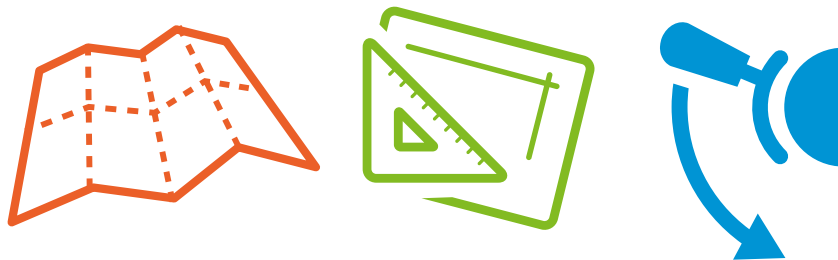


A SPACE STRATEGY FOR EUROPE - INPUT FROM INDUSTRY

FOR A SUCCESSFUL EUROPEAN
GNSS MARKET UPTAKE

1. EXTRACT OF RECOMMENDATIONS FROM INDUSTRY

12.07.2016



CONDITIONS FOR A SUCCESSFUL EUROPEAN GNSS MARKET UPTAKE

- European GNSS widely used with equipment, applications and services - designed, developed and manufactured in Europe

| Why? European Autonomy

Example: Critical GNSS-based applications and services, such as applications in security or timing & synchronization domains, must not depend on foreign applications, receivers and devices: Need to ensure autonomy in the whole value chain!

- European industry winning shares of the global downstream market

| Why? Return on investment, growth and job creation

Warning: Those benefits will not come without a significant support from the European Institutions. Other continents strongly support their industry through national strategies: Need to restore a level playing field!

A European strategy is mandatory to guarantee a development of the downstream favourable for Europe

HIGH POTENTIAL FOR INNOVATION

- A huge and fast growing global GNSS downstream market
- Low European market share
- Technology trends: multi-constellation, multi-frequency, hybridization, sensor fusion, security...

- European GNSS differentiators: authentication, high precision, robustness & security
- Reputation of European equipment & industries: Innovation, quality & reliability

Opportunity to develop new value-added GNSS products, applications and services

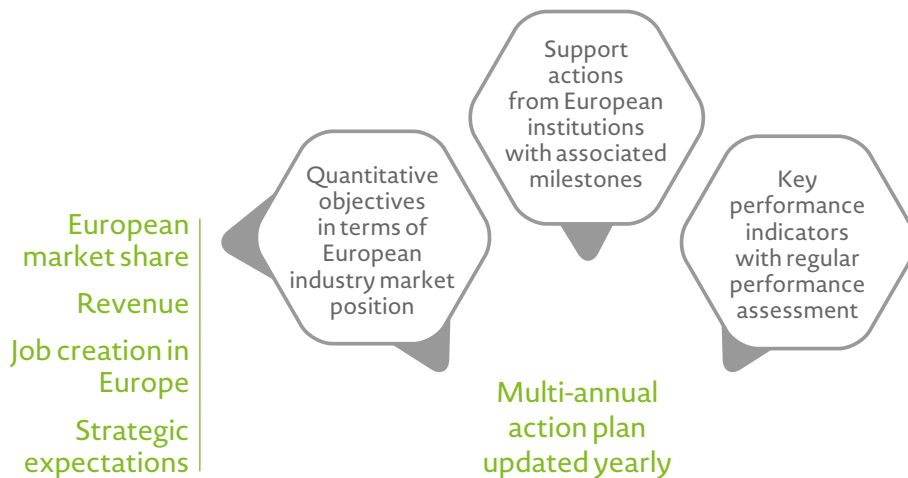
Opportunity to create new industrial activities and jobs in Europe

SPACE STRATEGY: MAIN OBJECTIVES

- Enhance European GNSS downstream industry competitiveness
- Foster European GNSS uptake
- Support coordination between National and European initiatives



SPACE STRATEGY: FORMAT



KEY SUPPORT ACTIONS FROM EUROPEAN INSTITUTIONS

- Technical Support
- Public Procurement
- Marketing
- Certification
- Manufacturing Capabilities
- Regulation
- Demonstrators
- Awareness
- Pilot Projects
- Standardisation
- R&D Programme
- ...

