Europe needs more GNSS APPLICATIONS

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GALILEO EGNOS

Navigation solutions powered by Europe

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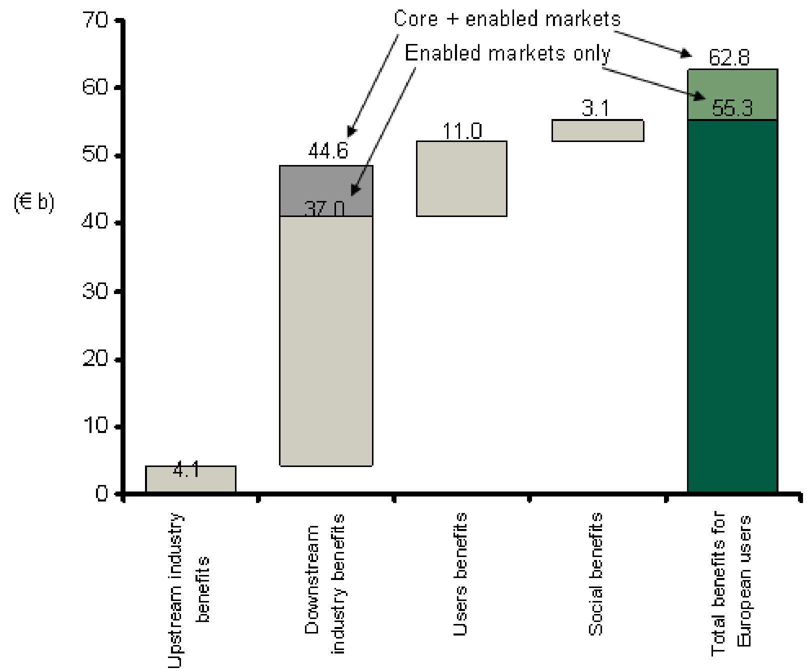
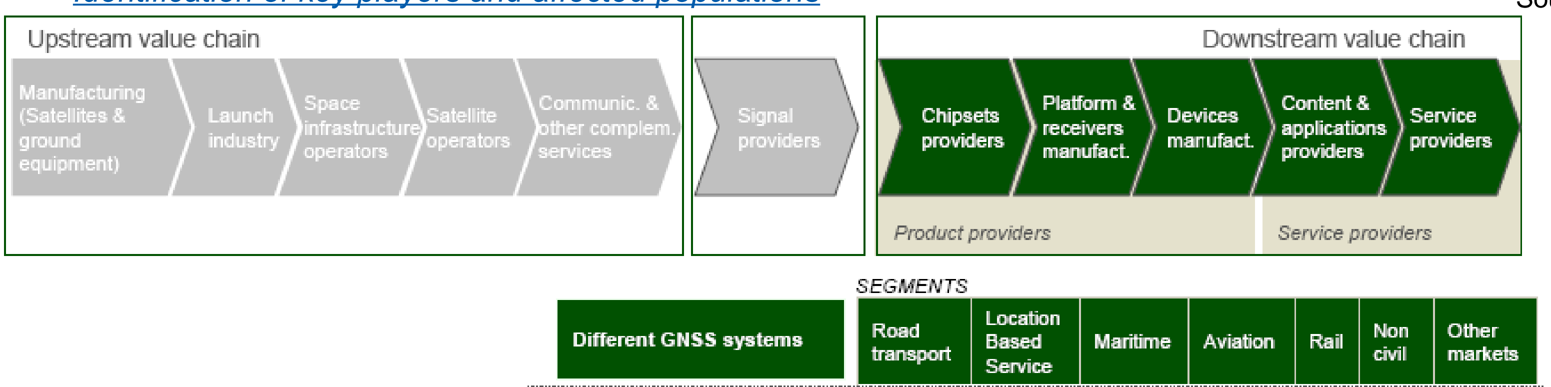
The Issue (I): Lost Opportunities

- **EGNOS is there.**
- But Europe has not taken an appropriate share of the GNSS application sector (around 20%, whilst it does 33% in several high-tech sectors), and misses a big opportunity with respect to the EU Lisbon strategy



