Galileo services

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Chairman of Galileo Services

UN Workshop on GNSS applications

May 14th, 2012, Riga - Latvia

- GNSS applications and services -
Best Opportunity for Europe

Market applications and consumer services

Navigation Applications

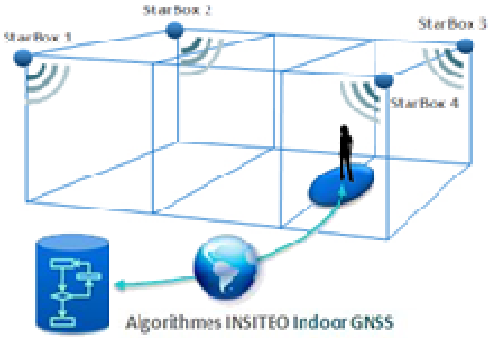
Systems and applications dedicated to car navigation

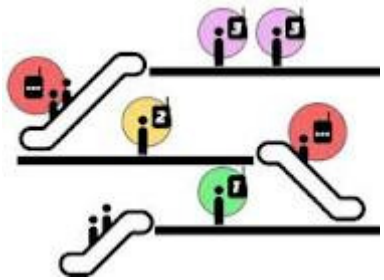
- Includes: PND, integrated equipment (OE) and applications for car navigation - Smartphone

Integration, Hybridation, Indoor Navigation

The main players within indoor navigation

- Development of Internet and mobile guides for airports, malls, museums, downtown ...
- Navizon (Navimote): GPS, Wi-Fi, Cellular
- Insiteo: Wi-Fi, Pseudolites GPS
- Point Inside
- Micello
- FastMall
- TeleAtlas
- Navteq





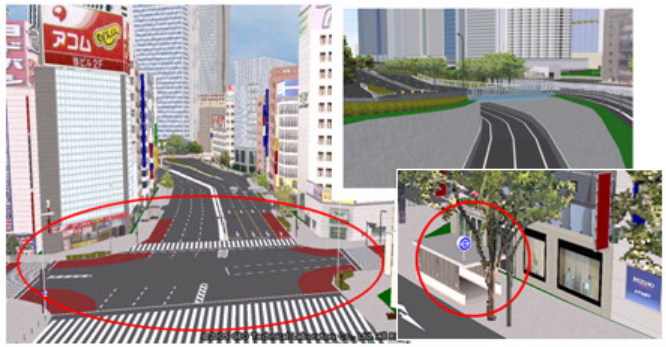
Cartography

The main players

- TomTom/TeleAtlas

- Navteq
  - Market leading supplier of maps
  - Acquired by Nokia

- Zenrin



- Google
  - New entrant to the market for LBS

GNSS Application Examples (1/5)

- Transport: Safety and efficiency increase for aviation, maritime and inland waterways, rail, road transport…

- Agriculture : Livestock Management, Precision Agriculture (steering guidance, farm logistics)…

GNSS Application Examples (2/5)

- Health : Tracking & Tracing on medical goods (organs, blood…), Assistance to elderly and disabled people…

- Mobility: Navigation, Road tolling, Location Based Services, multi-modal transport services…

GNSS Application Examples (3/5)

- Security and Safety: protection of IPRs, secure asset and person tracking, Customs and Freight monitoring, coordination of emergency team, Lone worker protection…
- Environment protection: low cost sensors for landscape monitoring, Land monitoring and Land Administration through Surveying and Mapping, support to Ecologic Driving…

GNSS Application Examples (4/5)

- Asset tracking: Inventory control, efficient utilization of equipment, fleet management...

