNOS in **mapping**, identified as another priority sub-segment in the high-precision domain, was also actively continued.

In all these segments, the GSA leveraged results of FP7 research and development (R&D) projects in order to develop the market through new applications and their exploitation.

The Agency's activities also included the **EGNOS Data Access Service (EDAS)**, evaluating its economic potential, designing the service model and identifying service improvements. EDAS supports the multimodal use of EGNOS by disseminating advanced EGNOS services in real time and within guaranteed performance boundaries. It is available through a ground network, without requiring direct access to an EGNOS satellite. EDAS is the third EGNOS service, along with the Open Service and the Safety-of-Life Service and was declared operational in mid-2012. New improvements have since been implemented, including some new functionalities and data formats to make it more





useful for the user community. The Agency provided important information regarding demand (e.g. customer profiles and benefits, market potential) and suitability of the current mode of access to service data. EDAS will be an integral part of the EGNOS offer in road, agriculture and mapping and will be marketed in conjunction with EGNOS.

Finally, the GNSS Agency tasks include communicating the operational status of EGNOS to the market, including effective communication of the EGNOS value proposition and developing specific instruments to raise awareness of EGNOS in target segments.

### **Main tasks in 2012**

- Promote utilisation of the EGNOS open signal and Safety-of-Life service; continue the actions of the EGNOS market entry strategy; exploit FP7-related projects demonstrating EGNOS benefits; and track impact and market indicators;
- Step up EGNOS marketing activities for aviation;
- Continue to implement the EGNOS market adoption plan for road transport;
- Strengthen EGNOS leadership in agriculture including support for EC regarding Common Agricultural Policy (CAP);
- Implement the market entry approach for the mapping segment;
- Continue to contribute to the EDAS related promotional activities and launch new activities for the enhanced EDAS as soon as available;
- Contribute to EGNOS marketing communication initiatives.

### **3.2.1.2. Main EGNOS Achievements in 2012**

#### **Achievements in the aviation segment**

The GSA developed an adoption plan to foster operational implementation of EGNOS in aviation, targeting publications on procedures, installation and certification of avionics and pilot qualification. The action plan defines the activities that need to be undertaken in order to accelerate the adoption of the International Civil Aviation Organisation (ICAO) recommendation to achieve 100% Approach with Vertical Guidance (APV) coverage in Europe by 2016, maximising the adoption of EGNOS.

Since EGNOS certification, 37 EGNOS-based Localiser Performance with Vertical Guidance (LPV) procedures in EU airports were published, as well as around 100 APV-baro procedures allowed to be flown with SBAS vertical guidance. The GSA's actions on the implementation of LPV procedure targeted both capacity building (pre-operational activities in countries with no previous experience of LPV) and operational implementation (procedure roll-out in countries with an established decision-making process and technical capabilities to adopt EGNOS in their aerodromes).

The FP7 ACCEPTA project provided an incentive scheme to accelerate adoption of EGNOS by co-funding 71 procedures, including five heliports and installation of EGNOS avionics in 44 aircraft of pioneer operators. The SHERPA project organised three workshops on 'safety case' procedure design, 'performance-based navigation implementation' and 'business case' on implementation of LPV for airports and operators, mainly targeting Eastern European countries.

Through its Country Implementation Plans, the Agency has been providing expert support to air navigation service providers (ANSPs), civil aviation authorities (CAAs) and airports on cost-benefit analysis, procedure design, validation, safety assessment and publication.



The Agency ensured that aviation users reap the benefits of EGNOS by supporting its adoption by operators. It provided cost-benefit analysis for interested operators, for example Air Nostrum, NetJets and CityJets. However, regional airlines are not the only ones to benefit from EGNOS. An independent study carried out by the Agency through a survey of European Instrument Flight Rules (IFR) for general aviation indicated that about 40% of participants equip their aircraft with SBAS. The Roadshow for General Aviation provided guidelines and clarification on installation and certification aspects of EGNOS-enabled avionics and included a series of workshops in collaboration with EASA.

The main conferences the Agency attended were EBACE (European Business Aviation Convention and Exhibition), ERA (European Regional Aviation) and AERO Friedrichshafen. The Agency is a member of EBAA (European Business Aviation Association) and collaborates with AOPA (Aircraft Owners and Pilots Association). It actively participates in the RNAV Approach Implementation Sub-Group (RAISG), set up by Eurocontrol to harmonise LPV implementation in Europe.

### Achievements in Road User Charging

The Agency has worked to consolidate European GNSS as the technology of choice for new free-flow Road User Charging (RUC) schemes applied to trucks. Mainly as a result of this effort, the three leading service providers of GNSS tolling in the EU (SkyToll, T-Systems, and AutostradeTech) publicly recommended the adoption of EGNOS and Galileo readiness for all new schemes at the Intelligent Transport Systems World Congress in Vienna in October 2012. The European Association of Tolerated Road Infrastructure Operators (ASECAP) is an important stakeholder in the RUC scenario, bringing together 20 national members managing more than 40 000 km of European road networks. In 2012, the Agency designed a roadmap for the long-term adoption of European GNSS in road charging. The roadmap was endorsed by ASECAP and publicly presented at the European Space Solutions conference in London, in December 2012. The joint roadmap analysed how European GNSS technology can add value to road infrastructure operators, and identified concrete actions to be undertaken by key stakeholders to guide the future trends in the evolution of new tolling schemes, taking advantage of new GNSS services.

### Achievements in Intelligent Transport systems

In the course of 2012, GSA promoted and chaired a task force inside the **eCall implementation platform** to support the stakeholders in an informed choice of the location function, fully leveraging the advantages of European GNSS. The European eCall Implementation Platform is the EC coordination body of the relevant stakeholders supporting the implementation of a pan-European, in-vehicle, and emergency call in Europe. The task force produced the eCall location technical guidelines presented at the stakeholder's platform in November 2012.

In addition, a report identifying European GNSS opportunities in the connected vehicles' segment was developed. The findings showed that Galileo could offer a performance advantage, although many stakeholders are still unaware of Galileo-ready receivers. This report has demonstrated the opportunity to improve Galileo penetration among the first embedded GNSS solutions.

### Achievements in Agriculture

The **Farming by Satellite Prize** project aims to raise awareness of GNSS within the farming community by launching a prize targeted at young students and professionals. The prize is pan-European, but with a particular emphasis on Central European countries, where the



use of GNSS is lagging behind other European regions. The competition is an initiative of the European GNSS Agency, in partnership with the CLAAS agricultural machinery group and Bayer CropScience - and is supported by the UK National Farmers' Union (NFU).

The key achievements in 2012 were:

- Successful use of social media (Facebook and Twitter) to reach our target market, as well as more traditional email and postal mailings. The website [www.farmingbysatellite.eu](http://www.farmingbysatellite.eu) attracted 5 500 visits from 42 countries around the world in only four months;
- 114 participants registered from 25 countries across Europe;
- 32 projects received from 14 countries. Six were from Central and Eastern European countries;
- Developed positive working relationships with sponsors, CLAAS (agricultural machinery and satellite navigation technology) and Bayer CropScience;
- Assembled a panel of judges, comprising experts from the sponsors, the project team and a senior representative from the UN Food and Agriculture Organization (FAO);
- 43 mentions were found online in 7 different languages. This includes press coverage by the Prize sponsors, but not by the GSA or the EC.
- The winners were selected at the end of 2012, with innovative ideas for the use of satellite technology in agriculture. The judging panel included:
  - Dr Andrew Speedy, consultant to the Food and Agriculture Organisation in Rome
  - Ms Fernanda Guerrieri, Assistant Director General, Regional Representative for Europe and Central Asia, Food and Agriculture Organisation in Rome
  - Dr Jens Möller, Chief Executive Officer, Technology Division, CLAAS
  - Mr Hans-Joachim Duch, Technical Manager Product Stewardship: Application Technology, Bayer CropScience
  - Dr Andrea Graham, Chief Science and Regulatory Affairs Adviser, National Farmers Union (NFU)



The official results and awarding ceremony is planned for February 2013 during the *Salon International de la Machine Agricole* (SIMA) in Paris.

### Achievements in Mapping

Mapping has been identified as an additional sub-segment for high-precision applications. A market analysis has been carried out, identifying key characteristics of these markets and the anticipated added value of EGNOS, as well as a concept for a market entry. In close coordination with other EGNOS market activities and in line with the EC Application Action Plan, the EGNOS go-to-market strategy for the mapping segment has been refined and implemented, ready for further refinement before full implementation.

