

Linking space to user needs

Market adoption of EO, with a focus
on the forestry and agriculture sectors

Copernicus para a Floresta e Agricultura em Portugal– 12/12/2023

Michal BABACEK - Space Downstream on-site consultant



EU Space Programme 2021-2027

EU Space activities **under one umbrella**



EGNOS

EGNOS “Makes navigation signals more accurate and trustable for Safety-critical applications”

Operational in **480+ airports** & helipads in 26 countries

97% of new tractors with GNSS in Europe equipped with EGNOS



Galileo

Global satellite navigation and positioning system (GNSS)

More than **4 billion Galileo receivers** worldwide



Copernicus

Earth Observation (EO) and monitoring based on satellite & non-space data

Nr. 1 world provider of space data and information (>20TB/day)



GOVSATCOM

Secure satellite communications for EU governmental actors

Rapid support over crisis areas



IRIS²

Infrastructure for Resilience, Interconnection & Security by Satellites

Sovereign multi-orbit constellation

Cutting-edge technologies focused on government service



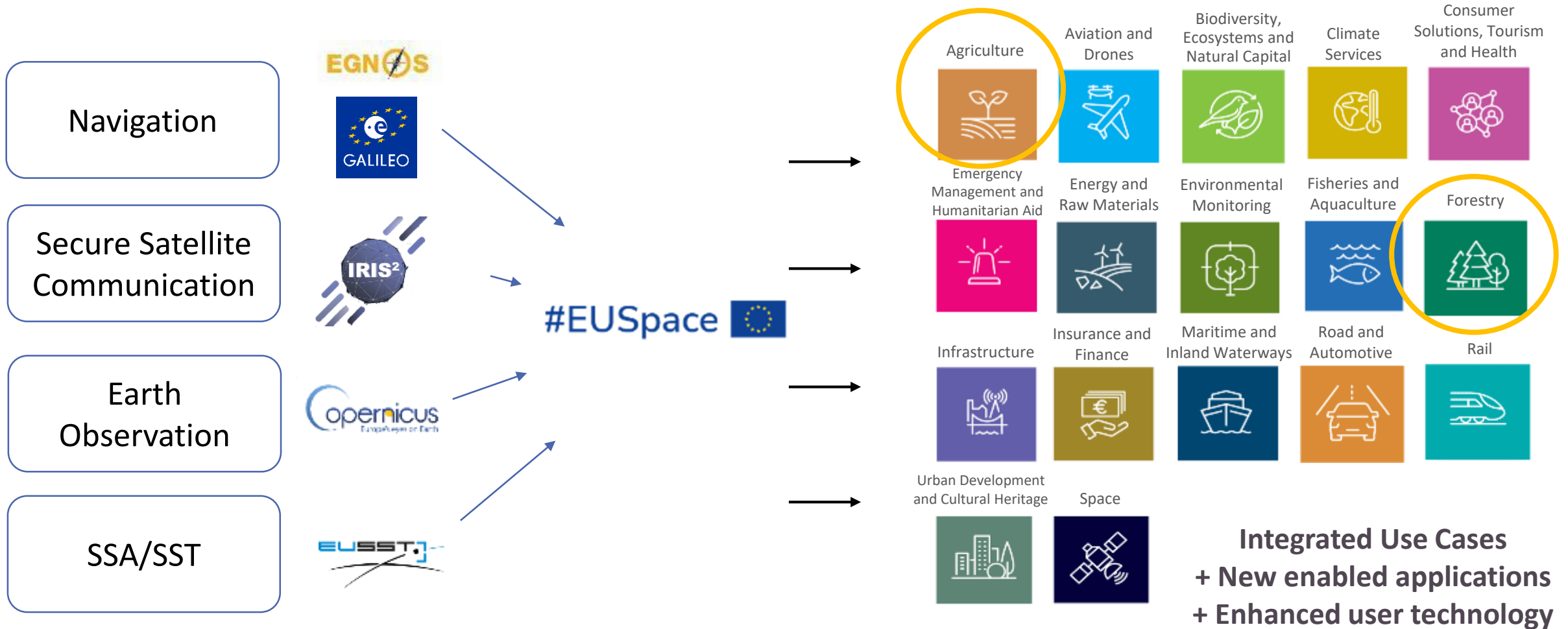
Space Situational Awareness (SSA)

