ESA and REGIONAL SPACE POLICIES - Strengthening relationships

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Some figures for 2013

- 203 billion € generated by global space economy
  - 33% space manufacturing
  - 9% satellite operators
  - 58% consumer services
- 8 billion € for overall European government budget for space activities
  - 3.45 billion € for ESA (excluding EU and ECS; 4.1 billion € total ESA budget)
  - 1.2 billion € for EU (about 50% being managed in the ESA frame)
- 36,000 direct employment of the European space manufacturers (upstream sector)
- 52.4% (more than 8,000) of world's scientific publications from ESA MS
- # of space-related patents quadrupled in 20 years

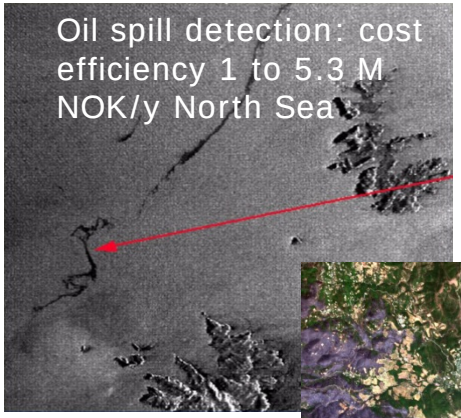
Sources: The Space Economy at a glance 2014, OECD; Euroconsult 2014; ESA; ASD-Eurospace 2014

Space boosting economy

- Austria: 114 organisations, 42% of technologies used outside space sector
- Belgium: 60 organisations, 3.3 spinoff factor
- Denmark: 4.5 spinoff factor
- Norway: 67 organisations, 4.8 spinoff factor
- Portugal: 76 organisations, 2 spinoff factor, Gross Value Added per worker in space sector 4x average value
- Sweden: 65 organisations, 36% of companies generated spin-offs
- United Kingdom: 234 organisations, 89% of turnover for the downstream sector, 1.99 spinoff factor

Sources: national reports from MS

Examples of societal impacts


Oil spill detection: cost efficiency 1 to 5.3 M NOK/y North Sea


Weather & climate value of space-based data 250-800 B$

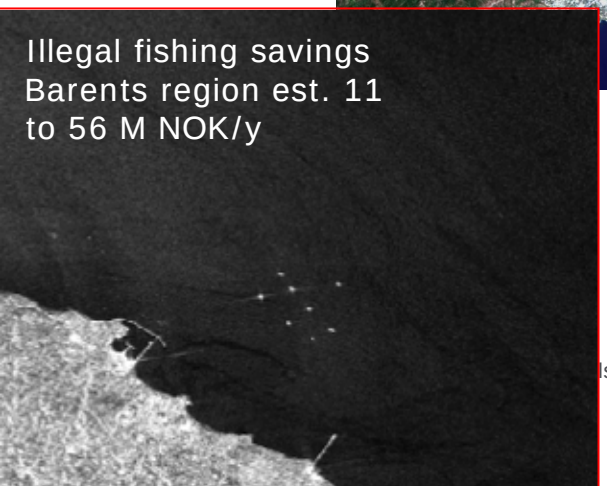
Automated agricultural guidance systems: less pesticides


Early warning of forest fires via techno transfer in Germany

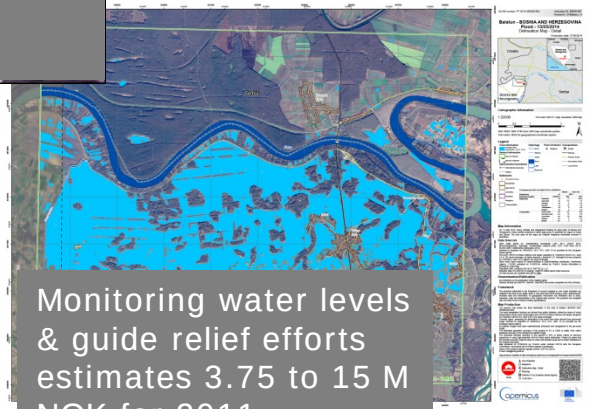

Techno Transfer for protecting from nosocomial diseases est. 200 M€/y cost savings in Europe + 500 lives saved