The following results were achieved:

- Further refinement of the market study and the market entry plan, including a cost-benefit analysis with regard to using EGNOS in mapping; public benefit analysis; Common Agricultural Policy land parcel applications (in coordination with EC); impact analysis of a growing constellation of Galileo and its implications for mapping and also surveying.
- Continuing and optimising implementation of the market entry plan;
- Setting up a showcase for EDAS implementation;
- Leverage of synergies with the EC Application Action Plan for each segment and area.

A video has been made to showcase the EGNOS value proposition, in support of EGNOS market entry into the mapping segment (see: <http://www.egnos-portal.eu/mapping>).



## 3.2.2.

# Market Monitoring

### 3.2.2.1. Objective and Scope

The market monitoring and forecasting process is of key importance for improving knowledge about the GNSS market and the overall public benefit created by the systems.

As the market is continuously evolving, the GSA tracks progress in the different markets to define specific targets, ensuring that market models remain up to date. Three new market segments were included in 2012 update of the model: **surveying, maritime and rail**.

The market monitoring process is also used to respond to *ad hoc* requests from the Commission for further implementation of the European satellite navigation programmes.

The Agency supplies information to industry and the general public. It is the intention of the GSA to release a report on the GNSS market every 18 months.

With regard to new applications, the Agency continues to keep a close track of developments in the market as well as new technologies. The GSA also interacts with the respective market agents (e.g. through focus groups).

#### Main tasks in 2012

- Regularly refine and improve the Market Monitoring and Forecasting process, in order to reflect changes in the market, in technology and in the priorities for market development;
- Act as a source of GNSS market information for the Commission, responding to *ad hoc* requests;
- Inform the general public about the development of the GNSS market through the publication of a market report.

### 3.2.2.2. Main Achievements in 2012

The main achievement in 2012 was the publication of the second issue of the **GNSS Market Report**, which was widely appreciated by the GNSS industry. The report provides reliable GNSS market information and revenue projections, covering the global GNSS market, the contribution of Galileo and EGNOS and indirect public benefits.

Apart from general updates of market data and forecasts, the report covered the main segments of interest: Road, Aviation, Agriculture, Location-Based Services, and new application areas in maritime and Surveying. In each section, special attention was paid to the European GNSS systems and their value, supported by concrete case studies.

Another tangible result was the publication of a **funding guide**. The complexity of the funding landscape is generally well appreciated, with numerous potential sources at regional, national and European levels. However, the sources for information and support themselves are not so well known. This is why the GSA developed a comprehensive funding guide, available online: <http://gsa.europa.eu/gnss-funding-guide/introduction>



### 3.2.3.1. Objective and Scope

With EGNOS market entry successfully achieved between 2009 and 2012, the focus is now on market consolidation.

As for Galileo, with a growing satellite constellation, market preparation and entry will now become increasingly important, especially with early service delivery anticipated as of 2014

### 3.2.3.2. Main Achievements in 2012

#### Commercial service

The first activities of the Commercial Services in 2012 were focused on an industry consultation, which confirmed the main conclusions of the Galileo Commercial Service (CS) business plan:

- There is an attractive and growing market for **global high-precision services**, where satellite-based augmentation systems are expected to replace terrestrial technologies, like Real-Time Kinematic (RTK), in the long term. There is also an opportunity in **mass-market authentication services**. Additional market potential has been identified in **data broadcasting**.
- The technologies to address all these markets are ready to be deployed on the CS with a clear competitive advantage compared to existing and future solutions.
- Service providers are interested in using the CS and investing in developing services and equipment. However, they expect the public sector to guarantee a minimum level of performance, as well as stable operational and commercial conditions.

### 3.2.4.1. Objective and Scope

The FP7 R&D programme for GNSS applications is one of the essential instruments for exploiting the full potential of the EGNOS and Galileo programmes. It encourages the development of GNSS downstream applications and aims to improve existing GNSS tools to support design, development and simulations for performance trade-offs of multi-function, hybridised terminals. It also seeks to foster international relations and cooperation in the field of GNSS, as well as to adapt receivers to requirements and to upgrade core technologies in order to enhance performance.

Galileo's success will be determined by the market penetration that it manages to achieve. The FP7 GNSS R&D programme therefore invests in the development of applications of wide public interest and the improvement of the quality of public services across the EU.

The FP7 GNSS R&D programme is based on the following strategic objectives:

- Creating economic value for Europe by generating a return for the public sector, industry, SMEs and users;
- Ensuring European GNSS system competitiveness by helping EGNOS/Galileo become GNSS market leaders;
- Maximising public benefits by supporting the development of applications that will improve the quality and the efficiency of public services and the use of public resources;
- Enhancing international relations by involving international partners in European GNSS projects, increasing trade and resulting in wider international cooperation.

## 3.2.3. Development of the Galileo Market

## 3.2.4. Seventh Research Framework Programme (FP7)

The FP7 GNSS R&D grants were allocated on the basis of calls for proposals and a peer review process. A total of three calls for proposals were launched within the FP7 programme.

Under the Agency's supervision, over EUR 66.4 million of EU funds were granted to 86 GNSS R&D application projects. All projects from the FP7 first call and 25 projects from the FP7 second call were completed. Thirty-nine projects from the Third Call were launched in 2012.

All FP7 projects details can be found in the Projects Portfolio, published on the GSA website: <http://www.gsa.europa.eu/r-d/gnss-project-portfolio>

In managing the projects, the Agency's objectives are:

- to keep the projects in line with the strategic objectives;
- to maximise the project results;
- to produce an effective communication action for each project;



### 3.2.4.2. FP7 GNSS R&D Calls in numbers<sup>13</sup>

FP7 GNSS R&D	1st call	2nd call	3rd call
<b>Date of Call Closure</b>	2008	2009	2010
<b>Funding (million EUR)</b>	12.1	25.1	29.2
<b>Funding to SMEs</b>	42%	37%	35%
<b>Number of proposals submitted</b>	57	94	148
<b>Number of projects funded</b>	18	29	39
<b>No of projects funded by Sector</b>			
Aviation	2	2	3
Road	5	6	7
Location-Based Service (LBS)	6	6	5
Education, Innovation, Support	3	2	2
Precision, Professional and Scientific	2	5	5
Security and PRS	1	3	3
International Cooperation	0	5	6
Other Transport	0	3	5
Agriculture	0	0	3
<b>No of projects closed in 2012</b>	0	14	0
<b>No of projects running<sup>14</sup></b>	0	4	39

### 3.2.4.3. Main Achievements in 2012

#### Achievements in R&D






Many excellent results have been achieved during the 2012 by different R&D projects:





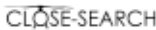
- Thirteen new EGNOS & Galileo Proofs of Concept for a FP7 total of 27
- Twelve new EGNOS & Galileo Prototypes for a FP7 total of 39
- Three new EGNOS & Galileo Pre-commercial products for a FP7 total of 31
- One planned Patent for a FP7 total of 6

<sup>13</sup> The table refers to the FP7 projects managed by GSA

<sup>14</sup> These figures are correct as of December 2012

Rather than simply counting innovations, it is useful to provide a more detailed picture of the outputs. The following table shows some practical examples of product innovations:

Project	Results by Dec 2012
<p>ACCEPTA</p> 	<p>Proof of Concept</p> <p>The main objective of the project is to accelerate adoption of EGNOS in the aviation sector, with wide-scale, real-life adoption of the EGNOS-enabled LPV approaches throughout European airports where the SBAS signal is available and certified.</p> <p>ACCEPTA phase 2 was launched in 2012 and provided an incentive scheme to design and publish 71 procedures and equip 44 aircraft with EGNOS-certified avionics. In 2012, five EGNOS-based procedures (LPV) were published in Nimes and Toulouse. Fifteen new LPV procedures were designed and waiting for validation and publication in: Barra, Benbecula, Campbeltown, Groningen, Belfast, Santander and Baracaldo (PinS).</p>
<p>FilGAP</p> 	<p>Proof of Concept</p> <p>A number of flight trials will be conducted under the FilGAP ('Filling the gap' in GNSS Advanced Procedures and operations) project, which is focusing on stimulation, development and demonstration of innovative advanced operations, procedures and applications for aviation, based on GNSS Safety-Of-Life (SoL). The first demonstration of Advanced GNSS operations in Valencia and Pamplona (Spain) with CRJ-1000NG avionics was launched in Air Nostrum premises in December 2012.</p>
<p>Fieldcopter</p> 	<p>Proof of Concept</p> <p>FieldCopter provides state-of-the-art, multi-spectral cameras on UAS that deliver the right information, at the right time, in the right spot. A UAV prototype platform, equipped with GNSS sensors and thermal cameras, was developed and has been trialled to get stable and high-precision orthophotos of crops and fields.</p>
<p>EEGS2</p> 	<p>Proof of Concept</p> <p>Under the EEGS2 (EGNOS extension to Eastern Europe: Applications) project, which is contributing to the adoption of SBAS systems in countries where the EGNOS signal is still not available, the first flight trials have been conducted in Spain and have shown very good performance of the radio link.</p>
<p>Handheld</p> 	<p>Prototype</p> <p>The objective is to develop a portable standalone system to harness the possibilities of precise positioning offered by the Galileo system. It includes the development of the GNSS antenna with strong filtering to avoid auto-interference from the Bluetooth and WLAN. In 2012 the housing, diplexer, front-end and radiating element prototypes were developed and are ready for integration in the portable standalone system and measurements.</p>

