The EGNOS Service to Provide Ground Based Access to EGNOS - EDAS Beta Test Findings

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Plugging into EGNOS
The EDAS is the new ground based data service from EGNOS

EGNOS

OS and SoL: the space based services

Service Providers

Ground based one-way connection to EGNOS

Applications & End Users
EDAS provides service providers with the opportunity to use EGNOS data to build innovative multimodal applications.

**EGNOS**
- GPS and GLONASS ground monitoring network
- Generates augmentation messages

**OS and SoL**
- Open and Safety-of-Life service will disseminate augmentation messages to users via three Geostationary satellites

**EDAS**
- **The EGNOS Data Access Service**
  - EDAS is a new data service from EGNOS
- EDAS provides a ground based connection for accessing EGNOS data (not just the broadcast message) in real-time

**Service Providers**
- Service Providers can sign-up to receive EDAS
- Delivering EDAS supported services & applications to users

**Applications & Users**
- ..and more
EDAS is the one way access point for plugging into EGNOS (1/2)
EDAS is the one way access point for plugging into EGNOS (2/2)

- SP access data through the EDAS Client Software (CS)
  - Manages user authentication
  - Provides EDAS data (SL0 or SL1) to the SP application
  - Monitoring & Control info (gaps, integrity, user quota)
Two EDAS service levels can be opted for:

- Designed for High Availability of Service
- EGNOS RIMS raw measurements obtained from a dedicated interface (INSPIRE)
- Data converted and broadcast in two different Service Levels

<table>
<thead>
<tr>
<th></th>
<th>Service Level 0</th>
<th>Service Level 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>ASN.1</td>
<td>RTCM 3.0</td>
</tr>
<tr>
<td>Data rate</td>
<td>600 kbit/sec</td>
<td>300 Kbit/sec</td>
</tr>
<tr>
<td>Maximum Latency(*)</td>
<td>150 msec</td>
<td>300 msec</td>
</tr>
</tbody>
</table>

(*) Latency measured at the output of the EDAS Server, thus not including delays in EDAS-SP connection (e.g. xDSL). Average latency values measured are actually half of those in the table.
EDAS enables access to the data collected, generated and delivered by EGNOS for the Open and Safety-of-Life Services

**Raw GPS, GLONASS and EGNOS GEO observations:** collected by the entire EGNOS network of Ranging and Integrity Monitoring Stations RIMS

**The EGNOS augmentation message:** as normally received by users via the EGNOS Geostationary satellites

**Antenna Phase Centre Coordinates:** list of the geographical coordinates of all RIMS stations

**EDAS Content**

**EDAS format**

- ASN.1 format
- RTCM format
- Receiving both formats is also possible
EDAS provides a simple internet connection for most users but also offers the option for a faster fixed connection.

- Simply register and download the client software
- A standard ADSL internet connection is sufficient to receive EDAS:
  - Service Level 0: ASN.1 format service requires 300 kb/s
  - Service Level 1: RTCM format service requires 600 kb/s
  - Option to receive both Service Levels

Want increased and more assured performance? We will advise on installing a fixed line to EDAS.
**EDAS builds on the qualities of EGNOS to provide a reliable high level of service**

<table>
<thead>
<tr>
<th>Reliability and Assurance</th>
<th>Data Delivery</th>
<th>Data Content</th>
</tr>
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<tbody>
<tr>
<td>EGNOS will be a certified Safety-of-Life system requiring a highly reliable and resilient infrastructure on which to base EDAS</td>
<td>EGNOS data in real time through a standard internet connection or a fixed-line</td>
<td>EDAS not only provides EGNOS broadcast data, but also:</td>
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<tr>
<td></td>
<td></td>
<td>- RIMS raw data</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Status messages</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>European and North African Coverage</th>
<th>Commercial</th>
</tr>
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<tbody>
<tr>
<td>The 34 EGNOS RIMS collect a unique GNSS dataset across Europe and North Africa</td>
<td>In the future, EDAS can be provided on a long-term basis with reliable performance levels</td>
</tr>
</tbody>
</table>
The GPS, GLONASS and EGNOS observables from the RIMS network provide a unique real-time data set.
EDAS adds value to existing services and can support innovative new applications.