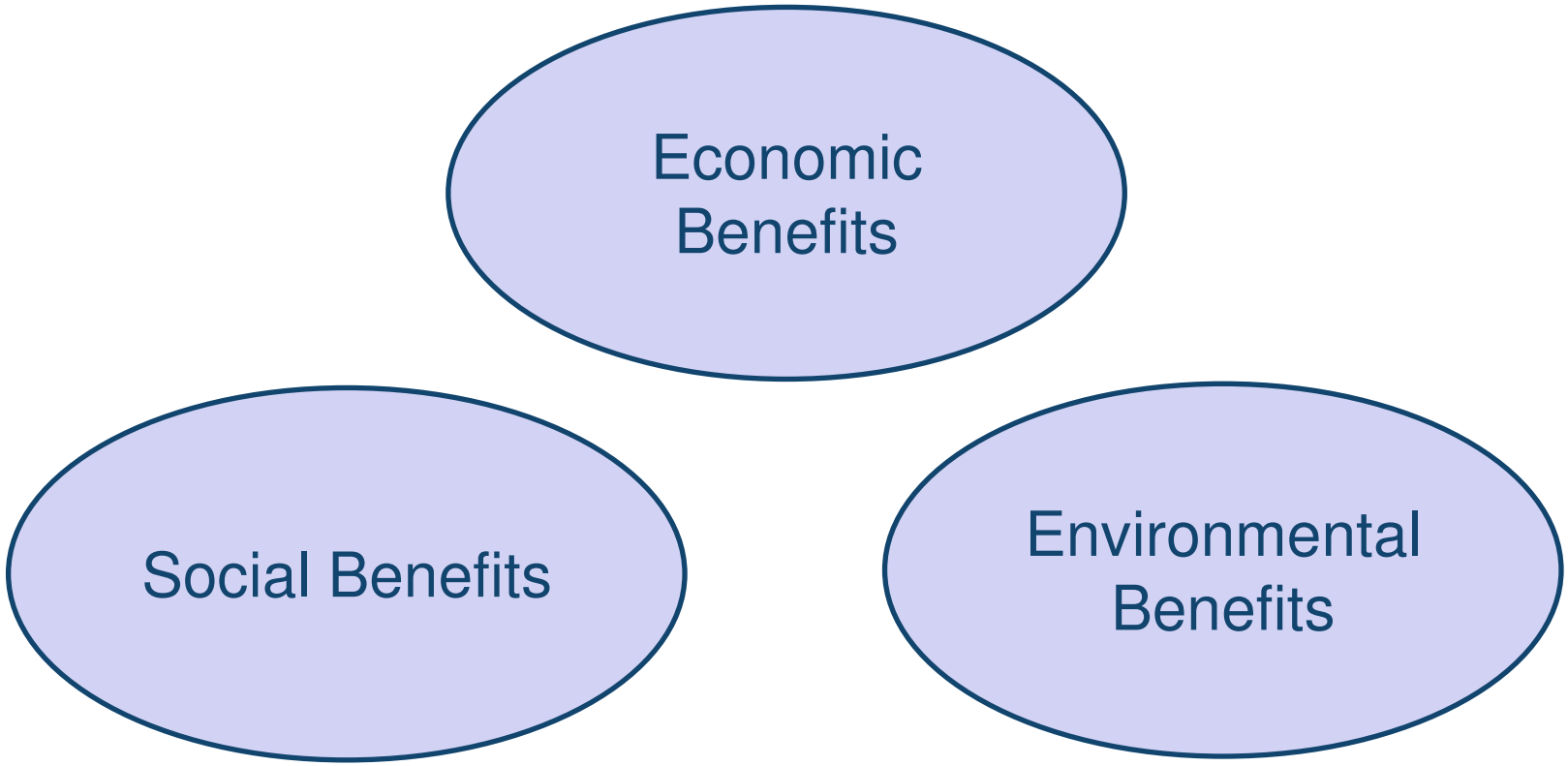
- Pet, Gadget and Toy tracking: Track all kinds of consumer items – service already provided by Apple for their phones...