Source: LEK for the GSA

Identification of key players and affected populations



The Issue (II): Increased Dependencies

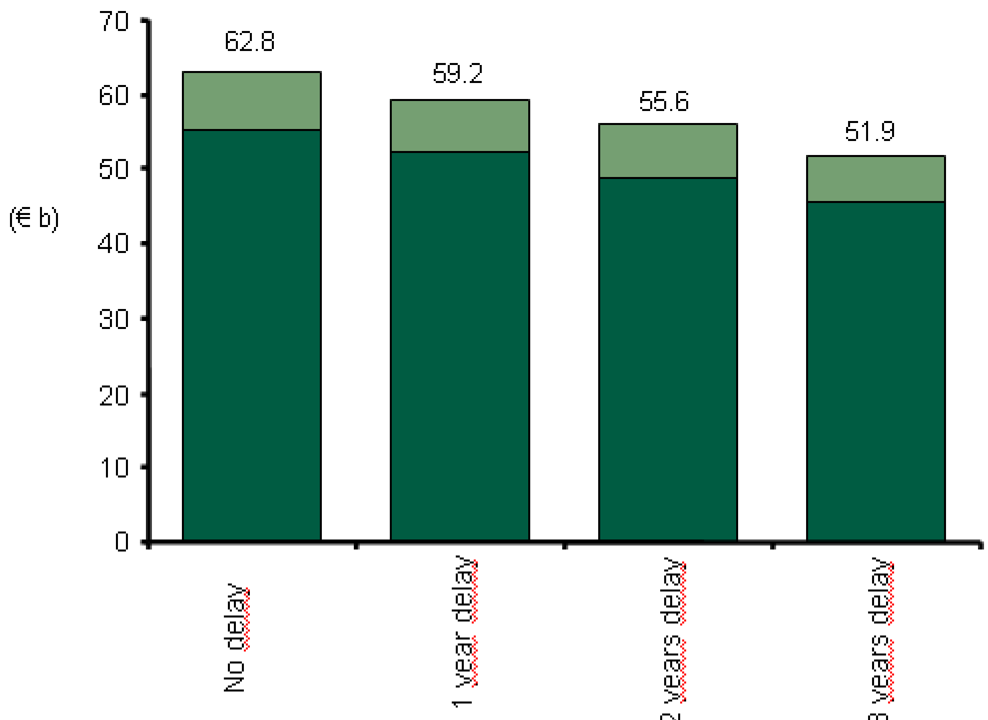
- **The limited usage of applications based on EGNOS and GALILEO leads to critical dependencies:**
  - In the operation of transport, energy, communication and banking networks, as well as of safety and emergency-related public services
    - ✓ In localisation for all modes of transportation, navigation, logistics, fishing and precision agriculture, surveillance, civil protection, mapping and Earth science, cadastre, management of natural resources, meteorology, environment and disasters management
    - ✓ In timing for the synchronization of networks (telecommunications, electrical power grids)
  - The size of economical activities that rely on GNSS is conservatively estimated as 6-7% of the whole GDP of the European Union (ca €800 bn)

The Issue (III): Possible Sources

- Uncertainty around the European GNSS has been weakening confidence in potential downstream business
- The provision of GNSS services does not follow traditional market models (but rather a “defence sector”-like model)
- Growing "competition" has changed the context for the development of GNSS applications to the detriment of European players
- Shortage of funds allocated to research and innovation for applications based on EGNOS or GALILEO is delaying technological advances and growth of industrial capacities in Europe

The Issue (IV): Need to Act

- Each year without pro-action costs 3 billions to the European economy



Source: LEK for the GSA

The Plan

The Source of Inspirations:

- The Green Paper
- Market Studies 2000-2006-2007-2008
- Analysis of Business Cases submitted to the European Satellite Navigation Competition
- Stockholders Meetings

The Goal:

- Accelerate adoption of EGNOS (and GALILEO) applications
- Increase European share of the GNSS application market

GNSS stakeholders expect actions from public authorities 1/2

- "…States should become clients of GALILEO and EGNOS…"
- "…Wherever there is a contribution of positioning applications to the overall security, health and wealth (dangerous goods, livestock, buses and coaches, E112…), the EU should take measures to accelerate the introduction of such services and technologies…"
- "…There is no sufficient visibility on the public sector recognition and planned use of GALILEO which would undoubtedly promote the system."
- "…Europe needs a Radio Navigation Plan …"
- "…The Directive on European Universal Services should constitute an interesting starting point to feed the ideas on new legal tools to foster the business on downstream GNSS markets…"
- "…An effective regulatory framework is essential to ensure compatible and interoperable solutions are rolled out across Europe…"

