



MARKET OVERVIEW AND EGNOS MULTIMODAL ADOPTION PLAN

EGNOS Service Provision Workshop 2015

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European
Global Navigation
Satellite Systems
Agency



Precise navigation,
powered by Europe



EGNOS benefits European citizens and businesses

EGNOS brings a huge range of public and commercial opportunities. Below are just a few examples of how EGNOS responds needs of the users in relevant segments



Safer landing procedures at lower costs thanks to Integrity message



Makes navigation more accurate, reliable and available and thus easier and safer



New applications enabled/ enhanced such as eCall or automatic road tolling



Improves accuracy to sub-meter level without investing in ground infrastructure

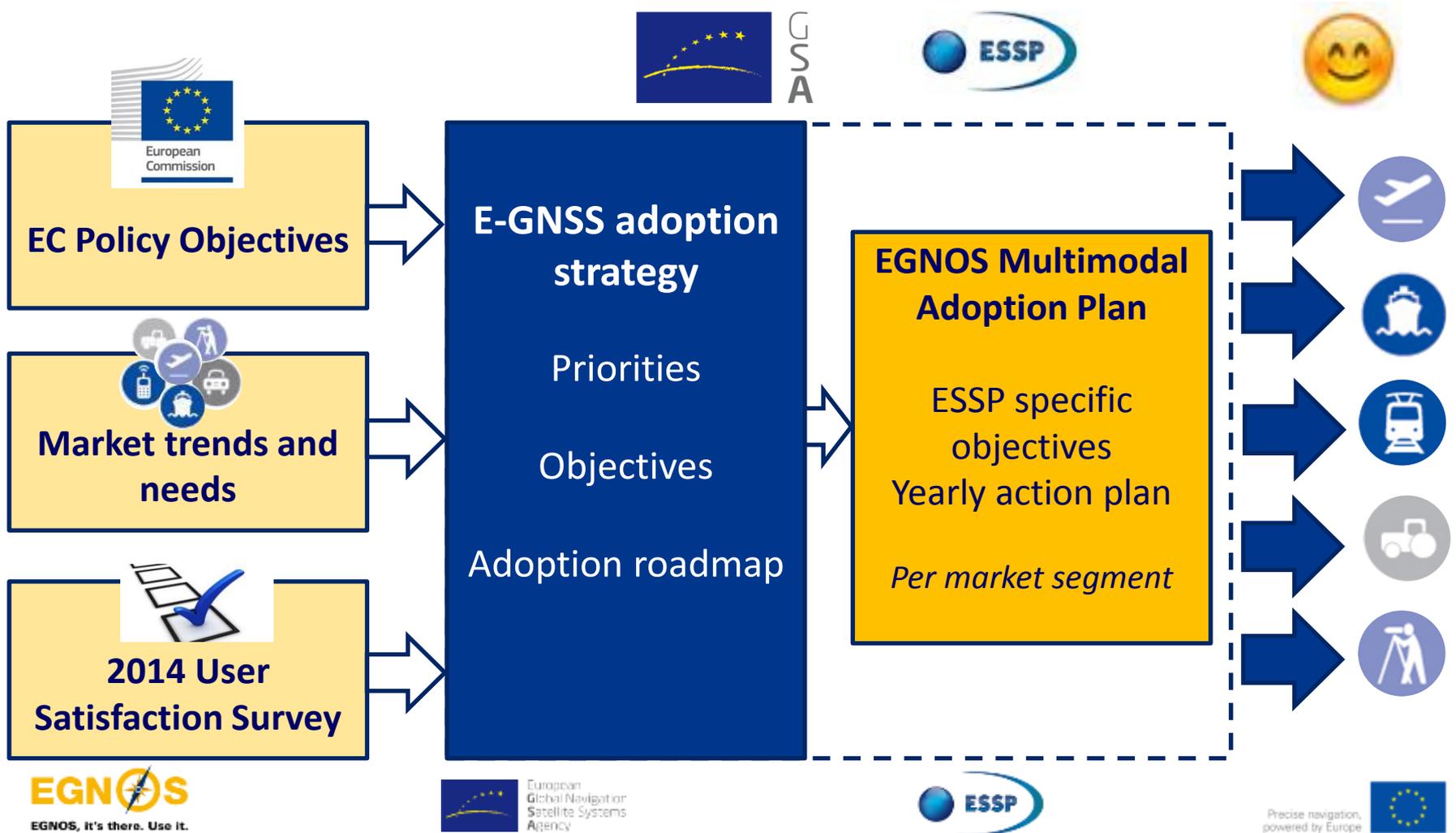


Enables high-precision spraying of fertilisers and pesticides, reducing the amount of chemicals



Increases the safety of signalling solutions and reduce costs of investments

Yearly EGNOS Multimodal Adoption Plan integrated in the GSA Adoption Strategy for E-GNSS





EGNOS in Aviation

GSA Priority



Navigation

PBN Enabler

Navigation support in all phases of flight

Fleet management



- Precise vertical guidance
- Safer landings at airports without ground infrastructure
- Increased airports capacity

Surveillance

Reliable PVT for cooperative ADS-B
Location Protocol Emergency locator
& Personal Locator Beacon



