MEDUSA:
exploiting ITS based on E-GNSS in Euromed countries

IRF Regional Conference:
North Africa - Mediterranean

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The European GNSS (E-GNSS): EGNOS and Galileo

Regional infrastructures & services

Augmenting GPS

3 services

Operational

Global infrastructures & services

Autonomous system

5 services

Under deployment

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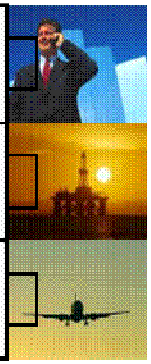
EGNOS services

Services		
	Open	Free to air; mass market; better than GPS
	Commercial	High accuracy; encrypted; professional market
	Safety of Life	Integrity and authentication of the signal



EGNOS OS

EGNOS EDAS

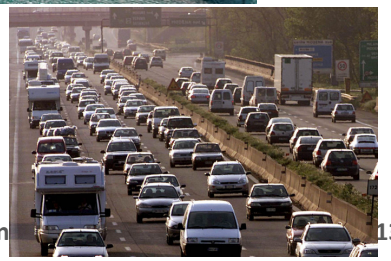
EGNOS SoL

- **Augmentation of the GPS signal:**
  - **Higher accuracy**
  - **Integrity information**
- **Compliant to the American WAAS**
- **European coverage with built-in capability to be extended to other regions, such as North-Africa and EU neighbouring countries**

- **EGNOS OS and EGNOS EDAS suitable for ITS applications**
- **EGNOS technology readiness and easy usage/adoption**

Markets and applications for EGNOS

Civil aviation

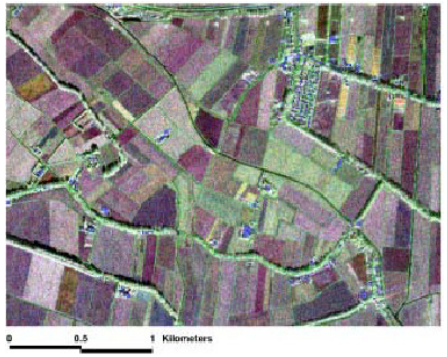


Transport and ITS

Emergency

Precision agriculture

High precision/Mapping



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EGNOS OS and EGNOS EDAS added value

EGNOS OS

- Enhancement of position accuracy wrt GPS
- Accuracy improvement wrt GPS ranging from 0,1 m to 3,7 m (on average, also in case of dense tall buildings/ foliage conditions/ urban roads)

EGNOS/EDAS

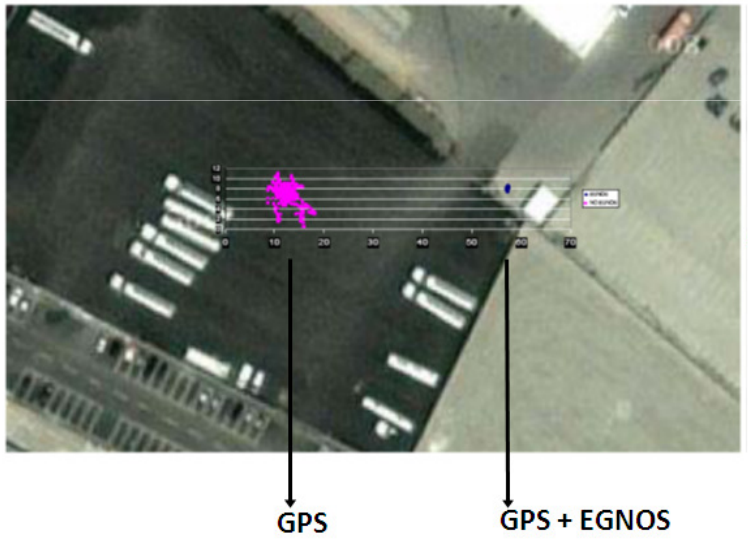
- Further enhancement of position accuracy wrt GPS