Preventing road rash with fibre from space tethers: less injury

Illegal fishing savings Barents region est. 11 to 56 M NOK/y




Coastal surveillance and water quality monitoring: protecting ecosystem

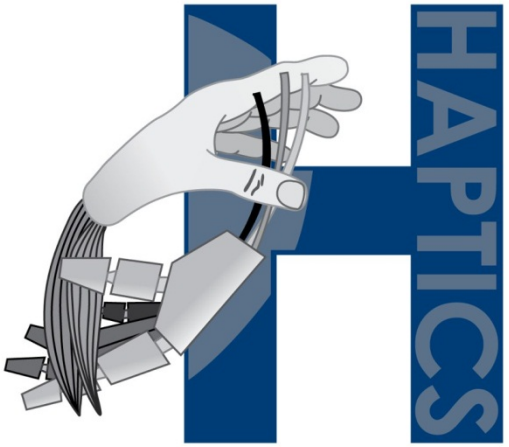

Monitoring water levels & guide relief efforts estimates 3.75 to 15 M NOK for 2011

Space technology to commercial success

- 40% of companies which adopted space technologies reported substantial increase in attracting new customers
- 55% of donor companies experience positive impact on their revenues
- 173 companies have been incubated (much more transferring technologies), 41% transferring space technology – *see next slide*

Product Lifecycle Manager

ProgenoX



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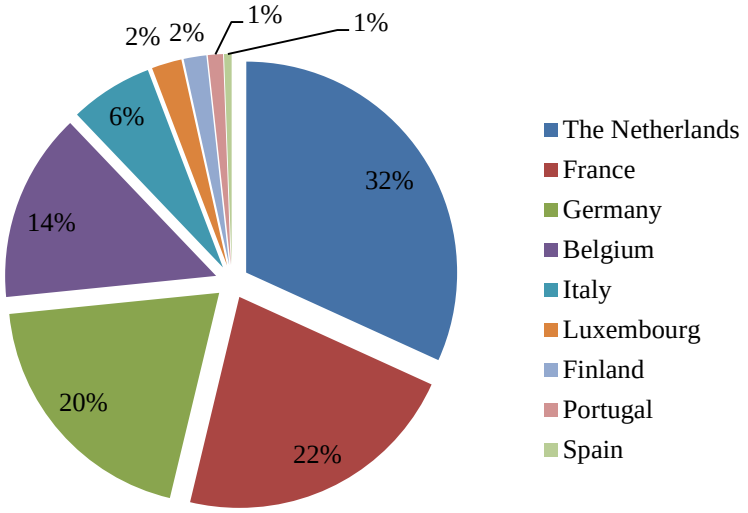
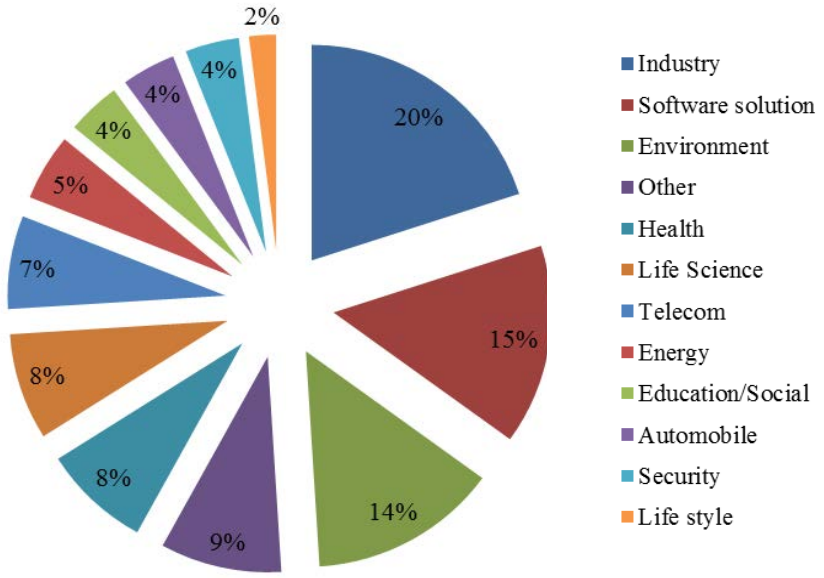
ESA BIC's and ESINET's impact

After 8 years of operations, 173 companies have been incubated:

