

EGNOS in Europe: recent milestones in applications development

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GSA Market Development

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Status of EGNOS adoption

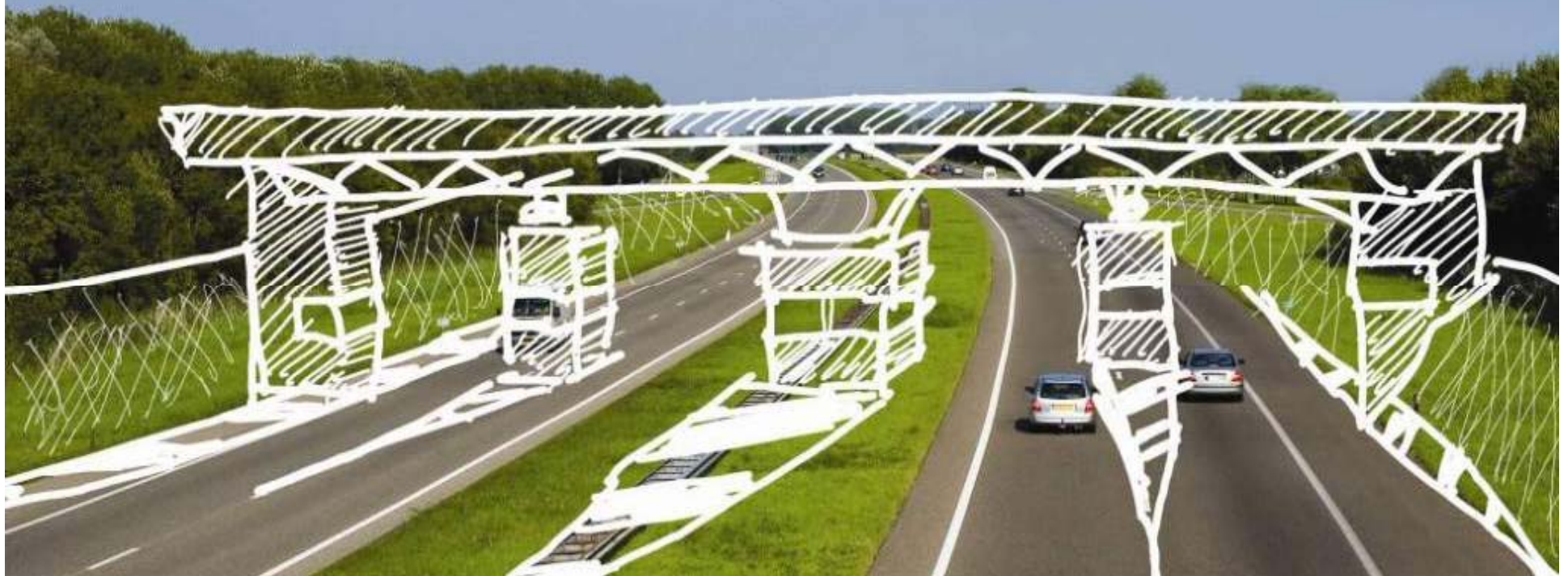
- ◆ Over the past 5 years, while EGNOS was still under development, industry and researchers across Europe and beyond started to study and develop applications based on this technology initially conceived for aviation
- ◆ Today EGNOS benefits have been proven and adoption in several fields - beyond aviation - is successfully starting in road, agriculture, mapping and other sectors
- ◆ **We present here a sample of the EGNOS/SBAS applications that have more relevance for the African continent**





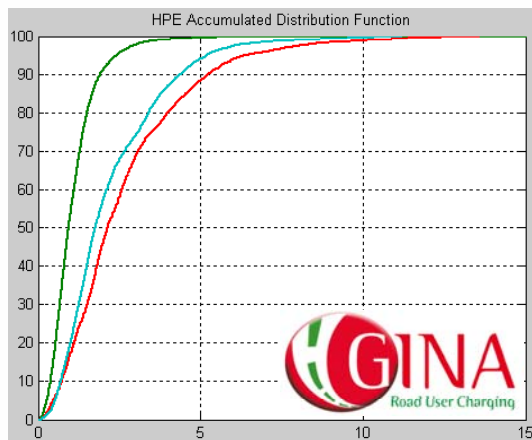
FOR ROAD / ITS

HIGH FLEXIBILITY,
LOW INVESTMENT



EGNOS increased accuracy

- ◆ EGNOS provides a better accuracy, specially in open sky scenarios, as highways (now proven in different FP7 trials)



- Position errors much smaller
- 3m position error (at 95%) with EGNOS.
- **EGNOS provides substantial accuracy improvement in "highway" environment**