  Horizontal accuracy improvement wrt GPS ranging from 0,1 m to 4 m (on average, also in case of dense tall buildings/ foliage conditions/ urban roads)
- Capability to provide a level of guarantee of position/capability to qualify position data "Protection level"

EGNOS OS added value

EGNOS OS added value wrt GPS alone

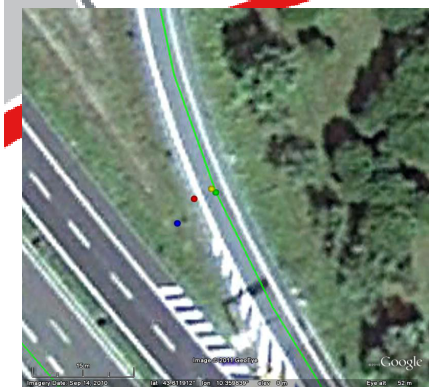
- enhanced GPS position accuracy *by approx. 3 metres*
- free to users from the satellites' open signal

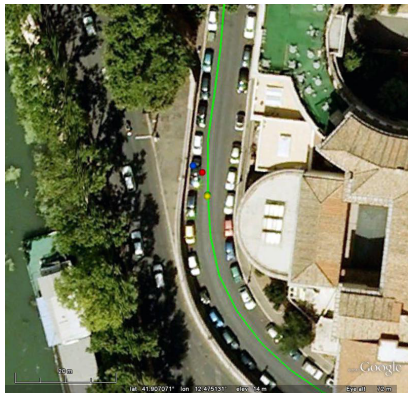


static tests

- **The majority of the receivers available on the market (mass-market and automotive chipsets) is EGNOS-ready**
- **Using EGNOS OS in new systems has no additional costs wrt GPS (zero costs for configuring the chipset integrated in the receivers)**

EGNOS EDAS added value





True path
GPS position
GPS+EGNOS OS position
GPS+EGNOS EDAS position

Different environments

- Controlled access, distributed by EDAS server via terrestrial networks
- Enabling to augment the performances of the EGNOS OS through "EGNOS EDAS solutions":
  - Higher accurate latitude & longitude
  - HPL
  - Higher availability
- EGNOS EDAS solutions available on the market
- Easily retrofitting of present GPS systems to use EGNOS EDAS
- EU technical specification/standard CWA 16390:2012

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Examples of EGNOS in ITS

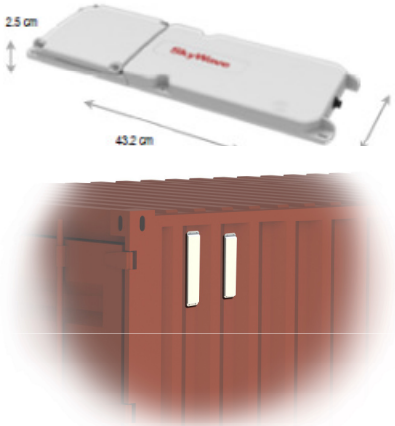
Road

- Tracking & tracing of professional fleets (e.g. HGV, truck and trailer)
- Intelligent Truck Secure Parking
- Tracking & tracing of dangerous goods and nuclear
- Localization and monitoring of urban fleets (e.g. city logistics, Public Transport, special service fleets)
- Electronic fee collection/road charging
- Traffic information

Logistics/road-maritime-rail

- Wagons localization and monitoring
- Container tracking
- Asset tracking

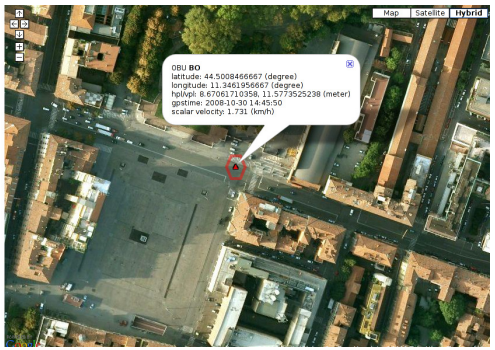
EGNOS OS + EGNOS EDAS use case: logistics/multimodal (road-rail-maritime) container tracking