Space Surveillance and Tracking (SST)

Space Weather Events (SWE)

Near-Earth Objects (NEO)

Integrating the EU Space Programme with a synergetic approach



EUSPA supports the adoption of EU SPACE

Market intelligence

Creating, supporting, and scaling up a **new generation of SMEs, start-ups, and innovators in the EU**

Fostering the EU Space Downstream **industry competitiveness**

Promoting synergies among different components of the EU Space Programme



EUSPA supports the adoption of EU SPACE

Market intelligence

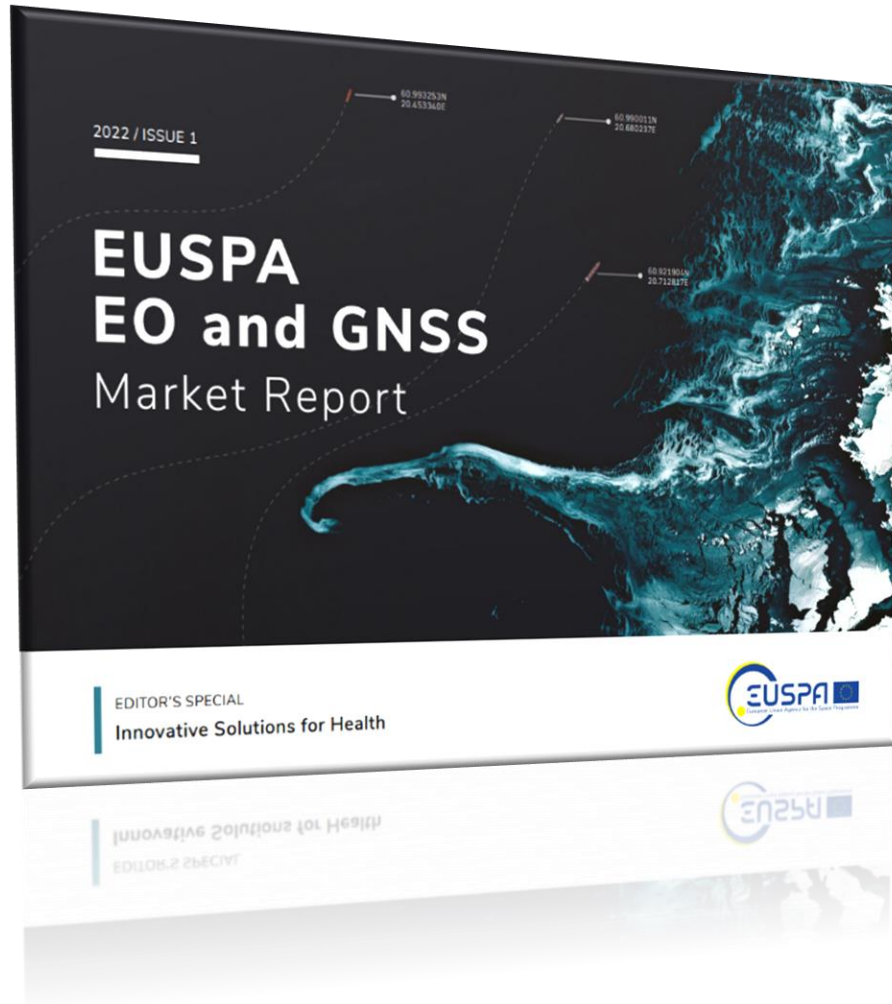
Creating, supporting, and scaling up a **new generation of SMEs, start-ups, and innovators in the EU**

Fostering the EU Space Downstream **industry competitiveness**

Promoting synergies among different components of the EU Space Programme



Take the Pulse of the EO and GNSS Market



- Provides insights on 17 #EUSpace market segments
- The ultimate guide to make space part of your business & develop new space downstream applications
- Provides comprehensive information on the dynamic and global GNSS and EO markets, along with an in-depth analysis of the latest global trends and developments

New edition in Q1 2024
STAY TUNED!