Early Adopters

The technology proposed by the winning consortium in the French ECOTAX is **EGNOS enabled**



EGNOS integrity

- ◆ Operators (toll chargers, EETS, public authorities, logistic operators) have an **increasing need** to provide a guarantee of positioning
- ◆ **EGNOS integrity** could help to increase user confidence
- ◆ **Potential applications:** GNSS-based road pricing schemes (to prevent or manage claims), dangerous goods transport



- ◆ **EGNOS 2 ROAD** project: to assess EGNOS benefits from technical, business and legal point of view

Early Adopters



Leading oil & gas company ENI is implementing EGNOS on all the fleet (1,500 trucks) and is experimenting the integrity on 100 trucks



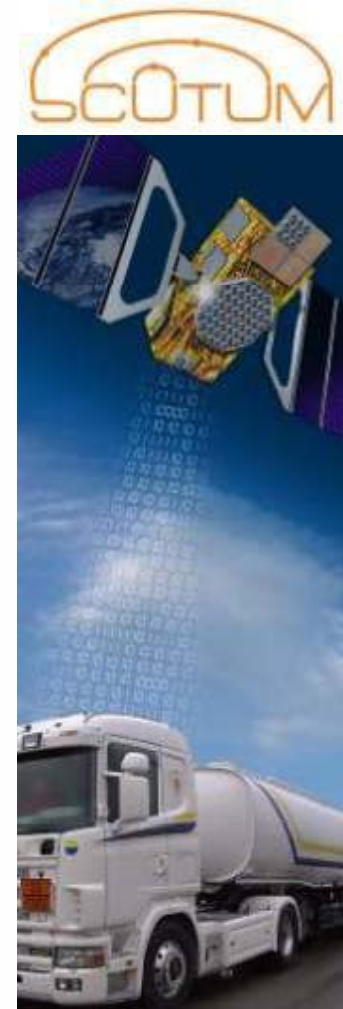
EGNOS/EDAS adoption via standardisation

Obstacles and opportunities

- The **protection level** is not calculated in a suitable way for **road applications** (customising the aviation standard) and is not implemented at receiver level
- FP7 projects **developed specific algorithms** for transport applications:
 - They calculate the protection level optimised for road applications in the OBU or in a service centre
 - But, in most cases, the **pseudoranges needed for these algorithms are not available from receivers**

Solution

- **CEN workshop** will deliver by 2011 an **Agreement** which could be adopted (on voluntary basis) into a EU or international standard
- ▼
- **Proposed standard** to cover the **interface/ protocol between receiver and the algorithm** (pseudoranges as output of receivers)





FOR AGRICULTURE

HIGH PRECISION,
LOW COST



EGNOS: the most affordable solution for a wide range of applications

"Precision Agriculture is about doing the right thing, in the right place, in the right way, at the right time"



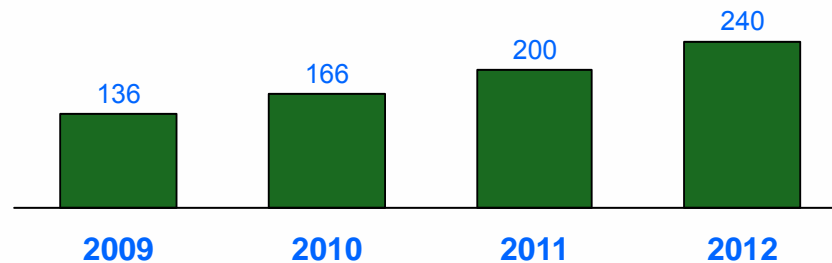
Application category	Application field	Required accuracy level
Arable	High-value crop cultivation (potatoes, vegetables) Precision operations (sowing and transplanting)	c.2cm
	Low-value crop cultivation (e.g. cereals) Low-accuracy operations (fertilising and reaping)	c.1m
Legislation/ management	Field measurement Boundary mapping and updating	c.2.5m
Dairy	Individual livestock positioning and virtual fencing	2-5m
Agro-logistics	Land parcel identification/ geo-traceability Post harvest pick-up Supervised tracking of livestock, manure, etc.	c.2.5m



EGNOS already has a strong position in the European market

Market evolution

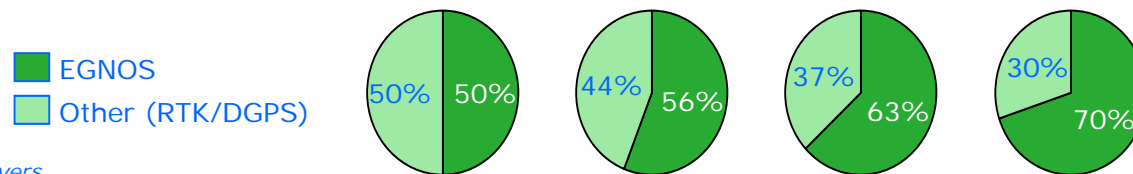
of GNSS-equipped tractors in EU-27 (000' units)