- E-GNSS improves localization information on-board

Communication

System and ATM synchronisation



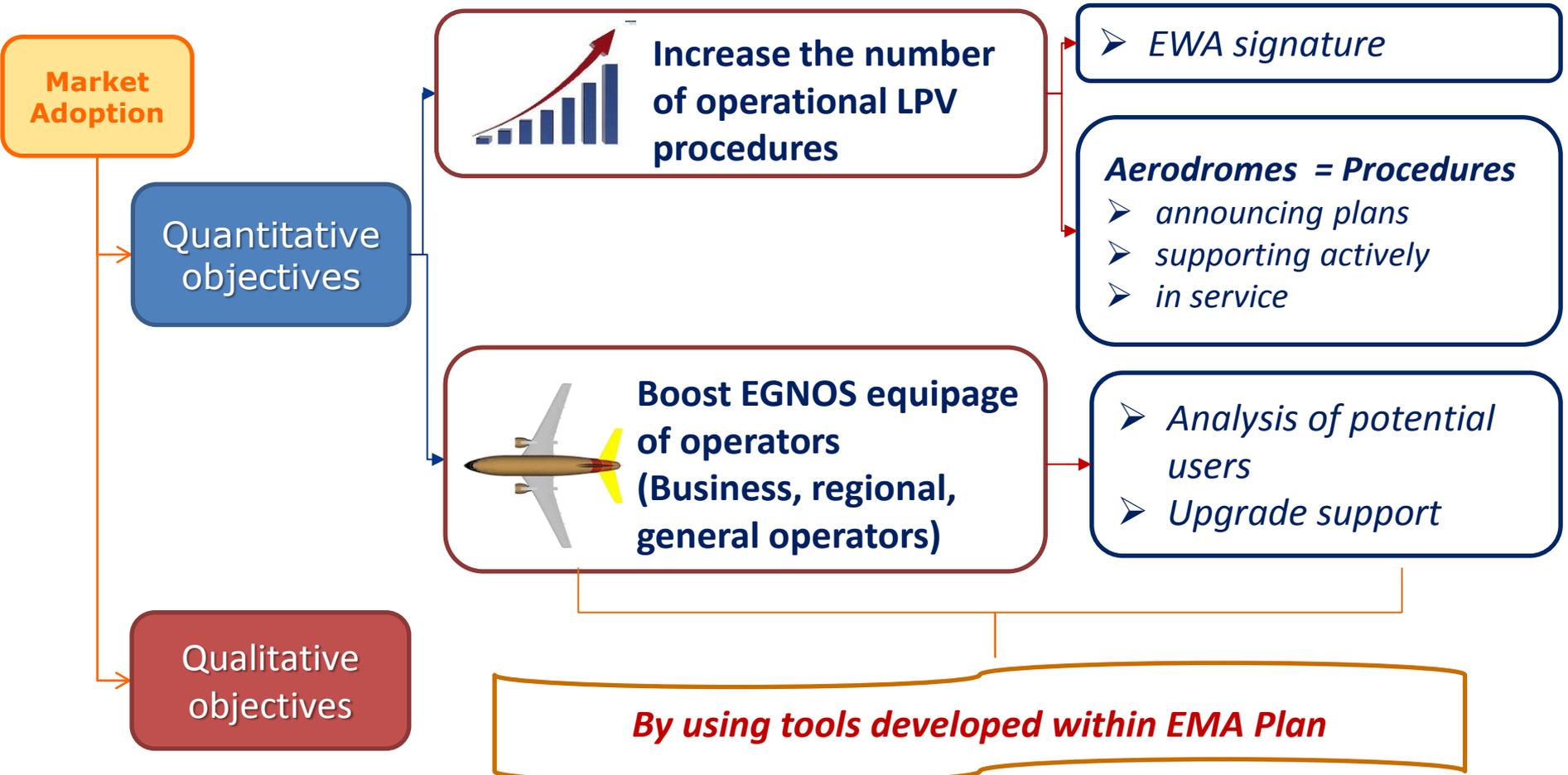
- GNSS timing





AVIATION

EGNOS Multimodal Adoption plan 2015 Priorities





AVIATION

EGNOS Multimodal Adoption plan 2015 Priorities

Qualitative objectives

Objectives

Analysis on Non-instruments RWYs