- 152 are still operational
- 21 have received equity investment, for a total of about €15.4M
- The **total turnover achieved for 2012** was more than **€128.3M**
- 17 companies already exceeded the €1M turnover (TO 2012)
- A total of **981 FTE** employees are working in these 152 SMEs
- the number of FTE is in continuous progression as well as the turnover





Technology Transfer Programme

ESA Business Incubation Centers
12 ESA BIC Locations

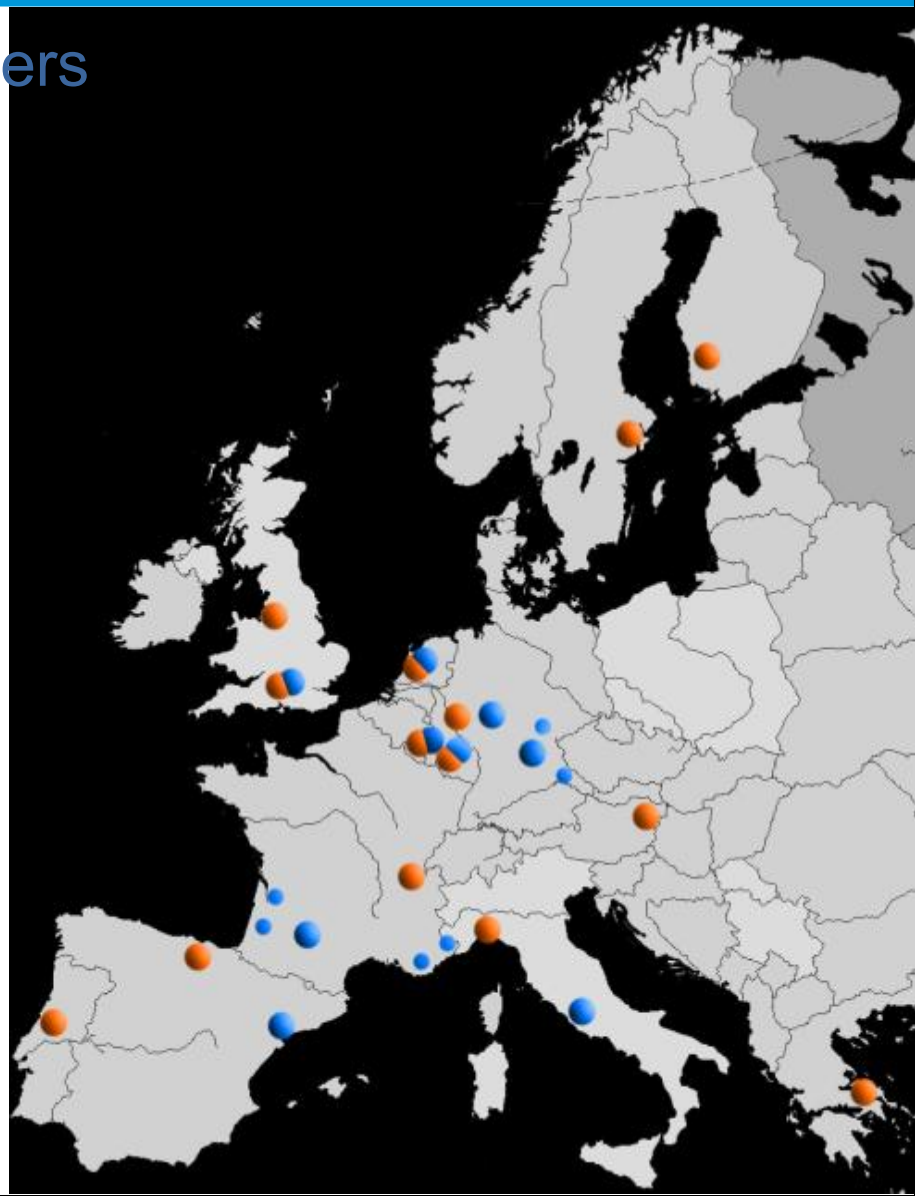
- *9 agencies*
- *11 regions involved*
- *12 research institutes*
- *250 start-up companies*
- *90 per year 2014*
- *12 M Euro in Seed Investment*

Broker Network

- *14 companies all across Europe*
- *Partner of EEN (Enterprise Europe Network)*