EO and GNSS applications in Agriculture & Forestry



Operations Management

- Asset monitoring
- Automatic steering
- CAP monitoring
- Farm machinery guidance
- Farm management systems
- Field definition
- Livestock wearables
- Pastureland management
- Precision irrigation
- Variable rate application

Environmental Monitoring

- Carbon capture & content assessment
- Environmental impact monitoring



Agriculture



Weather Services for Agriculture

- Climate services for agriculture
- Weather forecasting for agriculture

Natural Resources Monitoring

- Biomass monitoring
- Crop yield forecasting
- Soil condition monitoring
- Vegetation monitoring

Legend

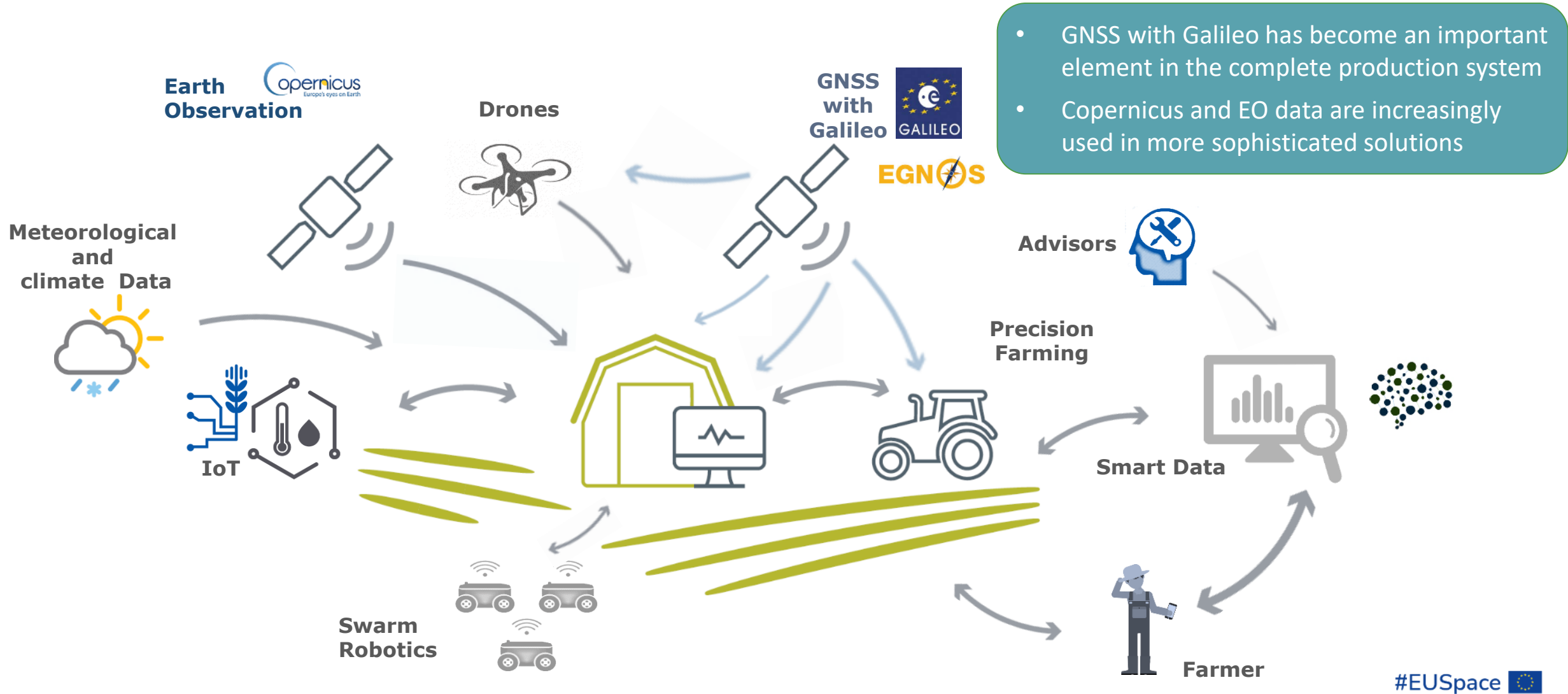
EO application

GNSS application

Synergetic application

(combined use of EO and GNSS)

Galileo and Copernicus are at the core of precision farming



EO and GNSS applications in Agriculture & Forestry



Forestry

Operations Management

- Automatic steering
- Forestry asset management