Analysis on military aerodromes

Analysis on rotorcrafts

LPV Map tool

Analysis, monitoring

Plans

Implementation





AVIATION

EGNOS Multimodal Adoption plan 2015 Priorities

Qualitative objectives

Objectives

Development of the tools

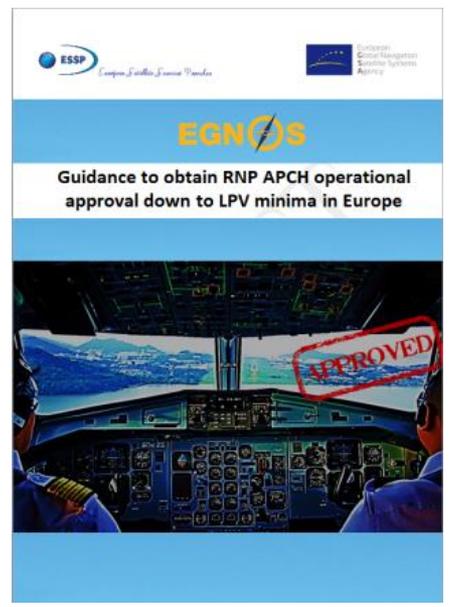
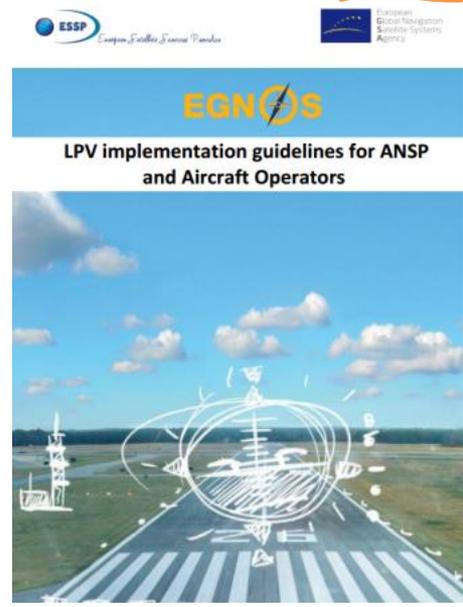
Guidance to ANSP/airports and operators