<p>i-GOING</p> 	<p>Prototype</p> <p>The main goal of this project is to help to make GNSS- and in particular Galileo-based pseudolite systems, the best overall solution to address the challenges of positioning and navigation within large buildings.</p> <p>The consortium developed a Galileo-based pseudolite in ISM (Industrial, Scientific and Medical) bands and the software receiver, being parts of the solution for indoor positioning and navigation.</p>
<p>LOGAM</p> 	<p>Prototype</p> <p>In the framework of the project, the ultra-low-cost attitude determination and navigation system will be developed, based primarily on non-dedicated mass-market GNSS receivers and antennas and aided by MEMS inertial sensors. In 2012 the hardware prototype to perform characterisation measurements of the algorithmic approach was designed and developed.</p>
<p>SafePort</p> 	<p>Pre-Commercial Product</p> <p>Many European ports will reach full capacity in the next few years. SafePort developed an Active vessel Traffic Management and Information System (A-VTMIS) to manage vessel movement within its jurisdiction. This will ensure that vessels follow safe paths without conflicting with other vessels and improve the efficiency of port operations.</p>
<p>CIGALA</p> 	<p>The project has proven that the multi-constellation paradigm, combined with selective exclusion of satellites presenting scintillation was the way to go, to provide robustness against scintillation, guaranteeing availability and accuracy of high-precision positioning services in low latitude regions. This is definitely a selling argument for Galileo in these regions.</p> <p>A patent was filed by the University of Nottingham on the use of I and Q correlation samples to improve the least squares stochastic model to mitigate scintillation (UK Patent Application No. 1112336.1, dated 18 July 2011 with the Short Title: GNSS Coordinates Estimation.</p>
<p>CLOSE-Search</p> 	<p>Commercial Product</p> <p>The key innovation of the project is the use of EGNOS for automatic flight control of small unmanned helicopters for SAR operations. This enables the European GNSS services to address a new field of applications. The development of the concept and implementation of a low-cost hyper-redundant integrated navigation system composed of an altimeter, a redundant INS and an EGNOS-augmented GPS receiver is novel, when considering its use for unmanned aerial platforms and, more specifically, for SAR operations.</p> <p>CLOSE-Search was completed in 2012 and endorsed by Civil Protection user groups from Spain, Portugal and Switzerland.</p>



<p>INCLUSION</p> 	<p>Commercial Product</p> <p>The INCLUSION project has introduced the first dedicated sat-nav solution specifically designed to support motor-impaired people, with the possibility of improving their mobility in safe conditions.</p> <p>NAVEVO was the first company to launch a dedicated solution called 'BBNav', which is now established in every major consumer electronics retailer in the UK, including Halfords, Argos, Amazon and DSGi.</p> <p>The resulting product was demonstrated to users during the European Space Solutions conference in December 2012.</p>
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These projects were presented at various workshops, conferences and meetings, which offered possibilities for networking with other experts and colleagues. The meetings included:

- **Intelligent Transport Systems World Conference** (Vienna, 22-26 October 2012): 14 projects participated in the R&D elevator pitch session organised by the Agency to disseminate Galileo/EGNOS R&D benefits to the Intelligent Transport domain and to the road transportation domain.
- **European Space Solutions** (London, 3-5 December 2012): The following projects helped to make the meeting such a success: FILGAPP, SHERPA, UNIFARM, Goldenlce, SMART-WAY, SafePort, Cosmemos, GAIN, TACOT, TAXISAT, GRAIL2, SATLOC and SUNRISE.
- **Space Solutions for Assisted Living** (London, 5 December 2012): The INCLUSION project featured a demonstration of its location-based service (LBS) solution during this special exhibition. INCLUSION offers motor-impaired persons improved mobility in safe conditions, helping them overcome traffic safety problems and the limited accessibility of public transport. Paralympian legend, Peter Norfolk OBE, enjoyed the INCLUSION application during the exhibition and stated: 'I was extremely pleased to see such an advance, particularly with the sat-nav system, which shows you the way to go without steps. It's a marvellous way to use the technology, and something I didn't expect to see.'

### 3.2.5.1. Objective and Scope

In 2010 the EC published an Action Plan on Global Navigation Satellite Systems applications (GNSS APPAP) to foster the use of the European GNSS system and reap the benefits of the Galileo and EGNOS programmes.

The GNSS APPAP focuses on actions to be undertaken between 2010 and 2013 in six priority domains:

- applications for individual handsets and mobile phones;
- road transport;
- aviation;
- maritime transport and fisheries;
- precision agriculture and environment protection;
- civil protection and surveillance.

## 3.2.5. EC Application Action Plan Implementa- tion Tasks

These domains had been chosen in view of their potential to contribute to EU objectives, indirect economic, social and environmental benefits, the single market, the interoperability of GNSS applications and the interests arising from consultations and entrepreneurial activities.

The European GNSS Agency has implemented the actions of APPAP in close cooperation with the EC, focusing on priority segments.

### Main tasks in 2012

- Contribute to the implementation of the GNSS APPAP, concentrating on priority markets;
- Assess the economic and social impacts of application development programmes;
- Monitor receiver technology in consultation with receiver and chipset manufacturers;
- Analyse the EU share of the global GNSS application market;
- Implement APPAP-related activities for the maritime segment.

### 3.2.5.2. Main Achievements in 2012

The European GNSS Agency has supported the EC, under a delegation agreement, in the following areas linked with the APPAP:

- The setup, maintenance and regular upgrade of a detailed **monitoring system** that will periodically report on:
  - the key market figures that the GNSS APPAP is targeting;
  - the status of the execution of the 24 actions of the GNSS APPAP, their impacts and related key performance indicators.
- Launch an **application development impact assessment**, based on key elements such as:
  - Evaluation of economic and social impacts of research projects managed by GSA, including environmental impact, creation of jobs, etc., and the launch of related consultation projects. This will also aim to provide input to various policy options, such as Horizon 2020.
  - Preparation of reports and integration with APPAP impact assessment.
- The delivery of other specific activities planned in the EC GNSS APPAP.

In order to stimulate wider adoption of Galileo, the Agency has initiated various technology monitoring activities, following market trends and gathering relevant insights. With the same aims in mind, the Agency has also continued to interact with receiver and chipset manufacturers, in close cooperation with the EC.

A new in-depth calculation of EU share of the GNSS application market has also been carried out.

Finally, the **maritime segment** has been identified as a new priority segment for EGNSS, together with the EC. Based on the 'Prioritization of sub-segments and applications' study conducted in 2011, a set of actions (in line with the EC Application Action Plan) was defined and carried out in 2012, namely: awareness of the current use and further research into advanced port and inland waterways applications.



## 3.3. General Administration

The ICT and Logistics team led the complex project to relocate to Prague, which is described in detail in section 3.3.3.

The temporary basic infrastructure in Brussels was at the end of its life, having been in use since 2006. So relocation to a completely new building offered a great opportunity to build new information systems from scratch, based on the latest available technologies, and to leverage significant efficiency gains and cost savings in the coming years.

In Prague, a small but high-quality new data centre was built for the Agency that now contains all the information systems that had been previously hosted in the Commission's data centre in Luxembourg. This will bring annual savings of about EUR 100,000, starting in 2013. At the same time, the GNSS Document Management system (GKMF) was migrated from the previously rather technically demanding and rarely used technological platform (Unix, Oracle, Weblogic and Livelink) to the current industry standard Sharepoint Server running in a Microsoft Windows environment. This will also contribute to cost savings when it comes to development and further modifications.

Together with the Finance department a new technical platform for paperless processing of financial transactions was created. It was a necessary tool because, as of September 2012, the Agency started to work in two geographical locations – standard paper processing was no longer viable or efficient. Despite some teething problems, the new tool is a major success and some additional resources shall be invested in its second version, which should be available and deployed in the summer of 2013. The Agency is also considering sharing this application with other EU agencies and will organise a presentation of the tool for interested parties.