GNSS Application Examples (5/5)

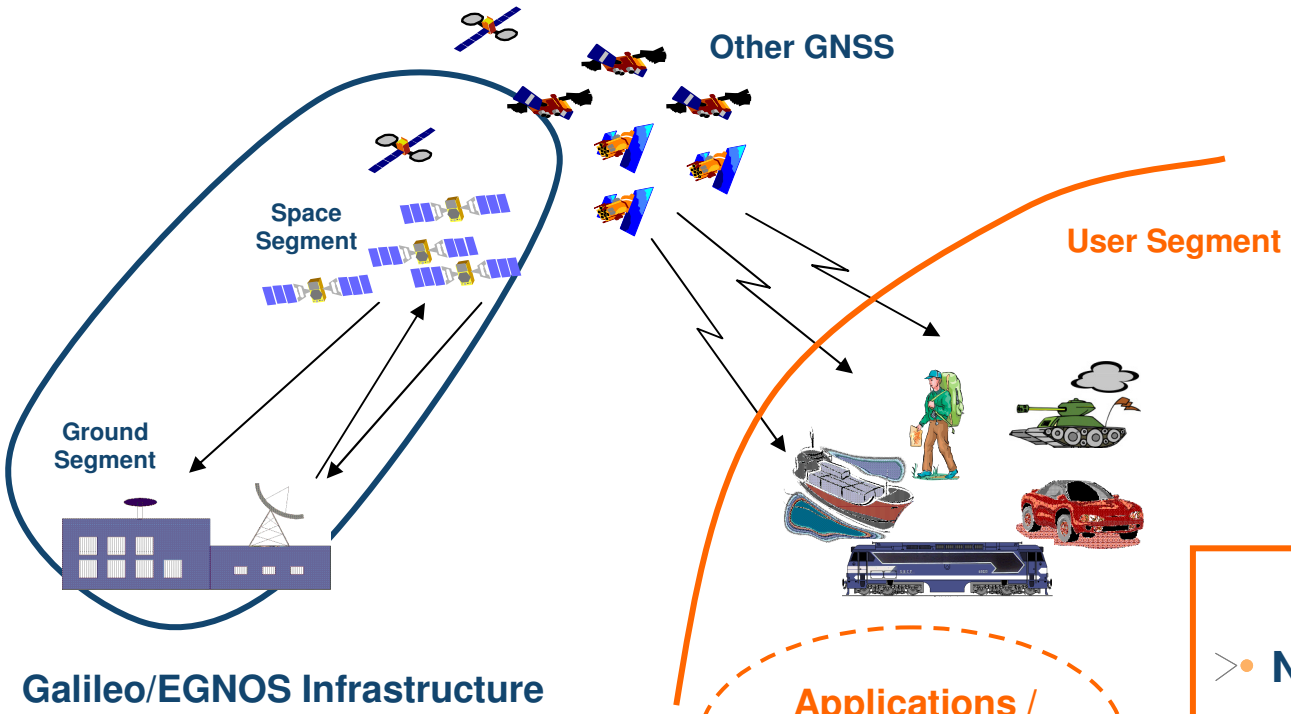
- Telecom Systems: Timing, syncronisation, transactions, tagging, maintenance...

- Power Grids: Syncronisation, maintenance, Smart Grids...

Benefits from GNSS applications



Benefits from GNSS applications



- New Business Activities
- Jobs & Wealth Creation
- Bigger GNSS Market Share

GNSS market capacity vs. Public R&D Funding (1/2)