Patents

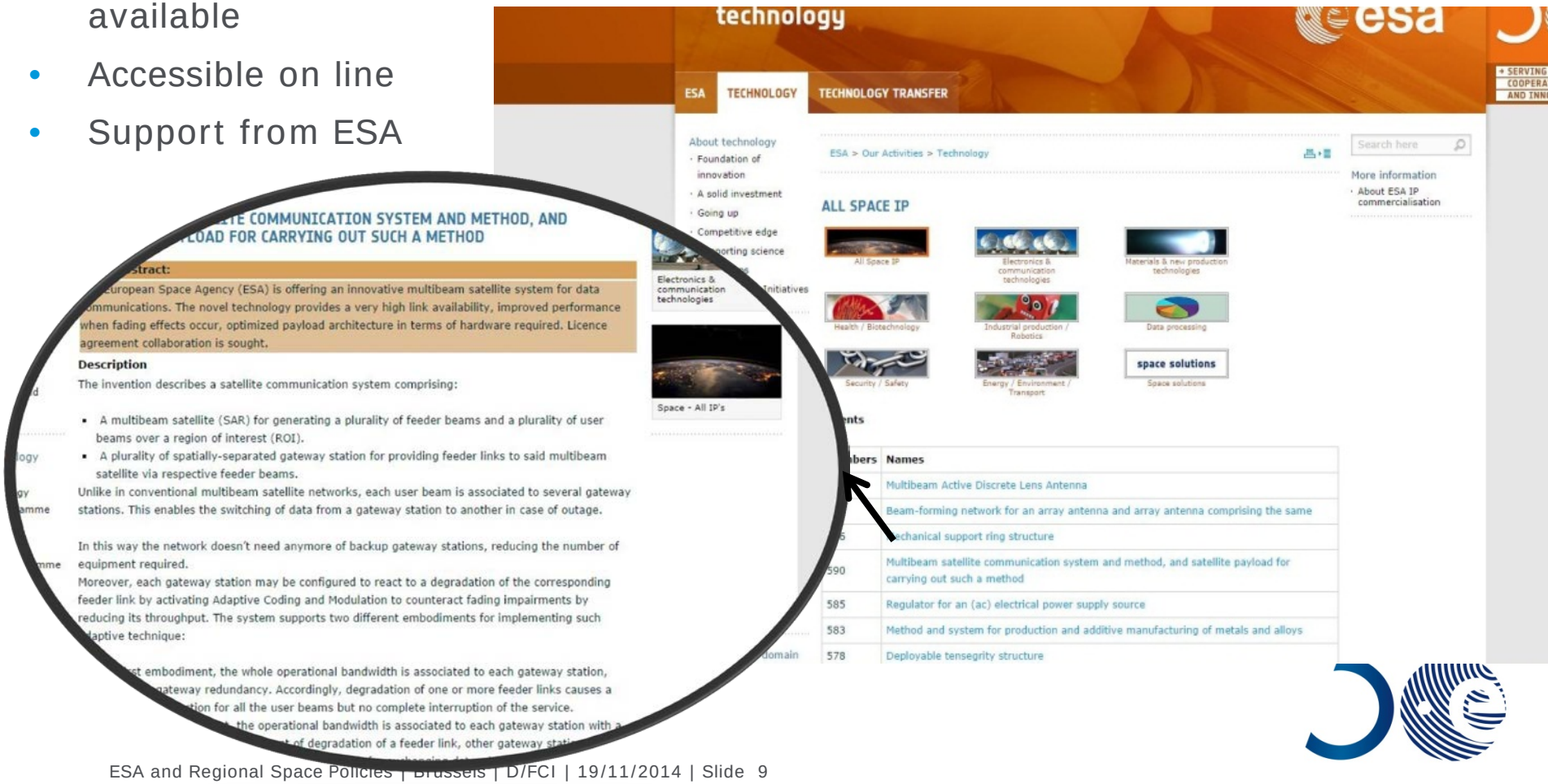
- *600 patents in ESA portfolio*
- *Access to ESA Space Technology*
- *Over 280 transferred technologies*