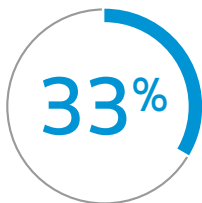


FUNDING AT A STRATEGIC LEVEL

Required investment:
 EUR 2 billion 2016-2020 • Initial Services Exploitation Phase
 EUR 2-3 billion for 2021-2027 • Next MFF

Expected return on investment:
 EUR 200 billion 2016-2027 • Cumulated increase of revenue

The objective is for Europe to win



of the global GNSS downstream market by



corresponding to

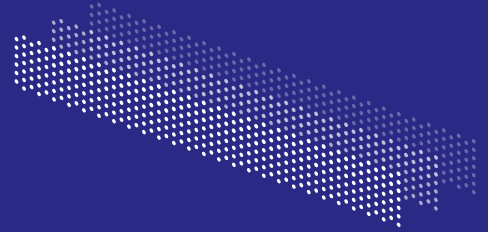


1,000,000 jobs

GNSS market in 2025: 300 B€

European Market share: 33%

Average annual man value: 100 k€



A SPACE STRATEGY FOR EUROPE - INPUT FROM INDUSTRY

FOR A SUCCESSFUL EUROPEAN
GNSS MARKET UPTAKE

2.

CONCRETE EXAMPLES





LBS – IOT/M2M

- To support the emergence of **European champions** in **Wearables** and **IoT/Embedded** domains leveraging multi-constellation, hybridization and sensor fusion
- To support the development of **European GNSS-based apps & services**, including **authenticated services**



MARITIME

- To sustain the European industry and support the **adoption of key European GNSS services** (Galileo OS, CS, PRS or EGNOS V3) in maritime applications



ROAD

- To sustain the European industry in the field of **E-GNSS trusted solutions** for automotive applications





RAIL

To support **EGNOS/Galileo adoption** into ERTMS-ETCS

INTEGRITY TRAIN MONITORING

VIRTUAL BALISE READER



AVIATION

To sustain a competitive industry base in Europe in the field of **aviation multi-constellation receivers** while defining an accurate **deployment strategy** for **European GNSS successful adoption in aviation**

GENERAL AVIATION

AIR TRANSPORT

ROTORCRAFT



RPAS

To support the development of **E-GNSS based solutions** for professional RPAS while establishing a strategy in introducing **Commercial and Civil RPAS** in Civil Airspace

HIGH PRECISION SOLUTIONS FOR MAPPING

ON-BOARD TRUSTED NAVIGATION SOLUTIONS



SECURITY AND PRS

To create a **competitive PRS downstream industry** showing, in particular, the need to federate national user needs and encourage public procurement

To support the European industry in the field of **robust equipment and services** based on E-GNSS (OS Authentication, CS or PRS) for **security**

DEFENCE

ENERGY

BORDER SECURITY

CRISIS MANAGEMENT

CYBER SECURITY



TIMING & SYNCHRONIZATION

- To support the European industry in the field of **European GNSS-based robust timing services and related receivers** for timing and synchronisation of critical infrastructures

TELECOM NETWORKS OPERATION

POWER ENERGY DISTRIBUTION

FINANCIAL TRANSACTIONS



SPACE

- To support the development of **cost-effective robust multiconstellation multifrequency solutions** meeting high demanding performances required for in-space applications

IN-ORBIT CONTROL OF GEO SATELLITES

IN-ORBIT INJECTIONS / ORBIT TRANSFER MANOEUVRES

GNSS APPLICATIONS FOR LEO SATELLITES



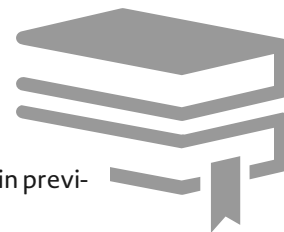
MULTIMODAL LOGISTICS

- To support the implementation of **European GNSS-based systems of freight movement tracking and tracing** to improve transport efficiency and security

INTER-PORT MANAGEMENT

CUSTOMS OPERATIONS

Further work on concrete examples identifying essential actions to the European GNSS market take-up and the development of a competitive GNSS downstream industry in Europe can be found on GS website: www.galileo-services.org



REFERENCES

More details on the rationales of those recommendations can be found in previous communication from Galileo Services:

- “Europe must succeed in the Global Navigation Market Race”, Position Paper, September 2015
- “Is Europe ready to make Business on Galileo”, The Parliament Magazine, 7 March 2016
- “Satellite Navigation Applications Realizing the Ambitions of EU2020”, Position Paper, 2011

GLOSSARY

CS	Commercial Service
Downstream	Products, applications & services based on satellite positioning, navigation & timing
ERTMS/ETCS	European Railway Traffic Management System / European Train Control Standard
GEO	Geostationary Orbit
GNSS	Global Navigation Satellite System
IoT	Internet of Things
LBS	Location-based Services
LEO	Low Earth Orbit
MFF	Multiannual Financial Framework
Multi-constellation	Any combination of Galileo, GPS, GLONASS and BeiDou
PRS	Public Regulated Service
OS	Open Service
PAYD	Pay As You Drive
PNT	Position, Navigation & Timing
R&D	Research & Development,
RPAS	Remotely Piloted Aircraft System