MINIMUM LEVEL OF EU PUBLIC FUND REQUIRED FOR GNSS APPLICATIONS R&D FROM 2011 TO 2021

EUR 130 BN*
GLOBAL GNSS MARKET IN 2010

EUROPEAN MARKET SHARE IN GNSS SECTOR IN 2010

2011

3% OF EU GNSS GDP INVESTED IN R&D
EU2020 STRATEGY & BARCELONA TARGETS

▼

1/3 OF R&D INVESTMENT COMES FROM THE PUBLIC SECTOR
EU2020 STRATEGY & BARCELONA TARGETS

▼

50% OF PUBLIC FUND COME FROM THE EU MS AT NATIONAL LEVEL
CONSERVATIVE ASSUMPTION

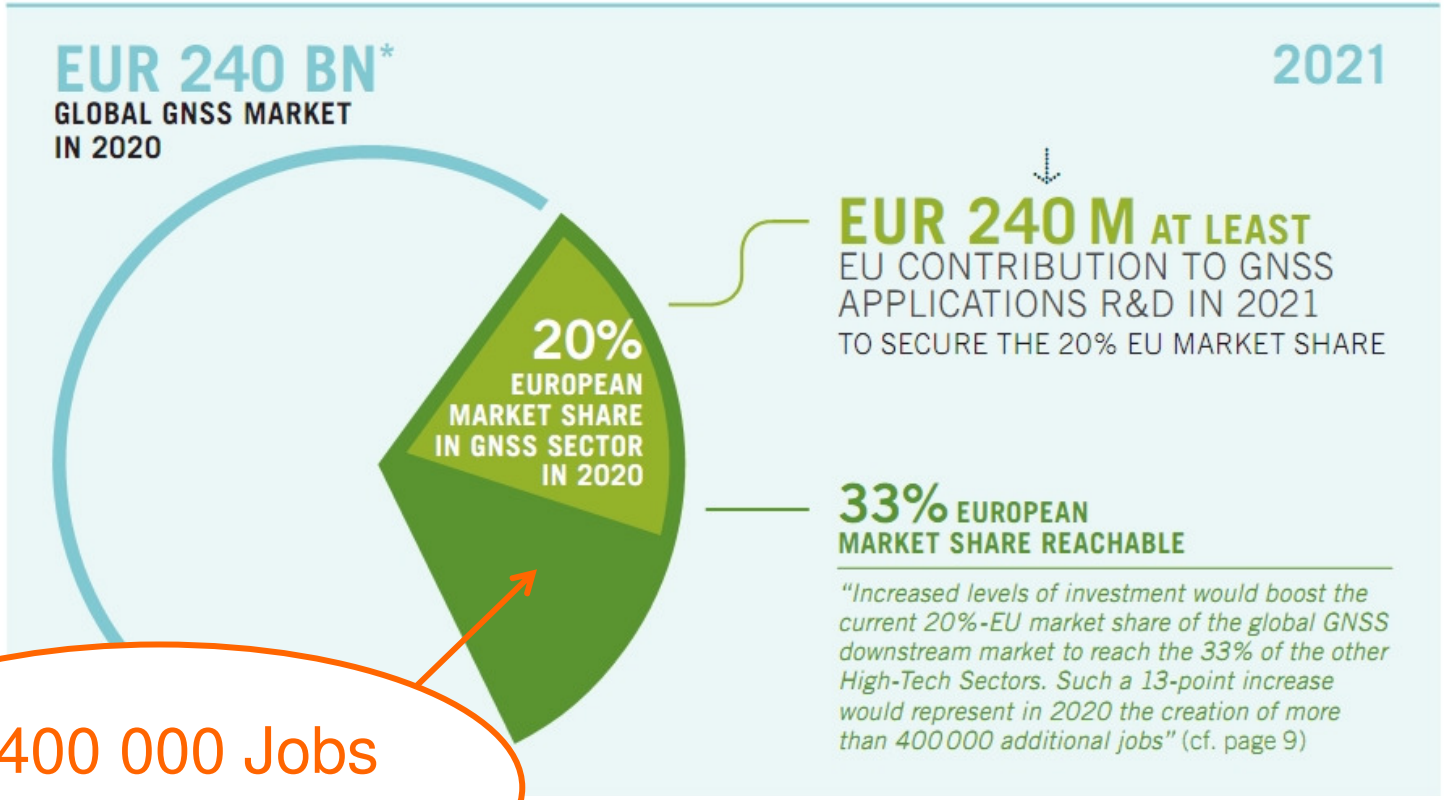
↓

EUR 130 M AT LEAST
EU CONTRIBUTION TO GNSS APPLICATIONS R&D IN 2011

* GSA estimates

GNSS market capacity vs. Public R&D Funding (2/2)