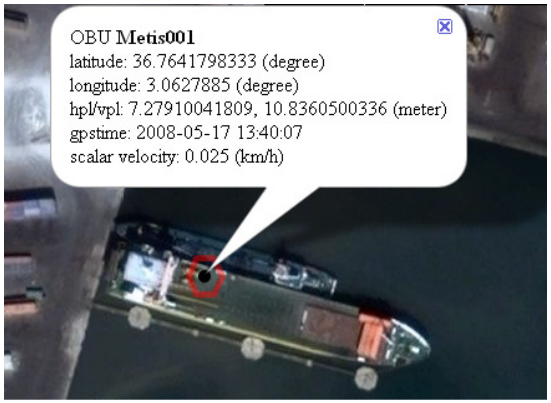


Benefits for users

- Trustable and independent from operator
- For quality contract and facilitation of customs procedures (EU neighbouring countries)
- Adding value to GPS now, and preparation to Galileo

Special traffic and "dual use" goods (e.g. tobacco)





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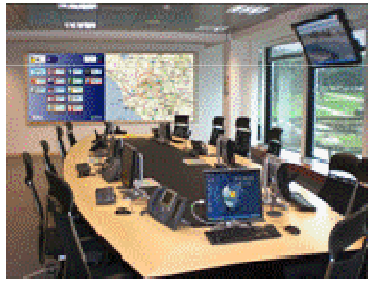
EGNOS OS + EGNOS EDAS use case: tracking & tracing of road professional fleets



Explosives and nuclear

Benefits for users

- Precise
- Trustable and independent
- Higher confidence/guarantee on position
- For risk management, law enforcement, safety and commercial purposes

Urban freights

High-value goods

Perishables

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EGNOS OS + EGNOS EDAS use case: tracking & monitoring of rail tankers