The following top ten technological achievements of the Agency were obtained through the relocation:

- Integrated IT and communications infrastructure allowing cost-free audio and video calls between the HQ and remote sites (using Microsoft Lync)
- Internet-based external communications reducing the cost of phone calls (VoIP and SIP technology)
- IT systems fully accessible from laptops and other mobile devices (no difference between working from the office or remotely);
- Technical solution for paperless handling of routing slips for financial transactions within the Agency, cutting the processing time to a fraction of what it was
- Integration of document management, intranet and extranet on one single platform
- Fully outsourced solution for Human Resources Management software (cloud-based)
- Fully outsourced solution for all Agency websites (cloud-based)
- Fully outsourced solution for email security and business continuity (cloud-based)
- Relatively little physical hardware in the server room, due to advanced virtualisation technology, low energy consumption and better resilience
- Advanced backup and data replication technology will allow us to create a disaster recovery site in the GSMC with much more security and reliability.

The Agency has successfully finished a pilot project of the future **Document Management System** (DMS) for the PRS, based on HPTRIM software, which was selected by Logica as

### 3.3.1. Information Systems and Information Technology

the best off-the-shelf product that met the PRS team's requirements. The pilot showed that the tool is really fit for purpose and in 2013 the Agency will continue this effort in order to deliver the final solution to our business units. The extension of the PRS DMS shall continue with a module allowing the distribution of PRS documentation to our main stakeholders, the Member States.

Throughout the year a **Business Continuity Plan** was developed. Starting from a Business Impact Analysis, with the help of Logica UK and using British methodology, Gold, Silver and Bronze business continuity plans were developed, which create a great basis for the final step – with all departments developing detailed implementation plans in 2013.

All activities running in 2012 were driven by a recognised project management methodology (Prince 2), in order to allow high levels of transparency, traceability and auditability.

All new systems and documentation were developed with the ISO 27000 standards in mind, and a preliminary statement of compliance was obtained before the end of the year. In 2013 the Agency intends to achieve full compliance with the standards, to be able to apply for format certification early in 2014.

The IT part of the relocation to Prague was delivered within the allocated budget. Some savings were made and, before the end of the year, good use was made of these in the continuous preparation for the GSMC relocation project to order a large part of the new equipment that will be needed to deploy the new infrastructure to Saint-Germain-en-Laye and Swanwick in 2013.

Last but not least, the ICT & Logistics team has grown considerably in 2012. Starting with four people in January 2013, a new Logistics Officer, two IT System Administrators and two IT Security Officers were recruited. A dedicated Help Desk facility was created in Prague, which was operated by a team of up to five trainees in 2012. This solution, based on using trainees, proved to work in the short-term, but it has its limitations in the long term. The solution for 2013 will be based on short-term contract agents and for 2014 a completely new model shall have to be developed for the Help Desk and IT support, because the situation has changed completely. As a result, in the second half of 2013 a new tender will need to be launched for General IT Support services.

In 2012 GSA Communications activities covered five main areas:

- EGNOS Market Communications
- PRS Awareness Activities
- Communication Support for Galileo Exploitation/Early Services
- GSA Corporate Communications
- Large Collaborative Actions

#### **3.3.2.1. EGNOS Market Communications**

A range of communications initiatives were implemented this year to raise the awareness and uptake of EGNOS in the following sectors:

- Aviation
- Road/ Intelligent Transport Services (ITS)

## **3.3.2. Communications**

- Precision agriculture
- Mapping

## Aviation

To promote EGNOS to the Aviation sector, in 2012 the GSA communications activities continued to target events that attracted key potential EGNOS users. In 2012, EGNOS was promoted at the following select European aviation events:

- **European Business Aviation**, Cannes (22-23 February 2012). The EGNOS/Aviation stand was built and manned and key contacts were made. The EGNOS message (video loop and literature) was also present in the event VIP and press lounges.
- **Aero Friedrichshafen** (18-21 April 2012). This is the largest general aviation event in Europe. EGNOS was, once again, an event sponsor and the EGNOS logo/message was displayed throughout the venue. An 'EGNOS for Aviation' stand was installed.
- **EBACE** (14-18 May 2012), the main European Business Aviation event. A new attention-getting 'EGNOS for Aviation' stand installed and key contacts made.
- **European Regions Airline Association (ERA) Annual General Assembly**, Dublin (19-20 September 2012) The 'EGNOS for Aviation stand' was installed and a newly updated version of the 'EGNOS for Aviation' video was shown. In addition, the GSA presented awards in the stand to the three regional airlines that leveraged EGNOS the most in 2012: Aurigny Airlines (Channel Islands/UK), City Jet (France) and Air Nostrum (Spain).



The 'EGNOS for Aviation' brochure was also revised and reprinted and a full-page advertisement promoting 'EGNOS for Aviation' was placed in *Skyway Magazine* (a Eurocontrol-published magazine). This was distributed to key stakeholders across Europe, as well as to all participants at the annual *ATC Global* event held in Amsterdam, 6-8 March 2012.

## Road/ Intelligent Transport systems

To raise awareness of the value of using EGNOS in this sector, the following activities were implemented in 2012:

- The GSA presented the 'EGNOS for the Road' message at the annual **Road User Charging Conference** held in Brussels (12-13 March 2012). As a conference sponsor, EGNOS had high visibility on all conference materials and the promotional campaign. The 'EGNOS for the Road' stand was set up, information was distributed to participants, new contacts were made, etc.
- The GSA was once again a sponsor of the annual **ASECAP** (road tolling operators) event. The EGNOS logo was included on all materials, information was provided in participant packs and a pop-up 'EGNOS for Road' stand was installed.
- The GSA worked with the Austrian government and the organisers of the **2012 ITS World event** (22-26 October 2012) to install a special ITS-focused *European Space Expo* alongside the conference centre, highlighting the benefits that Galileo and EGNOS bring to the sector. Four special Expo 'kiosks' were made for this occasion providing specific information on how satellite navigation supports: eCall, Freight and Logistics, Advanced Driver Assistance Systems (ADAS) and road charging. At the opening of ITS World, the GSA had the opportunity to welcome a group of event VIPs (ministers and high-level transport officials from Europe and around the world) to the Expo.





### Precision Agriculture

In the agriculture sector, the GSA presented the 'EGNOS for Agriculture' message for the first time in Eastern Europe at the **Polish Field Days** event outside Poznan (21-24 September 2012). A Polish version of the EGNOS stand was incorporated into the CLAAS Agrosystems Pavilion and a Polish version of the brochure was distributed.

### Mapping

In the mapping sector, in 2012 the GSA presented the 'EGNOS for Mapping' message once again at **Intergeo** (9-11 October 2012), the largest European event for mapping, surveying and geodesy. The 'EGNOS for Mapping' stand was installed at the event this year in a combined stand area organised by the German Ministry of Transport, along with other related exhibitors, such as ESA and the GMES user forum.

In addition, a **new video** in the EGNOS sector-specific promotional video series was produced on 'EGNOS for Mapping' and was distributed via the GSA and EGNOS websites and on YouTube. The video 'premiered' at the 2012 Intergeo event.

### EGNOS Portal

EGNOS was also promoted significantly via the EGNOS Portal website. In 2012, the following main activities were implemented on the site:

- A new version of the site content management system was installed and information and layout was refined.
- Several updates were made to the EGNOS Toolkit and SDK.
- 45 news stories were added to site.
- A range of new documents, videos and links were added to the site.



### The European Satellite Navigation Competition (ESNC)

The GSA was once again a major partner in the competition and awarded its **Fifth Special Topic Prize** in the annual '**Galileo Masters**' event for the most promising **EGNOS application** idea to '3Sound Navigation', an application developed by a Spanish start-up SME that integrates 3D sounds with GNSS technology to offer an innovative navigation solution for the blind or people working in limited visibility conditions (such as search and rescue teams). The GSA participated in the annual competition Award Ceremony held on 26 October 2012 in Munich.

#### 3.3.2.2. PRS Awareness Activities

In 2012, under the aegis of GSA security and market development activities in support of the future Galileo PRS, the GSA continued communications activities aimed at raising awareness and understanding of the PRS amongst key stakeholders, with a focus on industry. In 2012 GSA PRS awareness raising activities included:

- PMR (Professional Mobile Radio) Summit 17-19 September 2012. The PRS stand was installed and a special private evening workshop/reception with industry was held to support the on-going dialogue with key players in this domain. The PRS stand was built to continue to target the PMR market regarding the future integration of PRS into these devices. GSA event participation also included a conference presentation on the PRS.
- The PRS brochure was revised and reprinted.

### 3.3.2.3. Communication Support for Galileo Exploitation/ Early Services

In support of GSA market development and exploitation team objectives, and in cooperation with the EC, ESA and the new European GNSS Service Centre (GSC) in Madrid, a **GSC web portal** was conceived. The completed site will go online when the new centre is inaugurated.