% on total tractors

Year	% on total tractors
2009	5%
2010	6%
2011	7%
2012	9%

EGNOS market share of devices sales in EU-27



Source: Receivers
Manufacturers/MMFP

166.000 tractors are equipped with a GNSS device in EU.
50% of EGNOS market share in EU
70% Expected by 2012



New “EGNOS-only” entry products



CO-PILOT TS

CLAAS



MOJO MINI

Leica



EZ-GUIDE 250

Trimble

Product characteristics

- Pass to pass accuracy of +/- 15 cm
- EGNOS-only corrections
- Ideal for fertilising, seeding and spraying
- Entry price, affordable for all farmers

EGNOS effect on farmers

- They start with EGNOS
- They appreciate the benefits
- In few years, some of them, migrate to advanced systems to cover new functions





FOR MAPPING

**FREE ACCURACY,
WIDELY AVAILABLE**

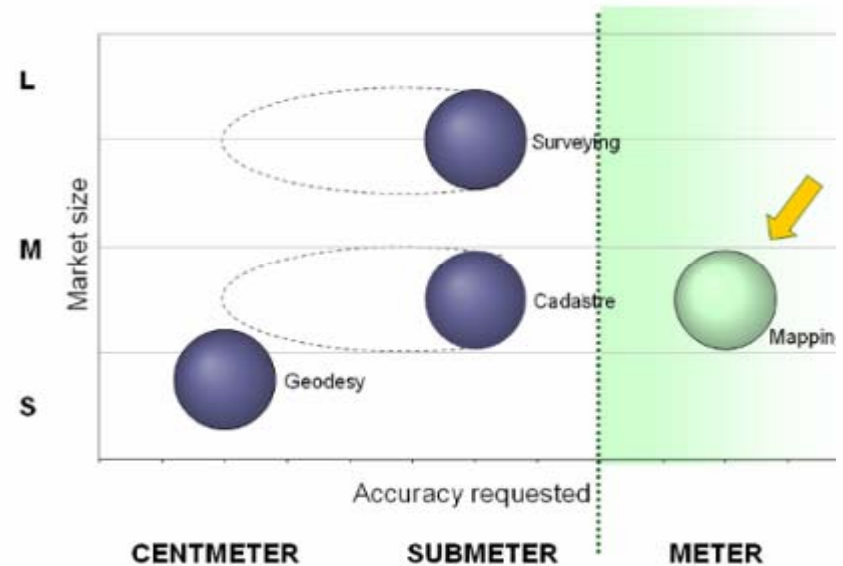


Now EGNOS can contribute in growing the use of GNSS in real time

For many mapping applications meter level accuracy is sufficient

Most of the devices used for mapping are already EGNOS-ready

EGNOS also allows more and more non-professionals to access GNSS Mapping technologies



Possible EGNOS Mapping applications

- Thematic mapping for small and medium municipalities
- forestry and park management
- surveying of utility infrastructures





High Precision, Low investment



Aviation operators gain interest in EGNOS...

Regional

IBERIAregional
AIR NOSTRUM



aurigny.com

- New aircraft all EGNOS ready
- Older being retro-fitted

Business



Blink

NETJETS®

- Aircraft equipped
- Approaching NATS to have procedure ASAP !

Helicopter

rega 

- New helicopter's specifications: it has to be EGNOS enabled
- Flight trials in Interlaken and Zurich

- FP7 offers assistance to uptake in aviation


ACCEPTA



...and partnerships strengthen EGNOS brand

EGNOS equipped aircraft partnering with GSA for visibility and information



Experimental or planned EGNOS procedures

 France

51 procedures ready

20-30 procedures scheduled per year to reach full IFR runway coverage by 2016

Operational ATC training guide written

 Spain

15 procedures ready

AENA test aircraft equipped

Flight trials in Nov 2010 at Cordoba airport getting local media coverage

 Italy

5 procedures ready

70% of airports identified as potential beneficiaries of EGNOS

 UK

2 procedures ready

Growing number of operators contacting NATS

 Poland

2 procedures ready

Flight trials on March 14-15

 Germany

1 procedure ready

45+ Baro-VNAV procedures ready

Intention to allow SBAS receivers on **45+** APV-Baro procedures





Thank you!

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Appendix