ESA patents

- 600 patents available
- Accessible on line
- Support from ESA

http://www.esa.int/Our_Activities/Technology/IP_for_commercialisation



Telecommunications and Integrated Applications

- ARTES applications and services co-funded with industry
- 162 completed projects
  - 54% led to operational services
  - 36% already generating revenues
- Rapid increase in the number of promising activities
- 10 KPIs defined applied today on 16 case studies
  - Ratio 4:1 between revenue and ESA funding, expected to grow to 20:1 by 2020
  - Most businesses strongly export-led
  - Mean 11 sustainable jobs per new venture
  - Multi-national value chain
  - Addressable markets from 2 M€ to 4 B€ - most in the range 14 to 140 M€

Socio-economic impact telecommunications

- Satellite TV and broadband connections (except high North)
- Connections for high seas users
- Emergencies and natural disasters
- Support peace-keeping, troops and border control
- Provides European autonomy of infrastructures and access to information
- Development of poorest countries
- Key driver and enabler of economic growth

➢ 1€ of public funding in satcom technology generates 47€ as downstream return as reported by European equipment suppliers*

** Source: Update on the satcom market and status of the Telecommunications Programmes of ESA – Council document June 2014*

Integrated Applications

- Combining at least 2 space assets and often starting within one region

Domains covered:

- Education & development
- Energy
- Environmental Resource Management
- Food & Agriculture
- Health
- Maritime & Offshore
- Media & Broadcasting
- Safety & Security
- Tourism
- Transport & Logistics

➢ Example of open ITT (until 10 December): Space applications in support of future cities

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Socio-economic impacts Earth Observation

- 319 companies in the service sector, 5,000+ employees, 757 M€ revenues
- Meteorology (factors of 5 to 20 for benefits / costs)
- Assessment of global impacts of human activities (climate change, environment)
- Key source of information for responsible decisions and effective action on long-term issues, from damage prevention of risk and active monitoring of land and infrastructure, to disaster management and emergency handling
- Fostering employment and supporting competitiveness
- Assessment of damage for insurance companies
- Producing maps for navigation (car and ships)
- Planning of cell phone networks

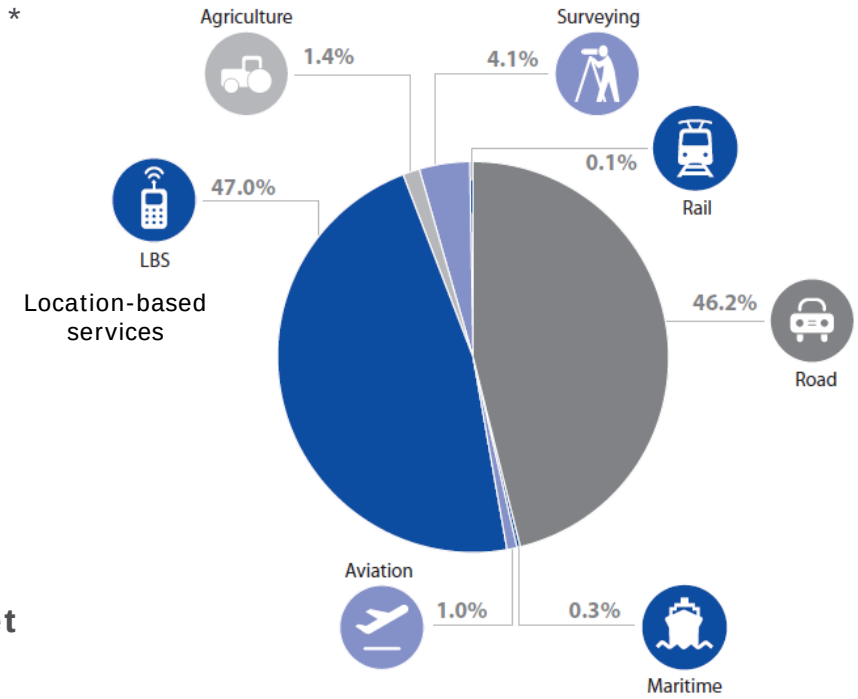
➢ 1€ invested in Copernicus means up to 10€ benefits*

**Source: ESPI report #39, 2011*

Socio-economic impacts Navigation

- The core and the enabled GNSS markets will reach 110 B€ and 240 B€ respectively by 2022.*
- At today most of the GNSS sector is de facto enabled by GPS, generating
  - more than 130000 jobs in the manufacturing industries and
  - more than 3 million jobs in the downstream industries

➢ **Core market** in case of multi-function devices only contemplates the GNSS functionality and relevant services, where for the **enabled market** the entire multi-function device retail value is contemplated.