### 3.3.2.4. GSA Corporate Communications

2012 was an active year for GSA Corporate Communications and featured the implementation of a wide range of actions, including:

- In conjunction with the Czech Ministry of Transport, the GSA organised the official inauguration event to mark the opening of the GSA's new headquarters in Prague on 6 September 2012.
- For the first time, the GSA issued its Annual Activity Report (AAR 2011) in a high-quality design, printed version. It was distributed to guests attending the inauguration event.
- GSA gifts were produced and presented to key inauguration visitors and other important Agency supporters and stakeholders.
- The GSA participated in the Council Open Day Galileo stand on 12 May 2012.
- The GSA continued to expand the information provided by the GSA website. In 2012, 44 news stories were added to the site, along with a range of new documents, publications, videos and links.
- Three new framework contracts for communications services – web, video, and publications; events and conference services; promotional items – were concluded and kicked off in March 2012.

### Press

In 2012, the GSA was involved in a range of activities designed to raise awareness of the Agency and its activities with key stakeholders and the press. These included the following actions:

- 15 April 2012: Press release: 'EGNOS ideas can win the 2012 Galileo Masters'
- 23 May 2012: Press release: 'GSA launches public consultation on the Galileo Commercial Service'
- 31 May 2012: Press release: 'GSA releases 2012 Sat Nav Market Report'
- 20 June 2012: Press release: 'GSA begins preparations for future EGNOS services'
- 20 July 2012: Press release: 'New features added to the free EGNOS Software development kit'
- 7 September 2012: Press conference and release: 'GSA Inaugurates New Prague Headquarters'
- 27 October 2012: Press release: '3D Sound idea wins EGNOS Application Prize'
- 16 November 2012: Press conference and release: 'Galileo Security Monitoring Centre being built in France'

### 3.3.2.5. Large Collaborative Actions

#### Galileo Applications Congress, Prague

The GSA supported the Czech Ministry of Transport in the organisation of the '*Galileo Applications Congress Prague*' held on 26-27 January 2012, which was attended by around 300 guests. The GSA facilitated coordination and preparation of the event between the different actors (Czech government, European Commission Office in Prague, EC, DG Enterprise, and ESA) and provided documents and other promotional support for the event.





## The European Space Expo

The GSA collaborated with the Commission to launch the new 'European Space Expo', a 300 m<sup>2</sup> travelling, interactive, public exhibition showcasing the many ways that the European space programme, with its flagship projects for satellite navigation (Galileo and EGNOS) and Earth monitoring (Copernicus, previously known as GMES), is improving life on Earth. As well as introducing the Expo concept, the GSA built four satellite navigation-specific multi-media information kiosks featuring a range of animated clips, videos and text to show the various ways that GNSS improves the lives of EU citizens. In addition, the GSA developed and printed tailored 'Expo guides' for each city's installation in English and the official country language(s).

In 2012, The European Space Expo visited the following cities:

- **Copenhagen, Denmark** (1-5 June 2012) Official launch of the Expo. 7,500 visitors attended.
- **Toulouse, France** (25-28 June 2012) This Expo coincided with the 2012 Toulouse Space Show. 6,000 visitors attended.
- **Helsinki, Finland** (17-21 August 2012) 23,000 visitors attended.
- **Brussels, Belgium** (25 September – 11 October 2012) This Expo coincided with the 2012 Belgian Space Week. 16,000 visitors attended.
- **Vienna, Austria** (23-26 October 2012) This Expo coincided with the 2012 ITS World Congress. 5,000 visitors attended.
- **Lamaca, Cyprus** (12-18 November 2012) This Expo coincided with the 'Second FP7 Space Conference'. 14,500 visitors attended.
- **London, UK** (3-9 December 2012) This Expo coincided with the European Space Solutions event. 11,000 visitors attended.

The European Space Expo 2012 tour met with a great deal of public, stakeholder and media success and plans are underway for it to visit another 12 cities in 2013.

## European Space Solutions, London (3-5 December 2012)

In collaboration with the EC and the UK Space Agency, the GSA led the organisation of European Space Solutions, which took place from 3-5 December 2012 in London. The event, which included a major 3-day conference, exhibition and a range of business support activities, brought together business and the public sector with users and developers of space-based solutions to explore how space can make a real difference to the lives, and livelihoods, of people across Europe.

The event featured:

- 1,400 registered participants from 58 countries.
- More than 250 keynote and plenary lectures, 11 focus sessions, and a business development fair stage.
- 7 complementary workshops and side events.
- The European Space Expo tour 2012, which complemented the conference and attracted a total of 11,015 visitors in London.
- 50 elevator pitches and over 150 scheduled one-to-one meetings.
- Over 400 attendees at the official opening event of the London European Space Expo focusing on: '*Space Solutions for Assisted Living*' on the occasion of the 2012 UN International Day for Persons with Disabilities. The unique event brought together high-level personalities from government, industry and national and international non-governmental organisations (NGOs) with the press and interested parties, to showcase the many space applications being developed that support greater independence and safety for citizens with disabilities and special needs.





- Unprecedented event interest by sponsors from government and industry including: The ESA Technology Transfer Programme (TTP) and Business Incubation Centres (BIC), Telespazio Vega, The UK Technology Strategy Board, the UK Science and Technology Facilities Council, Inmarsat, Surrey Satellite Technology Ltd., The UK Catapult Centre, The European Patent Office, the University of Leicester, UK Trade and Investment, GRACE, Astrium and Avanti.
- Excellent event coverage by the print and broadcast media generated by a range of press activities, including a main political press conference and a range of press briefings and releases on <http://www.space-solutions.eu>

The success of *European Space Solutions* in London has led to similar events being organised in Munich in November 2013 and in Prague in spring 2014.

In 2012, the Agency successfully relocated to Prague on time, within budget and according to specifications. However, part of the Agency (the GSMC and Exploitation teams) remained temporarily in Brussels, while the relocation of the GSMC team to Saint-Germain-en-Laye and Swanwick was postponed to 2013.

The relocation implemented Decision 2010/803/EU of 10 December 2010. The strategic objective was to move the Agency's headquarters to Prague prior to the deployment of the two GSMC sites, in order to save resources on the short-term infrastructure arrangements that would have been necessary between the temporary site in Brussels and the future GSMC sites. This risk was successfully avoided.

The relocation itself was managed by a **joint task force** made up of the Agency and the Czech government, with the Ministries of Transport (for coordination and political support) and Finance (to prepare the building).

In the course of 2011 the task force had successfully created the necessary legal framework for the relocation, which was then formalised in December 2011.

On 15 December 2011, both parties signed a Memorandum of Understanding (MoU), which set out, in high-level terms, their understanding regarding the decision on a date for the physical relocation of the Agency to Prague. The MoU also summarised the situation of the respective Parties with regard to their preparatory plans and tasks.

The Czech government and the Agency finalised and initialled the texts of the

- Host agreement
- Lease agreement
- Security arrangement with the Czech national security agency (NSA)
- Staff benefit packages

The Agency summarised all the changes to the original **building requirements** agreed during the negotiations in the second half of 2011 in a new document, released on 15 December 2011.

The Czech government finished drafting a **procurement procedure** to select the supplier to prepare the building (located at Janovskeho 438/2, Prague 7) for the Agency.

### 3.3.3. Relocation To Prague, St-Germain- En-Laye and Swanwick

The Czech procurement procedure was launched on 23 December 2011 and closed in January 2012. The GSA helped to evaluate the proposals. The contract was awarded to Czech company, TESLA, with multiple subcontractors.

The Host agreement, the Lease Agreement, the Security Arrangement and the Hospitality Package were formally signed during the Galileo Application Congress in Prague on 26-27 January 2012, in the presence of the Czech Prime Minister and a number of high-level officials on both sides.

It was agreed that, in the first quarter of 2012, DG Enterprise would transfer to the Agency the budgetary resources earmarked for the physical relocation.

The Host agreement was subsequently submitted to the Czech Parliament for formal ratification and signature by the President before the actual relocation of the Agency.

The months of February and March 2012 were mainly dedicated to procurement activities and preparation of the building.

The Czech government undertook to hand over the premises to the Agency by 31 May 2012. The premises were prepared according to the building requirements and handed over in July 2012. At the moment of the handover the premises should have had a **'Statement of Compliance** with EU Security Regulations' issued by the Czech National Security Authority and should have been ready for the formal accreditation process organised by the Agency. The Czech government also undertook to implement possible additional security requirements arising from the accreditation process, in order to ensure a positive accreditation statement from the Agency, acting as the Accreditation Authority for the HQ.

Based on the above, the Agency committed to relocate to Prague as of 1 September 2012.

This MoU was used as the basis for all subsequent planning and all actions in 2012.