- Forest certification
- Forest machinery guidance

Environmental Monitoring

- Biomass monitoring
- Deforestation/ degradation monitoring

Forest Resources Monitoring

- Forest Inventory monitoring
- Forest vegetation health monitoring
- Illegal logging monitoring



Legend

EO application

GNSS application

Synergetic application

(combined use of EO and GNSS)

Forest(ry) moving to digital Epoch

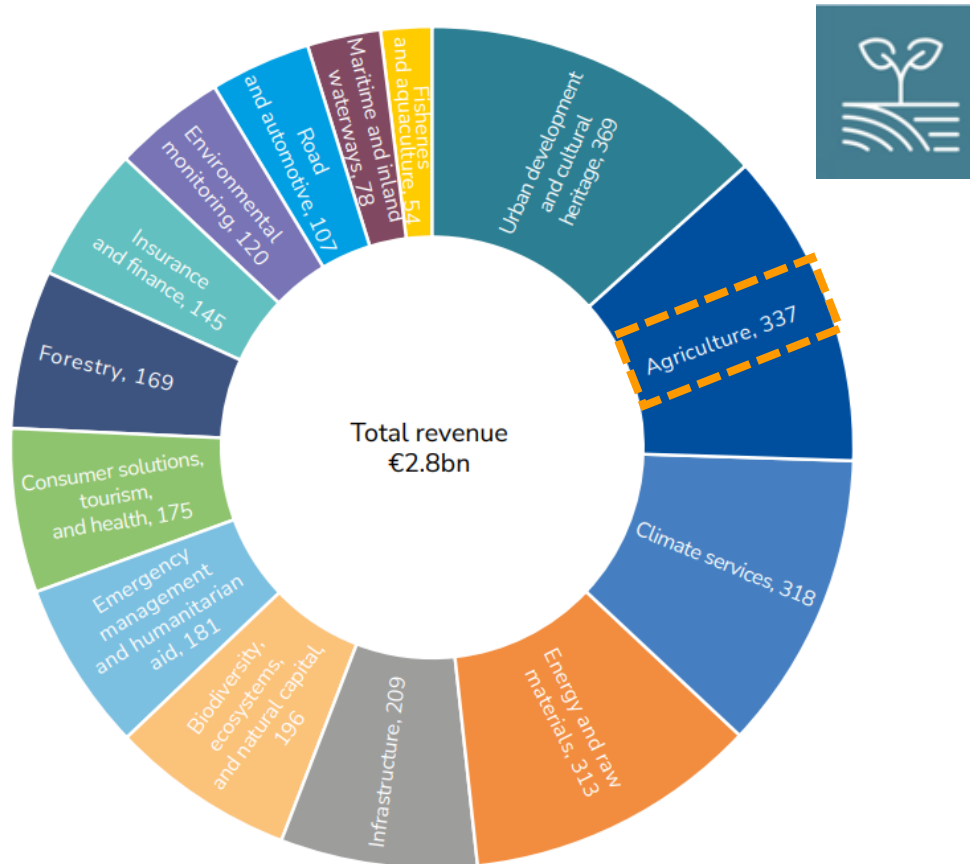


EO Integration:
Catalysts for wide-area
monitoring and
Sustainable Forest
Management

Source: <https://www.woodbusiness.ca/>

EO data and service revenues are set to double over the next decade

Distribution of revenue by segments (€m, 2021)



Adoption polarization among users:

- **Big farmers:** higher adoption, full awareness
- **Small farmers:** low-to-middle adoption:
 - Lack of awareness/ technical knowledge
 - High cost to entry/ lack of a favorable business model

North America and Europe are leaders of agtech adoption, with Asia lagging.