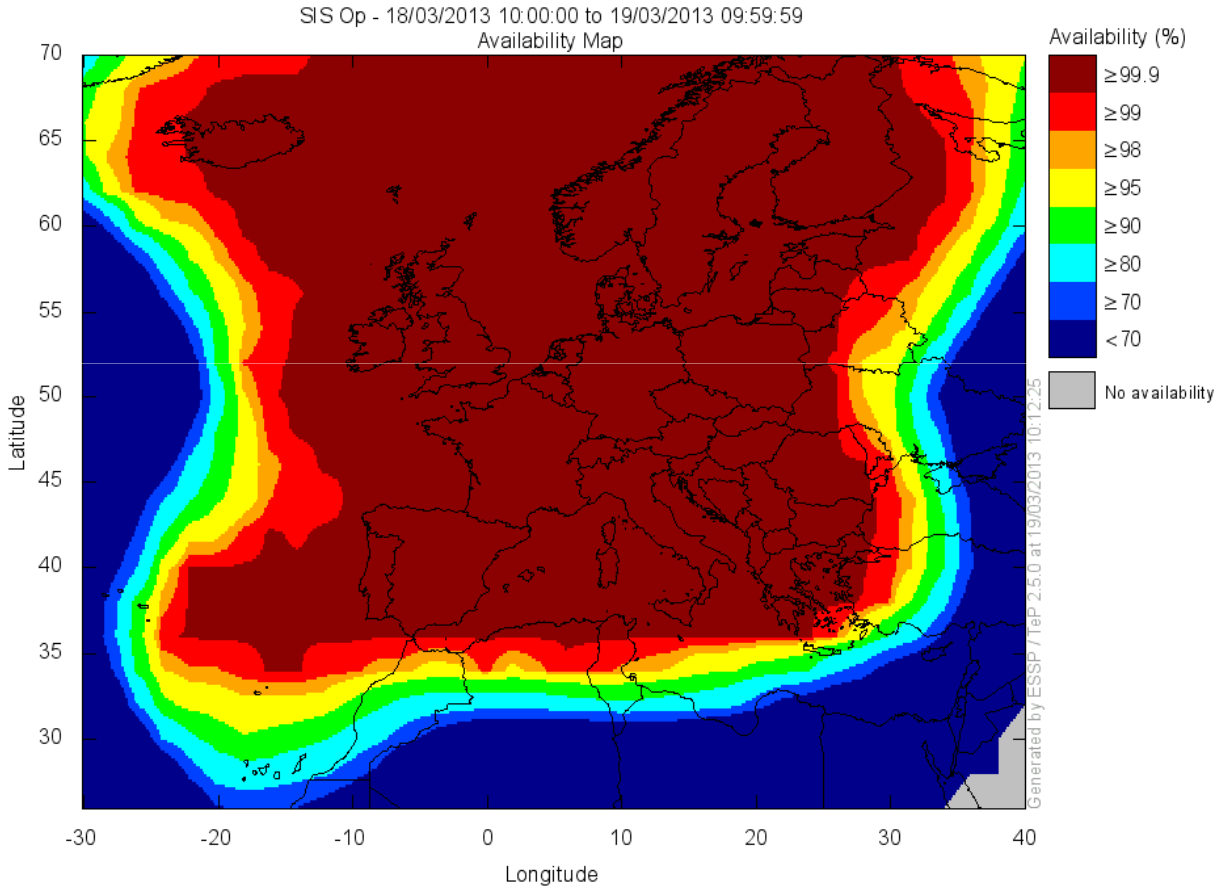
Shunting

Chemicals

Benefits for users

- Trustable and independent from operator
- Reliability and continuity at the countries' borders

EGNOS coverage in Mediterranean area



- North African countries already partly benefit from EGNOS coverage
- Activities under implementation for EGNOS service extension

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Euromed GNSS programme: E-GNSS introduction in Euromed region

Two main activities:

- **Infrastructure implementation for EGNOS service coverage**
- **Service introduction and exploitation**

  Euromed GNSS I/METIS: 2006 – 2009, ended

  Euromed GNSS II/MEDUSA: 2012 – 2014, METIS follow-up, on going

  - **EGNOS, in view of Galileo**
  - **EU-Euromed team of private/public organizations**
  - **Involvement of main stakeholders from the Euromed countries in the evaluation of needs, identification of opportunities and priorities, assessment of costs and benefits, definition of roadmap, implementation of actions**
  - **In parallel with the infrastructure implementation for EGNOS service extension**

Euromed GNSS I/METIS

MEdiTerranean Introduction of GNSS Services

Goal: Preparing EGNOS/Galileo services introduction in the Euromed countries

A. **GNSS Regional Plan + 10 National Plans**

B. **Awareness & training**

C. **Real-life demos**

Target Euromed countries: Algeria, Morocco, Tunisia, Egypt, Lebanon, Israel, Syria, Jordan, Occupied Palestinian Territories, Turkey

Euromed GNSS II/MEDUSA

MEDiterranean follow-Up for EGNOS Adoption

- Continuation of the actions started in METIS, as shared with the Euromed countries
- Bringing some of the Euromed countries (in particular the North African countries benefitting from EGNOS service coverage) to the operational adoption of EGNOS services in countries' priority markets/applications
- Providing examples to the other countries
- Contributing to technological transfer and capacity building for service exploitation
- Establishment of a GEMCO (Galileo Euromed Cooperation Office), acting for all domains and involving all Euromed countries

MEDUSA target countries include also Libya instead of Turkey

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Outlook

EGNOS benefits for ITS rely on enabling a more accurate and reliable positioning, to:

- **Enhance present applications based on GPS**
- **Be adopted in present/future operations for which the use of the satellite navigation technology is in plan**
- **Develop new applications requiring high precise and robust localization**
- **Prepare to Galileo**

North African/Mediterranean countries can already prove EGNOS use

MEDUSA supports interested countries/stakeholders

North African/Mediterranean countries are invited to be actively involved and contribute

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Thank you!
Questions?

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