In 2011, the GSA had created a detailed procurement plan and started its execution by identifying critical tender procedures. In 2012, the specifications were drafted and published for the supply of furniture, security installations, reception services, mobile communications, removal services, an IT hardware acquisition channel, Internet connectivity and services. These were published by the building owner in collaboration with the GSA.

Several purchase orders and specific contracts were issued, based on the existing framework contracts of the EC (e.g. a connection to the EC network via s-TESTA).

In February, the Agency received the Czech proposal for the building design ('Project'), together with a **Statement of Compliance** for a review and approval. All discrepancies were clarified, the preliminary review showed almost 100% compliance.

The Czech government targeted 31 May 2012 for building readiness and a partial handover, while the GSA targeted 1 June 2012 to start its own installations and preparations.



The Czech NSA completed a threat assessment as the basis for the GSA Risk and Business Impact Analysis.

In March 2012 the Czech Ministry of Transport set up a **Liaison office** according to the agreement with the GSA. The office quickly became fully operational and started to compile the various requirements of individual staff members regarding housing, car registration, work requirements for spouses, arrangements and schools for children, etc.

The Agency prepared direct agreements with eight international schools in Prague (one French school, one German school and six English schools) on the basis of the *Social measure for the support of multilingual tuition*, as adopted by the Administrative Board in August 2011. As a result, children could then be enrolled in the selected schools.

The Agency also prepared a decision regarding the extension of staff work contracts before the relocation.

The Agency organised a removal service for staff to simplify the process and was able to save money by grouping some removals into one single trip to Prague.

The Agency published vacancy notices for contract agents in order to hire two IT Security personnel, two IT System Administrators and a Logistics Officer, to replace services provided in Brussels by the EC (through the Directorate-General for Informatics, DIGIT, and the Office for Infrastructure and Logistics, OIB).

For the summer, traineeships for IT specialists willing to help set up the new GSA infrastructure in Prague were offered.

On 23 March the GSA issued a formal approval of the **building preparation project**, after a careful review with Logica. During the three following months, the Czech Ministry of Finance and the suppliers put in an enormous effort, working day and night to deliver the building on time.

On 31 May 2012 the **Host agreement** was successfully ratified by both chambers of the Czech Parliament. It finally entered into force on 31 July 2012 after signature by the Czech President.

The GSA organised a formal security inspection of the building with a positive outcome. On the same date, some other important milestones were reached:

- A **partial handover** of the building to the GSA (4<sup>th</sup> and 5<sup>th</sup> floors).
- Internet connection in Prague was working.
- s-TESTA connection in Prague was working (access to Activity Based Accounting (ABAC) and EC Intracomm).
- First physical removal completed (IT equipment and some office material).
- First GSA employee (IT Officer) was ready to relocate permanently on 16 June.
- Two system administrators and the new Logistics Officer were recruited and available to start working in Prague as of July.

From June until August, a small GSA team, together with a few external engineers and consultants from the supplying companies, were in Prague working intensively on the IT systems and general logistics, installing furniture and finalising building security preparations.



At the end of July, the second and final security inspection of the building was organised and, on 31 July 2012, the **formal handover** of the new premises was signed.

In August the removal of office material and staff members, including their households, took place.

Finally, on 03 September 2012, the Agency started to operate from Prague. This event was celebrated by a **formal inauguration event** on 6 September 2012, in the presence of Czech Prime Minister Petr Nečas and EC Vice-president Antonio Tajani.

Only a few actions remain for 2013, including formal accreditation of the physical premises and the IT systems.

## 3.4. Exploitation of the Galileo & EGNOS Programmes

During 2012, the Agency's main activity was the management of the Commission/GSA/ESA Galileo services task force that was established at the end of June 2012. The task force comprises around 20 staff (these are not employed full-time on the task force) and includes teams for market development, system development and operations, design and performance, and security and accreditation.

A key output from the task force was its conclusion that the start of early services before the end of 2014 was feasible. It developed a number of Change Requests that were submitted to the Commission and sent to ESA for implementation. These Change Requests included a set of applicable documents, including service requirements and implementation requirements, and a detailed list of key performance indicators for each early service. In addition, with respect to the implementation of security requirements for the early Galileo services, an SSRS applicability and compliance matrix was defined, with the main open issues and proposed ways forward being presented to the GSAP and discussed with SAB.

In addition to the preparation of the GSC Nucleus, an implementation plan for the GSC was proposed by the Agency. This included a procurement approach for the GSC Nucleus upgrade to support early services and the GSCv1 planned to be ready by 2015, with agreement reached that the procurement activities would be led by the Commission until sufficient resourcing was available at the GSA. In support of this the Galileo services task force started the preparation of a technical GSC specification.

With respect to the Commercial Service (CS) Demonstrator procurement, the Galileo services task force helped define the approach foreseen, including particular focus on CS and GSC accreditation matters.

Concerning the Galileo Reference Centre (GRC), the Galileo services task force supported the Commission in defining the approach to the GRC. During the early services phase this GRC-type functionality would be provided through an upgrade to the ESA Validation Facility and a procurement of the full GRC would be launched incorporating contributions from Member States.



### 3.4.1. Galileo Exploitation Preparation

The development of the GSA Galileo exploitation team included a proposed structure for the Galileo exploitation team and the recruitment of the Galileo Exploitation Programme Manager.

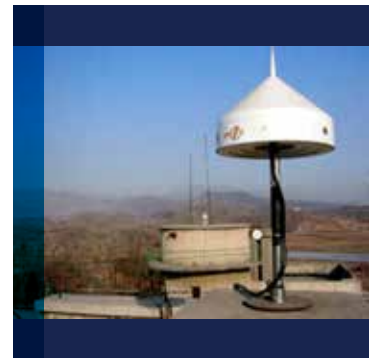
For EGNOS exploitation preparation during 2012 the main activity centred on the initial activities of the new EGNOS Service Provider (ESP) procurement. In particular, the full tender specification data package was completed and submitted to bidders, with initial offers being submitted and evaluated. Initial activities with respect to the definition of an EGNOS Security Roadmap were started with the Commission.

The GSA supported early ESA EGNOS V3 Phase A & Phase B activities and proposed a first version of an EDAS service deployment roadmap. The GSA participated in the EGNOS in South Africa Task Force, and under the lead of the GSA the EGSA (EGNOS South Africa) study was concluded.

In response to a GSA Administration Board request, the GSA undertook an analysis of the main EGNOS risk and issues, including service provision continuity, user adoption and improvements, and programme management. Linked to this, planning for the handover of Commission EGNOS exploitation activities to the GSA was started in 2012, proposing a progressive approach towards handover of activities, data and staff/know-how subject to GSA staffing availability.

The development of the GSA EGNOS exploitation team included a proposed structure for the EGNOS exploitation team and the recruitment of the EGNOS Exploitation Programme Manager and the EGNOS Exploitation Programme Controller.

## 3.4.2. EGNOS Exploitation Preparation



# 4. Status of the Internal Control

The Agency follows the Internal Control Standards (ICS) applicable to the European Commission and to EU institutions in general.

A new Internal Control/Audit Coordinator was appointed in November 2012, in line with Internal Control Standard no. 15 (Assessment of Internal Control Systems) and following the general provisions of the Agency's Financial Regulation.

The last assessment on compliance with the ICS was carried out in June 2012, the results of which were presented to the Agency's Administrative Board. An end-of-year informal follow-up of the assessment was carried out in December 2012, showing that the Agency is fully compliant with 46 out of 58 requirements and partially compliant in areas of business continuity plans, document management, compulsory training of staff, a clear list of sensitive functions and action plan. Full compliance was hindered by the relocation from Brussels to Prague and the transfer of some staff to new locations (need for new processes to be implemented). Full compliance is expected to be reached by the end of 2013. The Agency is compliant with all financial management requirements.

With regards to *ex post* controls for grants:

- FP6 grants
  - *Ex post* control of selected FP6 (Second and Third Call) beneficiaries was finalised in 2012. The final results were analysed and shared with the EC in December 2012. The recovery orders will be issued early in 2013.
- FP7 grants – First and Second call
  - New processes have been put in place (in line with the 'GSA Ex post FP7 control strategy 2011-2014' which was adopted in February 2012) to enhance, among other things, the *ex-ante* verification of declared costs by beneficiaries and to satisfy the requirements of the European Court of Auditors.
  - There are two groups of grants:
    - Closed grants (All activities have been finalised, including administrative closure) and
    - Open grants (All project activities are finalised, but final payment is still pending).
- Closed grants - In November 2012 the Agency initiated a project to audit 14 beneficiaries. External auditors are performing these *ex post* control audits. An audit of a further 22 beneficiaries has either been initiated, or will be initiated in early 2013.
- Open grants - In November 2012 the Agency initiated *ex ante* controls by external auditors for six beneficiaries, prior to the final payment. All other beneficiaries (71) will undergo a detailed desk review of the project costs in early 2013. These beneficiaries have been asked for a detailed breakdown of costs, which will be sampled, and the corresponding supporting documents checked in detail.
- FP7 grants (Third Call) - All of the Third Call grants will have a mid-term technical and financial review. The financial review, as foreseen in the 'GSA ex post FP7 control strategy 2011-2014', will consist of a detailed desk review of the project costs of selected beneficiaries, prior to the interim payment. For some of them (e.g. those involved in more than one project), the desk review will be replaced by a direct

visit of GSA staff to not only review the declared costs but also to focus more on instructing beneficiaries on FP7 financial rules, in order to reduce recurrent errors to a minimum.