Some users will not be able to maintain visibility of EGNOS satellites, such as in urban canyons. EDAS could support:

- EGNOS pseudolites (for SBAS and ranging)
- Provision of EGNOS augmentation via other channels (DAB/RDS/IP)

EDAS RIMS raw data can provide a key part of the data source for:

- A-GPS solutions for Location Based Services
- Data supply for high accuracy professional GNSS services
- Ionospheric monitoring
- Analysis and simulation tools
- Geodetic analysis
- NOTAM services
- EGNOS performance monitoring
User feedback and behaviour are the basis for the go-to-market strategy

### Roadmap

<table>
<thead>
<tr>
<th>Launch of beta test</th>
<th>Test reach &amp; engage</th>
<th>Market study</th>
<th>Go-to-market approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Set up of contractual framework, procurement &amp; project plan</td>
<td>• Technical improvements</td>
<td>• Set-up of online feedback tool</td>
<td>• Conduction of quantitative &amp; qualitative evaluation of priority segments</td>
</tr>
<tr>
<td>• Initial target definition for test users</td>
<td>• Optimisation of reach &amp; engage processes</td>
<td>• Development of in-depths interview guide</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Preparation of 2nd wave</td>
<td>• Conduction of 30+ in-depths interviews</td>
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### Activities

<table>
<thead>
<tr>
<th>Objective</th>
<th>Successfully run beta test and draw conclusions for in market phase</th>
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<tbody>
<tr>
<td>Launch of beta test</td>
<td>• Web-site live</td>
</tr>
<tr>
<td></td>
<td>• Server &amp; helpdesk set-up</td>
</tr>
<tr>
<td></td>
<td>• Target test users invited and first inscriptions</td>
</tr>
<tr>
<td>Test reach &amp; engage</td>
<td>• Connectivity process working, helpdesk up &amp; running</td>
</tr>
<tr>
<td></td>
<td>• ~30 test users by December 2009</td>
</tr>
<tr>
<td>Market study</td>
<td>• Report on user behaviour, satisfaction, requirements</td>
</tr>
<tr>
<td></td>
<td>• EDAS added value and target markets identified</td>
</tr>
<tr>
<td></td>
<td>• EDAS development roadmap drafted</td>
</tr>
<tr>
<td>Go-to-market approach</td>
<td>• Target market described and priorities set</td>
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EDAS is gaining market awareness with a continuous flow of new subscriptions

- As of December 2009, 30 test users had subscribed to EDAS.
- Organisations composed of companies, SME’s, research institutions as well as universities across Europe (including major European and global players in the GNSS industry).
- By beginning of June there were already more than 50 organisations using EDAS.

Organisations from 14 different countries.
For feedback collection key users and downstream market players were interviewed in-depth

- **1st phase:** 14 in-depth interviews with beta test users
- **2nd phase:** 17 in-depth interviews with players along value chain

Insights repository of about 200 pages of structured interview information

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<td>- Almost all the users in a data processing phase, testing the data and applications</td>
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<tr>
<td>- Impact more in terms of an add-on to their actual offer rather than stand alone product</td>
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<th>Satisfaction</th>
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<tr>
<td>- 86 percent of users satisfied with performance/security/helpdesk</td>
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<tr>
<td>- Some suggestions made for format and a few for content</td>
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<td>- Need for commitment regarding future enhancement and reliable service</td>
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Added value will be used mainly in order to enhance an already existing service offer.
Target segments need a medium accuracy and are prone to regulation.
ADAS still is at an early market stage → R&D players are studying services that could take advantage of EDAS performances, as a supporting source in situations where EGNOS is scarcely available, like in urban canyons.