GNSS stakeholders expect actions from public authorities 2/2

- "…Aviation is a small but significant segment of the GNSS market. […] Unless GALILEO becomes available within the next few years, the market for GALILEO related applications is reduced…"
- "…The downstream industry has much shorter product life cycles than the space industry and cannot invest in 2007 for a return in 2012…"
- "…Accompanying actions to foster downstream application developments should be continued…"
- "…[Even €100 million would be] insufficient for an annual basis for research effort, compared to what is made in other parts of the world. The EU R&D effort should balance the technology support that the US provides to their industry…"
- "…We propose the establishment of national centres of excellence that provide complimentary skills, capabilities and facilities to others around Europe [and in the World]…"

Types of Actions

- Certification, standardization, and coordination activities
- Information dissemination, information exchange, and awareness-raising campaigns
- Fund-raising for GALILEO or EGNOS-based innovation
- Regulatory measures (Applications for road transport and the monitoring of the EU CAP)

- Horizontal (non-Sector specific) vs. Sector-specific

Towards an Action Plan: Horizontal actions **1/3**

"Extreme pervasiveness" … "concerns all sectors"
(an Internet-like, or mobile-phone-like, phenomenon)

- A17 (internal and delegated to GSA; ESSP)
  Implementation of a virtual information centre
  - Technical information; Legal information
  - Development toolkits; helpdesk
  - Online user forum
  - Application-domain-specific
- A18 (internal and delegated to GSA)
  Information campaign towards clusters of SMEs
- A19 (internal, ESA and EIB)
  Assistance for SMEs to raise risk capital and innovate
  - GNSS innovation voucher (CIP)

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Towards an Action Plan: Horizontal actions 2/3

- A20 (internal and delegated to GSA)
  Research funding for novel applications

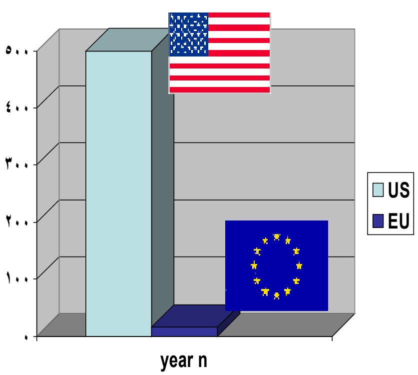
SEVENTH FRAMEWORK PROGRAMME

Comparison on R&D efforts between EU and the US:

US: **500 M€** per year for application-related research

EU: **15 M€** per year between 2002 and 2013 …

Russia and China also confirmed increased investments in applications for the civilian market



- 1st call in 2008: ~20 M€
  2nd call in 2009: ~30 M€
- 3rd call foreseen only in 2010-2011: 38 M€
- **No money left for further FP7 calls : seeking more funds**

- R&D is a key enabler for many other actions:
  - Broadens industrial basis, reduces industrial costs
    - New and cheaper receivers
    - Dual mode receivers
  - New products and services for clients and citizens come from innovation
  - Preparation for standardization and certification
  - International cooperation to broaden technology outreach and global coverage

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Towards an Action Plan: Horizontal actions 3/3

- A21 (internal)
  Synergies with GMES and Satellite telecommunications within Applications

- A22 (internal)
  Establishment of the European Radio Navigation Plan (ERNP)

- A23 (coordination)
  Towards a universal cartography system (cadastre)

- A24 (internal)
  International EGNOS (and GALILEO) Forum

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Sector Approach (I)

Criteria:

- contribution to the Lisbon objectives (growth, jobs, knowledge society);
- maximization of indirect economical (including energy consumption) and social benefits;
- positive influence on emissions and other types of pollution;
- positive influence on the operation of the single market and trans-border exchanges;
- positive influence on the interoperability of applications;
- interest expressed through consultations and calls for ideas and business cases;
- influence of European Commission and Member States authorities;
- timing constraints and opportunities (with EGNOS available now, GALILEO IOV soon, GALILEO only later);
- specific added-value brought by competitive advantages of EGNOS and GALILEO services: authentication, integrity, very high accuracy for positioning, navigation and timing.