An update of the risk register was last carried out in May 2012.

Following recommendations made by the European Court of Auditors (ECA) and the Internal Audit Service (IAS), the Agency:

- Implemented seven out of the eight IAS recommendations. The eighth recommendation refers to the annual work programme and the annual report; while the recommendation was accepted by the Agency, it can only be assessed once the annual activity report for 2013 is completed.
- Implemented actions resulting from two out of the three ECA comments on the 2011 accounts. Work related to the third comment is on-going.

The Agency received a discharge on its financial accounts for 2011 from the European Parliament.

# 5. Annexes

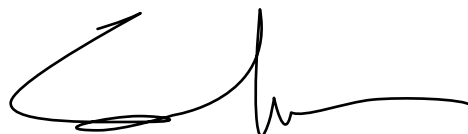
## 5.1. Declaration of Assurance

I, the undersigned, Carlo Des Dorides,  
Executive Director of the GSA,

In my capacity as authorising officer,

- Declare that the information contained in this report gives a true and fair view.<sup>15</sup>
- State that I have reasonable assurance that the resources assigned to the activities described in this report have been used for their intended purpose and in accordance with the principles of sound financial management, and that the control procedures put in place give the necessary guarantees concerning the legality and regularity of the underlying transactions.
- This reasonable assurance is based on my own judgement and on the information at my disposal, such as the results of the self-assessment, ex post controls, the work of the internal audit capability, the observations of the Internal Audit Service and the lessons learnt from the reports of the Court of Auditors for years prior to the year of this declaration.
- Confirm that I am not aware of anything not reported here which could harm the interests of the institution.

Prague, 27 June 2013



Carlo des Dorides

<sup>15</sup> True and fair in this context means a reliable, complete and correct view on the state of affairs in the service.



## 5.2. Human and Financial Resources

The Agency's own executed budget in 2012 was EUR 12,736,949, out of a maximum budget of EUR 12,738,648 (99.99% of budget execution in terms of commitments). In addition to the annual subsidy, in 2012 the Agency managed a 'delegated budget' from the European Commission of EUR 92,779,678 via grant and procurement projects. Furthermore, in addition to the previously on-going delegated activities, a new Delegation Agreement was signed in May 2012, which comprises tasks for the preparation of EGNOS and Galileo exploitation, PRS development and contribution to APPAP activities. The Delegation Agreement was signed for a maximum amount of EUR 34,424,000, and covers commitments in 2012 and 2013.

In terms of budget breakdown, total expenditure on **staff costs** was EUR 5,645,755; **administrative costs** amounted to EUR 4,585,831; **operational costs** amounted to EUR 2,505,363. Details of the budget implementation during 2012 can be found in the Budget Implementation Report 2012, on the Agency website.

The entire Agency revenue comes from the EU budget. No other sources of funding were foreseen during 2012.

At the end of 2012, the Agency consisted of 71 staff (44 of whom were temporary agents). Despite the relocation of the Agency's headquarters to Prague, the Human Resources (HR) department managed to fulfil the recruitment plan completely by the end of the year, doubling the size of the Agency, compared to the end of 2011.

The Agency staff came from 18 different Member States, namely Belgium, Bulgaria, Czech Republic, Estonia, France, Germany, Greece, Hungary, Italy, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Spain, Sweden and the UK. Many of the applications the Agency received for the more technical positions came from Member States having a long tradition in the aeronautic and space industry. However, the Agency is continuously searching for new ways to spread awareness about its vacancy notices in order to reach potential candidates in all Member States.

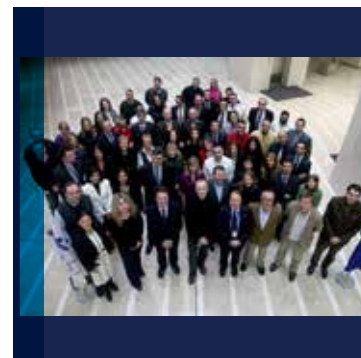
The Agency takes great care to avoid any form of discrimination in its recruitment procedures and has managed to achieve a very well balanced gender distribution across all grades. Men make up 59% of the staff and women make up the remaining 41%.

The 2012 distribution of staff was as follows, split by department and area of activity:

Department	Temporary Agents	Contract Agents	Total
Office of the Executive Director	4	0	4
Human Resources	2	4	6
Finance	2	2	4
Legal and Procurement	4	4	8

### 5.2.1. Financial Resources

### 5.2.2. Human Resources



<b>Market Development</b>	5	6.5	11.5
<b>Communications</b>	1	0.5	1.5
<b>Security</b>	10	4	14
<b>Galileo Security Monitoring Centres</b>	11	0	11
<b>ICT &amp; Logistics</b>	1	6	7
<b>Exploitation</b>	4	0	4
<b>Total</b>	44	27	71

## 5.3. Draft Annual Accounts and Financial Reports

Draft Annual Accounts have been prepared for the 2012 exercise and sent to the European Commission on their due date. The Budget Implementation Report 2012 has also been finalised and is currently available on the Agency website.

In May 2013 the Court of Auditors is expected to audit the 2012 Accounts. After their final remarks, the 2012 Annual Accounts are to be submitted in June 2013 to the Administrative Board for adoption.

## 5.4. The Administrative Board

The GSA Administrative Board brings together representatives of the Member States, the European Commission and the European Space Agency. The Administrative Board is responsible for defining the Agency's priorities, establishing the budget and monitoring the Agency's operations.

### Composition

Voting Members	European Member States (27 representatives) and European Commission (5 representatives) A detailed list of GSA-AB Members is available on the GSA website
Non-Voting Members	European Parliament (1 representative), Croatia, Norway
Observers	European Space Agency (1 representative)
Chair	Ms Sabine Dannelke (Germany)
Deputy Chair	Mr Christian Gaisbauer (Austria)

The Administrative Board met three times in 2012 in March, June and November. These meetings, numbered 32 through 34, decided upon the following items:

Mtg	Date	Reference:	Title
32	22 Mar	GSA-AB-12-03-32-08	Approval Of The New GSA Organisation Structure
32	22 Mar	GSA-AB-12-03-32-03	Decision On The Statement Of Estimates Of Revenues And Expenditure 2013
32	22 Mar	GSA-AB-12-03-32-06	Decision To Welcome Croatia As Observer
33	20 Jun	GSA-AB-12-06-20-33-02	Decision To Adopt The Annual Activity Report 2011
33	20 Jun		Decision To Have two Reporting Officers For The Appraisal Of The Executive Director
34	08 Nov	GSA-AB-34-12-11-08-02	Decision To Adopt The Work Programme 2013 (Subject to the Commission's inter-service consultation)
34	08 Nov	GSA-AB-34-12-11-08-03	Decision On The Budgetary Management For 2012 (Amendment To The Budget 2012)

Additionally, the Administrative Board also took four decisions based upon written procedures, namely (numbered 21 to 24):

21	31 Mar	Decision To Adopt The Statement Of Estimates Of Revenues And Expenditure For 2013
22	13 Apr	Adoption Of The Provisional Work Programme For 2013
23	29 Jun	Adoption Of The Annual Accounts For The Year 2011
24	14 Aug	Decision Laying Down Rules On The Secondment To The Agency Of National Experts And National Experts In Professional Training

## 5.4.1. List of Administrative Board Decisions

## 5.5. The Security Accreditation Board

The GSA Security Accreditation Board (SAB) brings together representatives of the Member States, the European Commission, the High Representative for Foreign Affairs and the Security Policy and the European Space Agency. The SAB is responsible for the security accreditation of the European GNSS systems, i.e. to verify that they are in compliance with the applicable security rules and regulations as established by the Council and the European Commission. The SAB is the sole Security Accreditation Authority of the European GNSS systems and acts independently of the authorities in charge of the programmes.

The general principles for security accreditation, the responsibilities and typical tasks are laid down in Regulation (EU) No 912/2010 under Chapter III.