MINIMUM LEVEL OF EU PUBLIC FUND REQUIRED FOR GNSS APPLICATIONS R&D FROM 2011 TO 2021

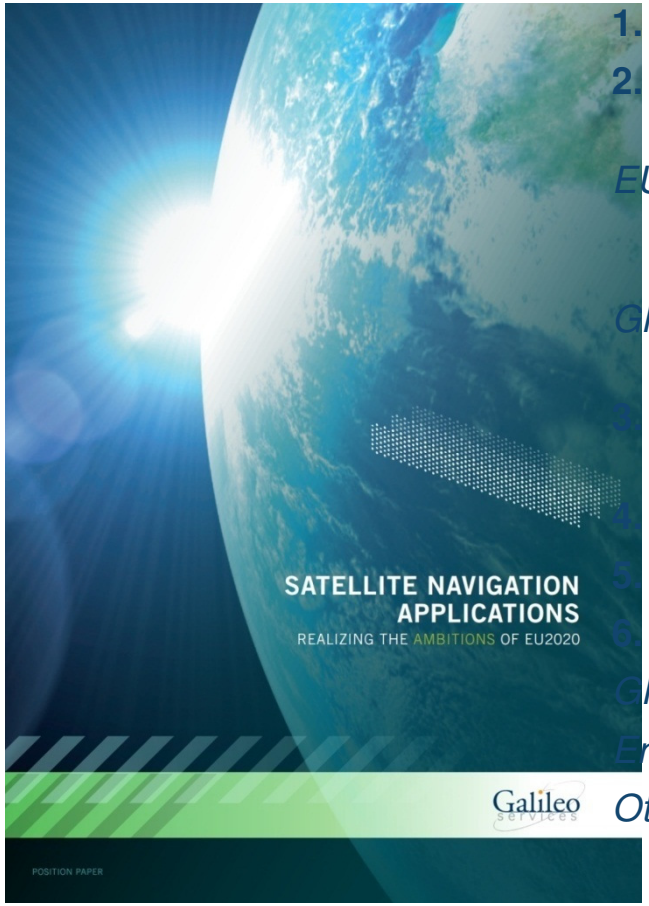


+ 400 000 Jobs in Europe

* GSA estimates

Galileo Services Position Paper

SATELLITE NAVIGATION APPLICATIONS REALIZING THE AMBITIONS OF EU2020



1. **Challenges & Ambitions for Europe**
2. **The necessity of EU public funding for GNSS applications R&D**

EU public funding is necessary for Europe to reach excellence, be competitive in a global market and expect future commercial and societal benefits

GNSS applications constitute one of the most promising markets for Europe

3. **EU public funding level required for maximizing the benefits for Europe**
4. **The critical GNSS technologies, applications & services**
5. **Crucial importance of users' involvement in EU projects**
6. **Horizon 2020 - "Galileo Services" Recommendations**

GNSS technologies and services

Enabling Activities to support market penetration and development

Other support activities from European Institutions

Available at: www.galileo-services.org

Critical GNSS technologies, applications & services (1/2)

- Requirements not satisfied yet:
  - Integrity, confidence, reliability, robustness and security: e.g. protection against interferences/jamming, spoofing and multipaths enabling automation; authentication; liability/safety/governmental critical services
  - Availability: e.g. constrained environment, GNSS coverage, indoor
  - Continuity: e.g. enabling seamless indoor/outdoor services
  - High accuracy: e.g. enabling scientific and professional applications, such as cadastre or ADAS applications

Main challenges of GNSS-based services at user level :