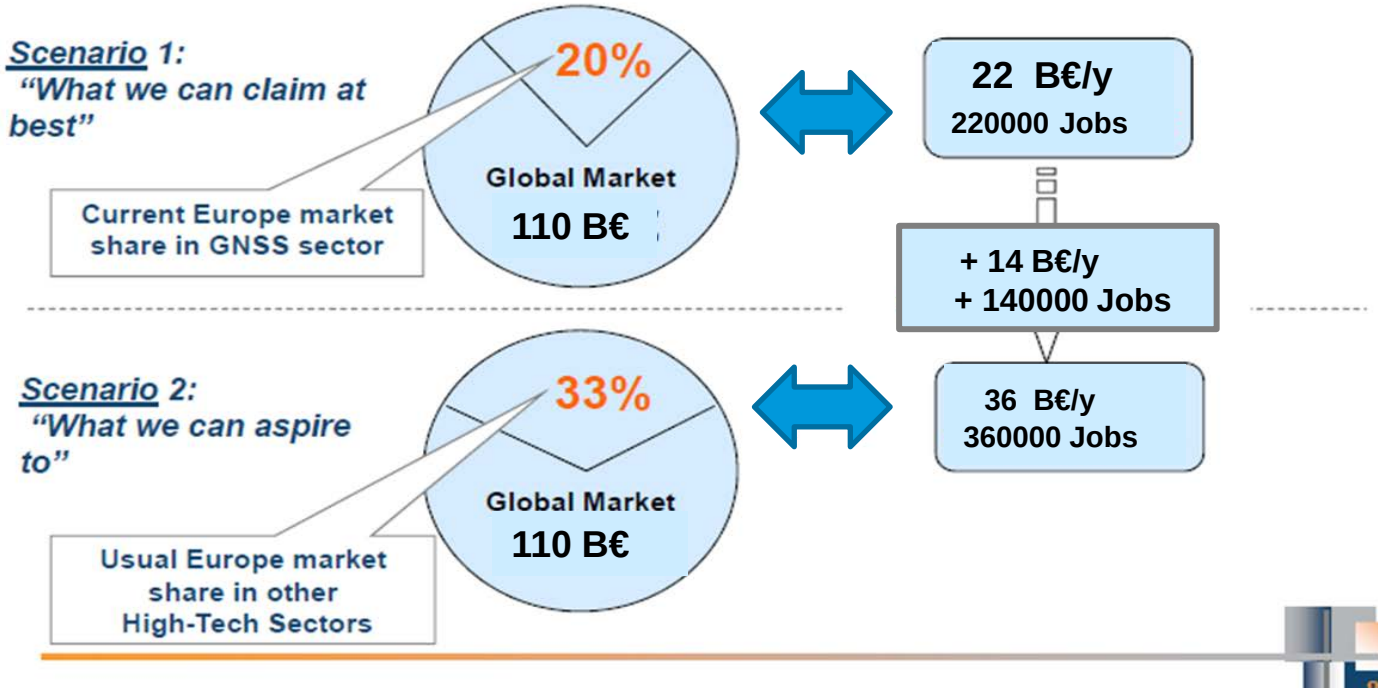


Cumulative core revenues 2012-2022

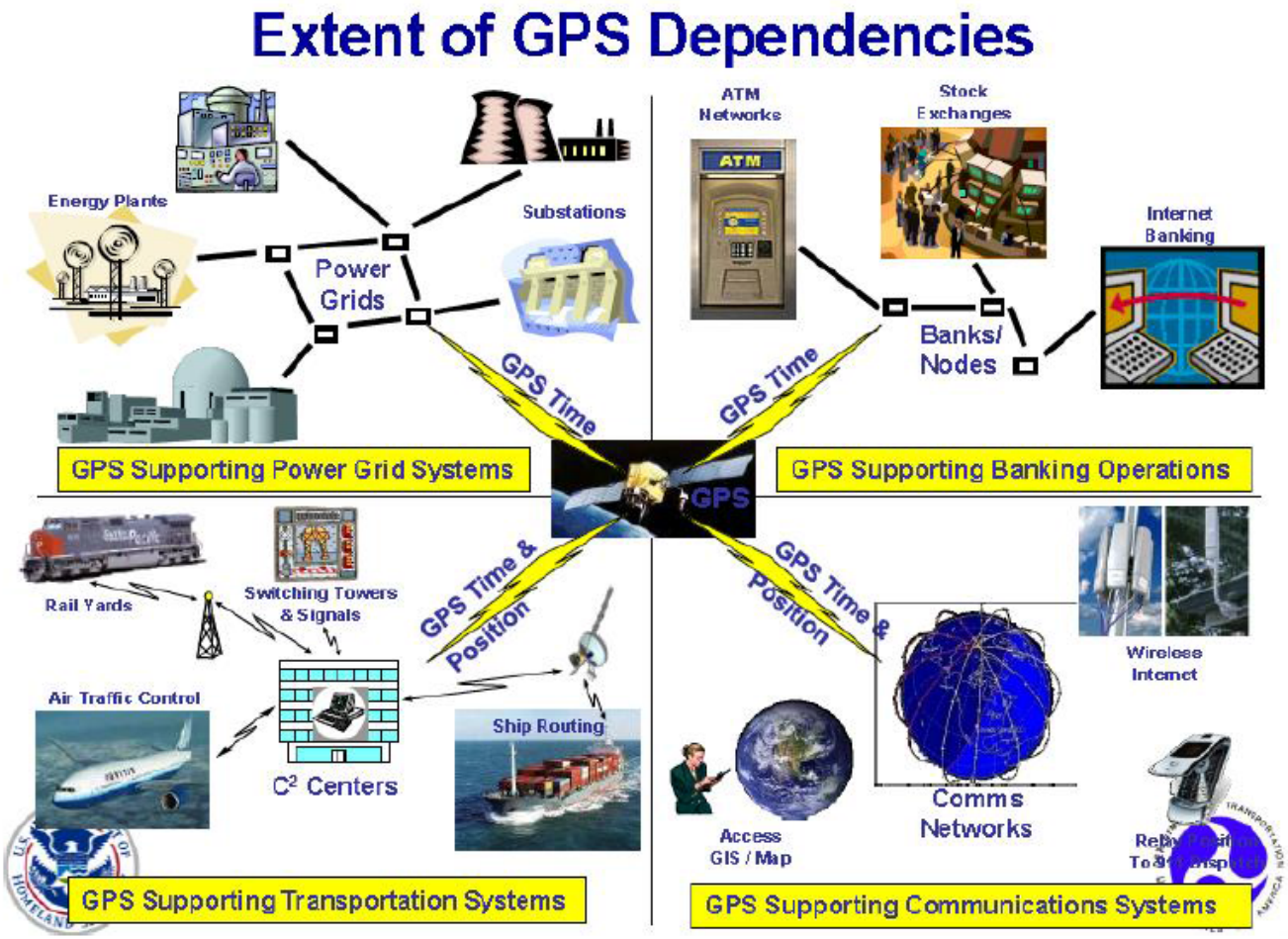
Source: GNSS market report (Issue 3) GSA, October 2013

The size of the opportunity

2022: European GNSS global core market share



GPS key dependencies in the worldwide economy



Opening new markets (1)

- Opening new markets to space applications requires:
  - Proactive effort to complement evolving ground infrastructure systems
  - Innovative approaches to service provision and exploitation
    - ➢ Will reinforce the competitiveness of European space industry
  - Protecting, maintaining and upgrading space infrastructures for the continuity of services

Opening new markets (2)

- Irrespective of space system used, many topics of **regional interest** benefit and will benefit from space assets as exemplified in previous slides:
  - Management of natural resources, including water
  - Smart cities
  - Energy
  - Health and ageing
  - Education
  - Sustainable agriculture
  - Security and defence

Opportunities for the European regions (1)

- Space is essential for EU policies and EU policies are essential to the space sector to develop economic value and create public market
- Within EU policies, Regional Policies play a central role and Regions in particular play a key role in supporting the fruition of applications by communities/citizens
- The draft Resolution on ESA Evolution for the next Council Meeting at Ministerial level in December invites ESA DG to make proposals to reinforce cooperation between ESA and MS, in order to optimise synergies between ESA and national programmes, skills and resources. Regions in MS are important players for a coordinated and cost effective effort and increased cooperation with ESA (with this ESA mirrors the stated objective of NEREUS to strengthen relationships NEREUS-ESA)

