SPACE SERVICES FOR THE DOWNSTREAM ECONOMY

Integrated Space Services: The Future Of Space Economy

Geospatial World Forum, 2021

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Space-based technology is driving innovation and supporting service delivery in almost all sectors of the global economy.
Green and digital transformation

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Main revenues from:
Data revenues of smartphones and tablets using location-based services

Main revenues from:
In-Vehicle Systems (IVS), ADAS and fleet management

Cumulative Revenue 2019-2029 by segment

Total: €2,525 bln
- Consumer Solutions: 38.3%
- Road: 55.0%
- Other: 6.7%

Total: €170 bln
- Geomatics: 2.4%
- Agriculture: 1.4%
Key trends in GNSS

**Multi-constellation, Multi-frequency**
Better signal availability, robustness and accuracy

**New type of services**
Broadcasted directly by global or regional constellations (e.g. Galileo HAS, OS-NMA, QZSS CLAS)

**Advancements in Receiver technology**
Minituarisation; Low Power; More security (anti-spoofing, anti-jamming); Sensor fusion

**Seamless positioning (indoor/outdoor)**
With hybridisation and GNSS and sensor fusion

**Commoditisation of high accuracy**
Boom of PPP-RTK services; Galileo HAS

**Enabling autonomous and immersive experiences**
Thanks to higher accuracy and better Rx technology
€2.6bn to €2.8bn global revenues of the EO downstream industry in 2017*

*Source: PwC: Main trends and challenges in the space sector June 2019
Key trends in EO

- **Huge growth in no. of satellites**
  - More data available

- **Better supporting infrastructure**
  - Faster data download

- **Advanced sensors**
  - Better parameters
    - (e.g. resolution down to 30cm, better revisit time)

- **Boom of small satellites**
  - Emergence of NewSpace, cost-effective

- **Rise of Artificial Intelligence (AI)**
  - Faster and automatic data processing

- **Shift to cloud computing**
  - "Unlimited" computing capacity for data processing
A new EU Agency for the Space Programme

The user-oriented operational Agency of the EU Space Programme, contributing to **sustainable growth, security and safety** of the EU

With the new regulation, **space data is at the heart of a technological revolution**

EU space activities under one umbrella:

- **Copernicus**
  - Earth Observation (EO) and monitoring based on satellite and non-space data
  - Nr.1 world provider of space data and information (>20TB/day)

- **Galileo**
  - Global satellite navigation and positioning system (GNSS)
  - 10% of the EU GDP enabled by satellite navigation

- **EGNOS**
  - Makes navigation signals more accurate and reliable
  - Operational in 360+ airports & helipads in 23 countries

- **GovSatCom**
  - Secures satellite communications for EU governmental actors
  - Delivering rapid support over crisis areas

- **Others**
  - ...under negotiation
Earth Observation

Generating prescription map:
A geo-referenced map which contains rate information controllers shall apply (NDVI index, health of crops, soil moisture, etc.)

GNSS

Highly accurate positioning of the machinery that show where fertiliser/pesticides should be applied
Earth Observation

Generating Land use mapping
Soil Moisture mapping
Vegetation mapping
Tailings dam monitoring (stability)
Pit Slope Stability and subsidence
Illegal mining detection
Waste accumulation monitoring
Air/Water quality monitoring

GNSS

Machine guidance and control
Mine surveying and mapping
Construction survey, as-built survey
Volumetric survey (incl. drones)
Slope stability
Fleet management
Autonomous equipment
Drones for inspection
Wearables for field maintenance
Earth Observation
Near-real time monitoring for:
Vegetation management
Ground deformation, subsidence, land slides, Natural hazards

GNSS
Asset management, GIS
Real-time monitoring of ground deformation, subsidence, displacements
Survey during construction phase
Igniting innovative space downstream applications

Supports the development of EGNSS-enabled chipsets, receivers and antennas

Support innovative entrepreneurs, start-ups and SMEs in the space industry
### Horizon Europe: Next calls

<table>
<thead>
<tr>
<th>Horizon Europe topics</th>
<th>Indicative budget (mln EUR)</th>
<th>Type of action</th>
</tr>
</thead>
<tbody>
<tr>
<td>EGNSS and Copernicus applications fostering the European Green Deal</td>
<td>14</td>
<td>IA</td>
</tr>
<tr>
<td>EGNSS applications for Safety and Crisis management</td>
<td>9.3</td>
<td>IA</td>
</tr>
<tr>
<td>EGNSS applications for the Digital Age</td>
<td>9.3</td>
<td>IA</td>
</tr>
<tr>
<td>Public sector as Galileo and/or Copernicus user</td>
<td>5.2</td>
<td>PCP</td>
</tr>
<tr>
<td>EGNSS applications for Smart mobility</td>
<td>9.5</td>
<td>IA</td>
</tr>
<tr>
<td>Copernicus downstream applications and the European Data Economy</td>
<td>9.6</td>
<td>IA</td>
</tr>
<tr>
<td>Large-scale Copernicus data uptake with AI and HPC</td>
<td>9.6</td>
<td>RIA</td>
</tr>
<tr>
<td>Service developments and demonstrations</td>
<td>9.1</td>
<td>RIA</td>
</tr>
<tr>
<td>Designing space-based downstream applications with international partners</td>
<td>5.1</td>
<td>RIA</td>
</tr>
</tbody>
</table>

*Dates are tentative and subject to change*
Supporting entrepreneurship

2nd CASSINI HACKATHON
5-7 November 2021
Connecting the Arctic

CASSINI Hackathons & Mentoring
myEUspace COMPETITION

part of the CASSINI initiative

+ 50+ awards

+ €1,000,000 prize pool

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