Sequence:

- EGNOS-specific: first
- GALILEO: later (starting 2011)

Sector Approach (II)

	Aviation	Maritime transport	Road transport	Urban transport	Rail	Logistics	Fishing	Precision agriculture and environment	Meteorology and desaster prevention	Synchronization of networks	Mapping and land management	Energy	Civil protection and surveillance	Handsets and mobile phones
Lisbon objectives	++	++	++	+	+	++	++	+++	+	+	++	+	+	+++
Maximization of indirect economical and social benefits	ssr	sss	ssrr	sr	srr	rrs	ssr	rrhh	sss	rs	rr	ssr	sss	rrr
Impact on emissions and pollutions	++	++	+++	++	=	+	+	+++	+	=	=	+	+	=
Impact on the single market and trans-border exchanges	+	+	+++	+	++	++	+	=	=	+++	+	++	++	+
Impact on interoperability of applications	++	++	+++	+	++	+	=	=	++	+++	+	++	+++	+++
Manifestation of interest	++	++	+++	++	+	+	++	+++	+	++	+	+	++	++
Influence of public authorities	+++	+++	+++	+++	+++	+	++	++	+++	++	+++	++	+++	++
Timing priority (urgent: +++, timely: ++, with Galileo: +, not urgent: -)	+++	++	+++	+	++	++	+	+++	+	-	++	++	+	+++
Specific value added by EGNOS or Galileo	+++	+++	+++	++	+	++	+++	++	+	+++	++	+	++	++

safety or security	s
revenues	r
health	h
education	e

Priority Sectors (2009 – 2012)

1

2

3

4

5

6

jump

Towards an Action Plan

LBS

- A1 (internal and coordination)
  Promote GALILEO-enabled receivers; support cost-reduction through research

- A2 (subvention)
  "GALILEO" prize

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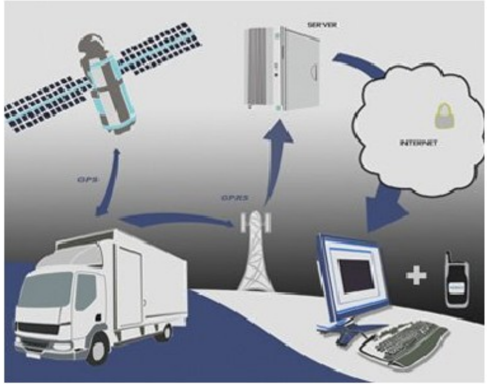
Towards an Action Plan

Road Transport



- ★ A3 (internal)
  Regulation on tracking of dangerous goods, of coaches, on multimodal logistics

- ★ A4 (internal)
  Regulation on electronic identification of vehicles

- ★ A5 (internal)
  Localization function in the digital tachograph (regulation)

- ★ A6 (to be defined)
  Certification of GALILEO for ADAS

- ★ A7 (internal and delegated to GSA)
  Marketing and awareness raising for EGNOS (and EDAS) on road (starting with trials)

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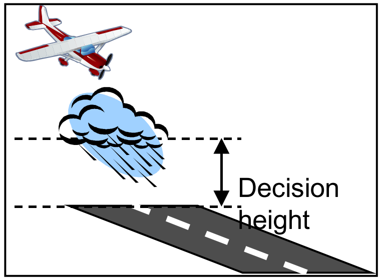
Towards an Action Plan
Aviation



- A8 (internal, ESSP, …)
  EGNOS Certification

- A9 (internal and delegated to GSA)
  Awareness and marketing campaigns towards general aviation, helicopters manufacturers, airports

- A10 (internal, ESA and ESSP)
  EGNOS and Africa; other extensions

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Towards an Action Plan
Maritime Activities

- ★ A11 (to be defined)
  Certification for maritime services
- ★ A12 (internal, COSPAS SARSAT)
  Acceptance of GALILEO SAR by COSPAS SARSAT
- ★ A13 (internal and delegated to GSA)
  Awareness and marketing campaigns towards equipment manufacturers, port authorities, shipping companies, leisure ships, and fisheries

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Towards an Action Plan
Agriculture and Environment

- A14 (interne and delegated to GSA)
  Awareness and marketing plan towards:
  - modern agriculture
  - environmental protection

- A15 (internal)
  Adoption of EGNOS-based solutions within EC programmes (e.g. CAP)

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Towards an Action Plan
Civil Protection

- A16 (coordination)
  Cooperation with, and among Member States on GNSS-based services for civil protection, including on GMES-related services

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Sharing Action Plans on an International Basis

- Exchange of Best Practices (e.g. METIS)
- Joint Infrastructure in Neighbouring Countries (e.g. METIS in the MEDA region)
- Joint Infrastructure: What about Africa?
- Research and Development (FP7 ?)
- GNSS Agreements (e.g. Morocco, South Korea, Ukraine, etc.)

Monitoring the Action Plan

- Market Monitoring Tool (delegated to GSA)
  - Overall market data
  - Sector-specific data

- Iterative and Adaptive Process
  - Next « *rendez-vous* »: agreement on the exploitation phase
  - If necessary, annual update to take account of market changes or milestone events

... on the way to GALILEO. Thank you!