Opportunities for the European regions (2)

Potential action lines for the Regions:

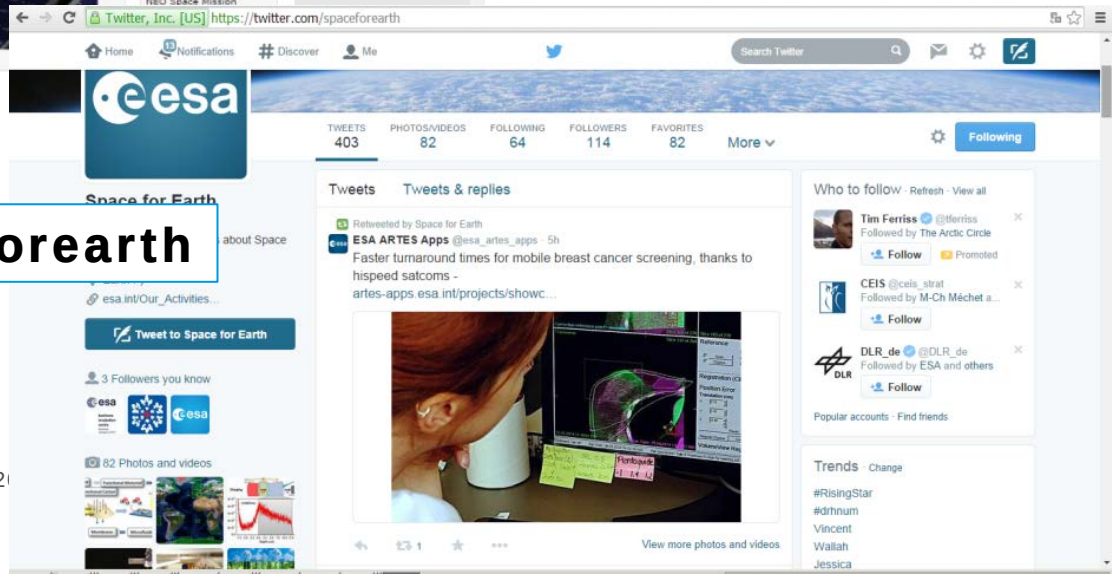
- Supporting technology transfer (spin-in and spin-off) and incubation (in existing and future BICs) as well as evolution, maintenance and exploitation of infrastructure in their territory
  - at this regard it has to be noted how national space agencies have generally as a mission to perform primarily R&D, which leaves not systematically covered the mission of maintenance – and sometimes also exploitation - of existing infrastructures, the use of which is vital for customers once they rely on the continuity of services
- Promoting the diffusion in Europe of applications, developing the enormous potential of applications in particular in support of the local (institutional and commercial) markets:
  - the parallel sustainability in terms of market of similar application initiatives in different regions is objectively much more at reach than the parallel sustainability of similar technologies (and related production)

Opportunities for the European regions (3)

- Promoting share of experiences and good practice, stimulating the extension of successful applications to other regions and sectors (inter-regional cooperation)
- Identifying needs from Regional Policies, that could be satisfied by space-based systems and applications
- ESA also converges with NEREUS in considering that regions can
    - promote the demand of space activities for the benefit of the general public, from citizens (as users of applications) to entrepreneurial players (in particular SMEs and start-ups)
    - stimulate young generations to undertake science and technology studies
- ESA is actively promoting the demand of space-based services, stimulating the awareness of what space could do for citizens and public institutions (e.g. with “Space for Earth” initiative for information on projects)

Follow “Space for Earth”

http://www.esa.int/Our_Activities/Preparing_for_the_Future/Space_for_Earth



Energy
Oceans
Health
Arctic...

@spaceforearth

Conclusion

- European Regions already benefit significantly from space economy – a margin for growth exists with larger opportunities in the segment of applications
- Space can support a large variety of Regional Policies
- Regions have an important role in filling the gap bridging between demand and supply and “connecting” space & society
- Focus shall also be on non-space industrial and service segments, the funding of which could complement “traditional” space funding, enhancing the multiplying effect in terms of return on investment for citizens and society (spin-off factor continuously growing), both in social and economic terms.

THANK YOU