## Composition

<b>Voting Members</b>	European Member States (27 representatives)
<b>Non-Voting Members</b>	European Commission (1 representative) High Representative for Foreign Affairs and the Security Policy (1 representative)
<b>Observers</b>	European Space Agency (1 representative)

The SAB met five times in 2012, in Feb, May, July, September and December. The decisions taken are classified.

## 5.6. GSA Legal Framework

Document	Ref.	Issue - Date
Council Joint Action 2004/552/CFSP of 12 July 2009 and aspects of the operation of the European satellite radio-navigation system affecting the security of the European Union	Joint Action 2004/552/CFSP	12 Jul 2004
Regulation (EC) No 683/2008 of the European Parliament and of the Council of 9 July 2008 on the further implementation of the European satellite navigation programmes (EGNOS and Galileo)	683/2008	9 Jul 2008
Regulation (EU) 912/2010 of the European Parliament and of the Council of 22 September 2010 setting up the European GNSS Agency, repealing Council Regulation (EC) No 1321/2004 on the establishment of structures for the management of the European satellite radio-navigation programmes and amending Regulation (EC) No 683/2008 of the European Parliament and of the Council	912/2010	22 Sep 2010
Council Decision No 2011/292/EU of 31 March 2011 on the security rules for protecting EU classified information	2011/292	31 Mar 2011
Decision No 1104/2011/EU of the European Parliament and of the Council of 25 October 2011 on the rules for access to the Public Regulated Service provided by the Global Navigation Satellite System established under the Galileo programme	1104/2011 (enforced on 5/11/2011)	25 Oct 2011
Regulation (EU, Euratom) No 966/2012 of the European Parliament and of the Council of 25 October 2012 on the financial rules applicable to the general budget of the Union and repealing Council Regulation (EC, Euratom) No 1605/2002 of 25 June 2002	966/2012	25 Oct 2012

Financial Regulations of the GSA adopted by the Administrative Board on 11 October 2005 (GSA-AB-2005-042), as amended by the Administrative Board on 20 November 2008 (GSA-AB-08-11-18-02)	GSA-AB-08-11-18-02	20 Nov 2002
Commission Delegated Regulation (EU) No 1268/2012 of 29 October 2012 on the rules of application of Regulation (EU, Euratom) No 966/2012 of the European Parliament and of the Council on the financial rules applicable to the general budget of the Union	1268/2012	29 Oct 2012
Implementing rules of the financial regulations adopted by the Administrative Board on 27 October 2006 (GSA-AB-06-10-07-04)	GSA-AB-06 -10-07-04	27 Oct 2006
Regulation No 31 (EEC), 11 (EAEC), laying down the Staff Regulations of Officials and the Conditions of Employment of Other Servants of the European Economic Community and the European Atomic Energy Community	Staff Regulations	As amended (2007)

## 5.7. List of Acronyms

Abbreviation	Definition
ABAC	Activity Based Accounting
ADAS	Advanced Driver Assistance Systems
APPAP	Application Action Plan
ANSP	Air Navigation Service Provider
AOPA	Aircraft Owners and Pilots Association
APV	Approach Procedure with Vertical Guidance
ASECAP	European Association of Tolloed Road Infrastructure Operators
ATL	Authorisation To Launch
BIC	Business incubation centre
CAA	Civil Aviation Authority
CAP	Common Agricultural Policy
CDA	Crypto-Distribution Authority
CDR	Critical Design Review
CFSP	Common Foreign and Security Policy
CMS	Common Minimum Standards
Commission	European Commission
CONOPS	Concept of Operations
CS	Commercial Service
DCN	Document Change Notice

DG	Directorate General
DIGIT	Directorate General for Informatics
DMS	Document Management System
EASA	European Aviation Safety Agency
EBAA	European Business Aviation Association
EBACE	European Business Aviation Convention and Exhibition
EC	European Commission
EDAS	EGNOS Data Access System
EGNOS	European Geostationary Navigation Overlay Service
EGNSS	European Global Navigation Satellite System
EGSA	EGNOS South Africa
ERA	European Regional Aviation
ESA	European Space Agency
ESP	EGNOS Service Provider
ESSP	European Satellite Services Provider
EU	European Union
EUROCONTROL	European Organisation for the Safety of Air Navigation
FAO	Food and Agriculture Organisation
Financial Regulation	Council Regulation (EC, Euratom) No. 1605/2002 of 25 June 2002 on the Financial Regulation applicable to the general budget of the European Communities, as amended by Council Regulation (EC, Euratom) No. 1995/2006
FKC	Flight Key Cell
FP6	6th Framework Programme for Research and Technological Development of the European Union
FP7	Seventh Framework Programme for Research and Technological Development of the European Union
GF4	GSAP Formation 4
GKMF	GNSS Knowledge Management Facility
GMES	Global Monitoring for Environment and Security
GNSS	Global Navigation Satellite System
GNSS Regulation	Regulation (EC) No. 683/2008 of the European Parliament and the Council of 9 July 2008 on the further implementation of the European satellite navigation programmes (EGNOS and Galileo)
GNSS Security Board	The Security Board of the European GNSS Systems, which is composed of one representative of each Member State, selected from among the recognised experts in the field of safety and security, and a representative of the Commission
GPS	Global Positioning System (USA)
GSA	European GNSS Agency

GSA Regulation	Regulation (EU) No 912/2010 of the European Parliament and of the Council of 22 September 2010 setting up the European GNSS Agency, repealing Council Regulation (EC) No 1321/2004 on the establishment of structures for the management of the European satellite radio-navigation programmes and amending Regulation (EC) No 683/2008 of the European Parliament and of the Council
GSAP	Galileo Security Accreditation Panel
GRC	Galileo Reference Centre
GSC	GNSS Service Centre
GSF	Galileo Security Facility
GSMC	Galileo Security Monitoring Centre
GSS	Galileo Sensor Station
HQ	Headquarters
HR	Human Resources
IAS	Internal Audit Service of the European Commission
ICAO	International Civil Aviation Organisation
ICS	Internal Control Standards
ICT	Information and Communications Technology
IFR	Instrument Flight Rules
IOV	In-Orbit Validation
IP	Internet Protocol
ISO	International Standards Organisation
IT	Information Technology
ITS	Intelligent Transport Systems
Joint Action	Council Joint Action 2004/552/CFSP of 12 July 2004 on aspects of the operation of the European satellite radio-navigation system affecting the security of the European Union
JRC	Joint Research Centre
LBS	Location-Based Services
LEOP	Launch and Early Operations Phase
LPV	Localiser Performance with Vertical
MMI	Man-machine interface
MoU	Memorandum of Understanding
MRD	Mission Requirements Document
MS	Member State(s)
NET	National Expert Team (working group of the GNSS Security Board)
NFU	National Farmers' Union (UK)
NGO	Non-Governmental Organisation
NRSCC	National Remote Sensing Centre of China
NSA	National Security Agency

OIB	Office for Infrastructure and Logistics (Brussels)
OS	The Galileo Open Service
OSRR	Operational Service Readiness Review
PinS	Point in Space
POC	Point of Contact
POCP	Point of Contact Platform
PPTI	Participant to PRS Trials in IOV
PRA	Preliminary Risk Assessment
PRS	Public Regulated Service
PRS4PMR	Public Regulated Service for Personal Mobile Radio
PxSU	Payload or Platform Security Unit
R&D	Research and development
RAISG	RNAV Approach Implementation Sub-Group
RAPUS	Risk Assessment of the PRS User Segment
RID	Review item discrepancy
RNAV	Area Navigation (method for airspace navigation)
RTK	Real-time kinematic
RUC	Road User Charging
SAA	Security Accreditation Authority
SAB	Security Accreditation Board
SAM	Security Accreditation Milestone
SAR	Search And Rescue
SAT PDR	Satellite Preliminary Design Review
SB	Security Board
SBAS	Satellite-Based Augmentation Systems
SC	Specific Contract
SCDR	System Critical Design Review
SecOPS	Security Operations
SG	Secretariat-General
SIMA	Salon International de la Machine Agricole
SIP	Session Initiation Protocol
SME	Small or Medium Enterprise
SoC	Statement of Compliance
SoL	Safety-of-Life
SSP	System Security Plan
SSRS	System Specific Security Requirements Statement
SSRS-PRS-Rx	System Specific Security Requirements Statement for the PRS Receiver
TGVF	Timing & Geodetic Validation Facility
ULS	Uplink Station



US	United States (of America)
VoIP	Voice over Internet Protocol
WG	Working Group
WG-CMS	Working Group – Common Minimum Standards
WG-NET	Working Group – National Expert Team
WG-PRS	Working Group – Public Regulated Service
WLAN	Wireless Local Area Network