Reliability, Robustness, Security, and High Performance

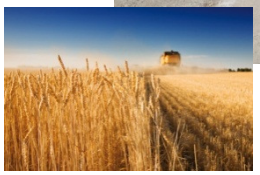
Critical GNSS technologies, applications & services (2/2)

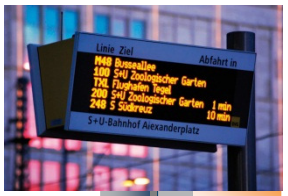
- R&D effort to be focused on achieving the best combination, through suitable hybridisation techniques and design of advanced integrity algorithms given application specific constraints, of:
  - GNSS signals and services (GPS, Galileo, Glonass, Compass, SBAS, GBAS, pseudolites…)
  - Positioning Sensors and ICT, Information and Communication Technologies (3G/4G/LTE, Wi-Fi, RFID, DAB/DVB, Radar, odometer, clock, gyroscope, accelerometer, magnetic compass (MEMS)…)

Next generation challenge : multi-constellation multi-sensor receiver

GNSS challenges

- Fast GNSS related technologies evolution
- Fast GNSS environment evolution
- Fast GNSS market evolution





Industry and Education

- Industry role is crucial to the adequate preparation of the future European Engineers and Researchers
- Industry hold the technical/market Expertise in the GNSS field

→ To provide Education with feedback on Industry needs (technology evolution, market evolution)

→ To welcome and train students

How does Galileo Services operate to maximize the benefits from GNSS downstream market in Europe?

Galileo Services Overview (1/2)

- Non-profit Making Association aiming at developing, promoting and maximizing the potential of the GNSS applications' market
- Comprising key GNSS Downstream Industry players
- Representing all elements of the value chain and covering the different application sectors (aviation, maritime, road, rail, telecom…)
- Missions:
  - Voice Industry concerns & expectations toward the institutions
  - Share market experience and knowledge of user needs
  - Support the implementation of the European GNSS Programmes

Galileo Services Overview (2/2)

Galileo services Members:

ASTRIUM AN EADS COMPANY · BMT ARGOSS · EPSON EXCEED YOUR VISION · ESSP · eutelsat communications via satellite

FDC · FUGRO · gmv INNOVATING SOLUTIONS · HELILEO The art of navigation · hispasat acercando culturas · Honeywell

indra · ineco · JAVAD · KAYSER-THREDE · KONGSBERG · logica · NavCert

NAVTEQ · NLR · NovAtel · OHB · Septentrio satellite navigation · sogei

TELESPAZIO A Finmeccanica / Thales Company · THALES · TNO innovation for life · TOMTOM · veripos

Backing on oregin *Network (160 Members – 20 countries)*

Sample of Galileo Services Activities

- Active and Living Network
- Regular Members' Meetings :
  - To share information
  - To discuss business opportunities
  - To establish strategic industrial alliance
  - To decide on lobby actions, etc.
- Setting-up of Working Groups on key subjects (e.g. Standardization, International Cooperation, IPRs)
- Preparation of Position Papers (e.g. on IPRs, R&D contracting rules, etc.) and circulation to Key Decision Makers
- Etc.

Regular contacts with Institutions

Privileged relation with key decision makers

- At European level
  - European Commission
  - European Space Agency
  - European GNSS Agency
  - European Parliament
- At EU MS level
  - European Council
  - GNSS Programme Committee
  - Key Ministries
  - National Space Agencies
- Maintaining regular and frequent contact with the European and National Institutions
  - Informal and Formal contacts through invitation to participate in Galileo Services Formal Meetings
- Working closely together to optimize EU GNSS programmes outcomes and spin-offs

Conclusion

GNSS application industry can act :
to take up EU challenges
to reach EU2020 ambitions

For 10 years,
maximizing the development of the EU GNSS downstream market and thereby maximizing benefits for European citizens,
is the Raison d'Être of Galileo Services

www.galileo-services.org

Thank you for your attention

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and backing on oregin