Existing application already developed
Best practice offers the possibility to quickly develop further the application → Dangerous Goods and similar sub-segments

EDAS potential is currently under study in projects starting in 2010
This segment can be split in commercial and specific applications

In EU 15 the four main water corridors represent around 15% of freight transport through In Land Navigation
An increase of demand of the RIS (River Information Service) is expected → EGNOS/EDAS’ accuracy should suffice

Only Germany and Slovakia have implemented a GNSS RUC system based on GNSS
EDAS are currently tested in large scale trials

= EDAS impact
EDAS has proved to be able to play a role within the identified market segments. There is a continuously growing EDAS user community. Despite this, EDAS can be improved in order to better meet current user needs and attract new users, user groups and segments.

It is important to take note that all here mentioned EDAS system enhancements will be fully backward compatible. That means, current users will be able to stick with the present configuration of their application even after releases of new EDAS versions.

As for the system level, there was evidence during the beta test that the current EDAS system does not respond fully to the user needs. In order to better meet the user needs, developments of the server itself and new development regarding the software will be necessary.

Examples of expected (main) system enhancements are:
• Server side data filtering
• Archive of historical data
• Basic data stream provision (EGNOS corrections only)
• Dissemination of RIMS raw data in the NTRIP protocol

Several other system and service-level enhancements are currently under investigation.
EDAS provides access to EGNOS data in real-time, with a high-level of reliability in terms of latency and availability of the data.

EDAS builds on the qualities of EGNOS to provide a reliable high level of service to users. EDAS offers the following key advantages.

The potential EDAS market was identified mainly related to a medium level of accuracy and regulated markets. Five segments were identified that can be seen as potential EDAS segments, even though at a different level of development, including Dangerous Good Transportation, Road User Charging (RUC), In Land Navigation, ADAS and LBS.

EDAS has proved to be able to play a role within the identified market segments. There is a continuously growing EDAS user community. Despite this, EDAS can be (and is being) improved in order to better meet current user needs and attract new users, user groups and segments.
We would like to thank the EC, all the beta test users and third company players that contributed to our study, for their availability and willingness to provide a feedback and share with us knowledge and information on their projects and activities.
Time-to-market will be decisive in a first step of market entry compared to market attractiveness.
EDAS is available for a free trial before being made available for commercial licences.

A free Beta trial phase for EDAS is now available. This allows any interested parties to sign-up to access EDAS for free.

During the evaluation different market scenarios are currently assessed including a commercial service delivery model.

For more information on EDAS and to sign up please go to:
http://egnos-edas.gsa.europa.eu
COVEL - Cooperative Vehicle Localization for Efficient Urban Mobility
ROAD (Germany, France, Italy, Netherlands)

GNSSmeter - GNSS-based metering for vehicle applications and value added road services
ROAD (Austria, Germany, Spain, Switzerland, UK)

Golden Ice - improving the efficiency Of salt-spreadiDing (de-icing) sErVices and emergeNcy call management on wInter professional vehiCles using Egnos
ROAD (Czech Republic, France, Germany, Italy)

LIVELINE - Live ICT services Verified by EGNOS to find Lost Individuals in Emergency situations
LBS (Luxemburg, Netherlands)

PERNASVIP - PERsonal NAvigation System for VIsually disabled People
LBS (France, Greece, Spain)

SCUTUM – SeCUring the EU GNSS adopTion in the dangeroUs Material transport
ROAD (Italy, Belgium, France)

ERSEC – Enhanced Road Safety by integrating Egnos-Galileo data with on-board Control System

INCLUSION – Innovative LBS for Social/Public Dimension
EDAS is the one way access point for plugging into EGNOS

- RIMS Antenna Phase Centre (APC) coordinates, currently broadcast every 30 minutes
- Possibility to receive Air Traffic Control (ATC) messages generated in EGNOS
  - Feature currently disabled