Guidance on Operational Approval

CBA

Performance Assessment

incl. LPV200





EGNOS in Maritime

How EGNOS helps

- ▶ Avoid accidents thanks to enhanced precise positioning, especially in tight waters
- ▶ Makes navigation easier and safer for a broader user base
- ▶ Help improve traffic management without costly ground infrastructure investment
- ▶ Help with casualty analysis





MARITIME

EGNOS Multimodal Adoption plan 2015 Priorities



Regulated

EGNOS



Unregulated
Leisure

EGNOS

- GENERAL NAVIGATION**
- 1 Perform cost-benefit analysis of optimisation of DGNSS network using EGNOS
 - 2 Analysis of EGNOS v2 performances for its use in maritime using SBAS integrity
 - 3 Analysis of users' requirements for navigation in ports
 - 4 Guidelines on EGNOS transmission via AIS for Inland waterways, coastal waters and ports
 - 5 Guidelines on EGNOS transmission via IALA beacons for coastal waters

EDAS

LEISURE

- 6 Provide support in communicating EGNOS benefits to users and receiver manufacturers/dealers

Market Uptake



EGNOS in Rail



EGNOS is key for safety relevant railway applications!

- ❑ **integrity** delivered by EGNOS can be the enabler of GNSS based positioning in **railway signalling** in Europe
- ❑ **accuracy** improved by EGNOS is offering improved precision of positioning for free, which can further contribute to efficiency of train localisation in ERTMS
- ❑ Due to difficult rail environment any safety relevant GNSS based solution must be complemented by additional sensors to cover availability gaps

The future:

EGNOS V3 under development, offering multifrequency/multiconstellation augmentation will further improve accuracy and reliability of the positioning information



RAIL

EGNOS Multimodal Adoption plan 2015 Priorities

NGTC documents contributions

- Assistance, consultations and support

Certification framework analysis and roadmap

- Support rail-focused technology development
- Documentation describing future standardization

Logistic operations

- Demonstration for logistic users on how EGNOS can be efficient for logistic operations (loading and unloading of goods)





EGNOS in Agriculture

Applications

- Variable rate applications
- Tractor guidance for operations such as spraying
- Individual livestock positioning and supervised tracking
- Virtual fencing
- Post-harvest pick-up
- Field boundary mapping

How EGNOS helps

- ▶ Enhance precision without expensive investments
- ▶ Eliminate waste and over-application of fertilisers and herbicides
- ▶ Save time and reduce fatigue
- ▶ Extend equipment lifetime by optimising its use, optimise crop yields and increase profit margins



GSA priorities

Utilization of EGNOS in Common Agricultural Policy (CAP)



AGRICULTURE

EGNOS Multimodal Adoption plan 2015 Priorities

**EGNOS
EDAS**

**Maximize
adoption**



- 1 Perform cost-benefit analysis
- 2 Identification of new applications where EGNOS can be used
- 3 Contribution to the marketing materials
- 4 Provide support in communicating EGNOS benefits to survey community
- 5 Analysis on the Common Agricultural Policy (CAP)



EGNOS in Surveying/Mapping

How EGNOS helps

- ▶ Enhanced precision without costly investments help public authorities to manage public infrastructure
- ▶ Efficient management of farming land permitting to optimise interventions
- ▶ No need of additional communication channels enabling coverage of remote areas with no additional investment



GSA priorities:

Encourage the use of EGNOS free corrections to transform mapping into a more accessible activity

Identify further user needs in cooperation with cooperation with surveying associations (CLGE)

Engage young surveyors via a new GSA prize



Surveying/mapping

EGNOS Multimodal Adoption plan 2015 Priorities

**EGNOS
EDAS**

**Maximize
adoption**



1

Perform cost-benefit analysis

2

Identification of new applications where EGNOS can be used

3

Contribution to the marketing materials and technical Support

4

Provide support in communicating EGNOS benefits to survey community

5

Analysis on EDAS contribution to the current high precision commercial service providers

THANK YOU FOR YOUR ATTENTION



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