Currently using or planning to use at least one technology in the next two years¹

| Global | Europe | North America | South America | Asia |
|---------------------------------------|--|--|--------------------------------------|--|
| ~39% | ~62% | ~61% | ~50% | ~9% |
| Farm-management software top use-case | Farm-management software and remote sensing most popular use-cases | Farm-management software most popular use-case | Remote sensing most popular use-case | Farm automation and robotics most popular use-case |

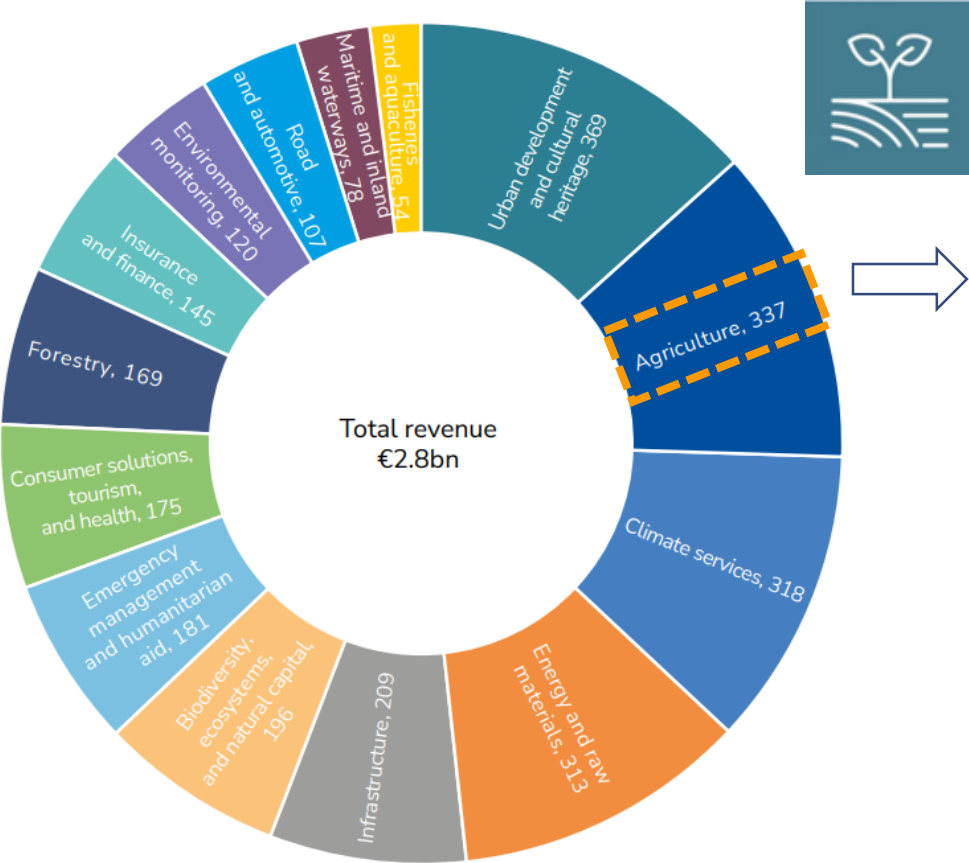
¹Asia includes China and India; Europe includes France, Germany, Netherlands, and Spain; North America includes Canada and the United States; South America includes Argentina and Brazil; (n = 5,675). Source: Farmers' Global Insights Survey, McKinsey, May 2022; McKinsey analysis

McKinsey & Company

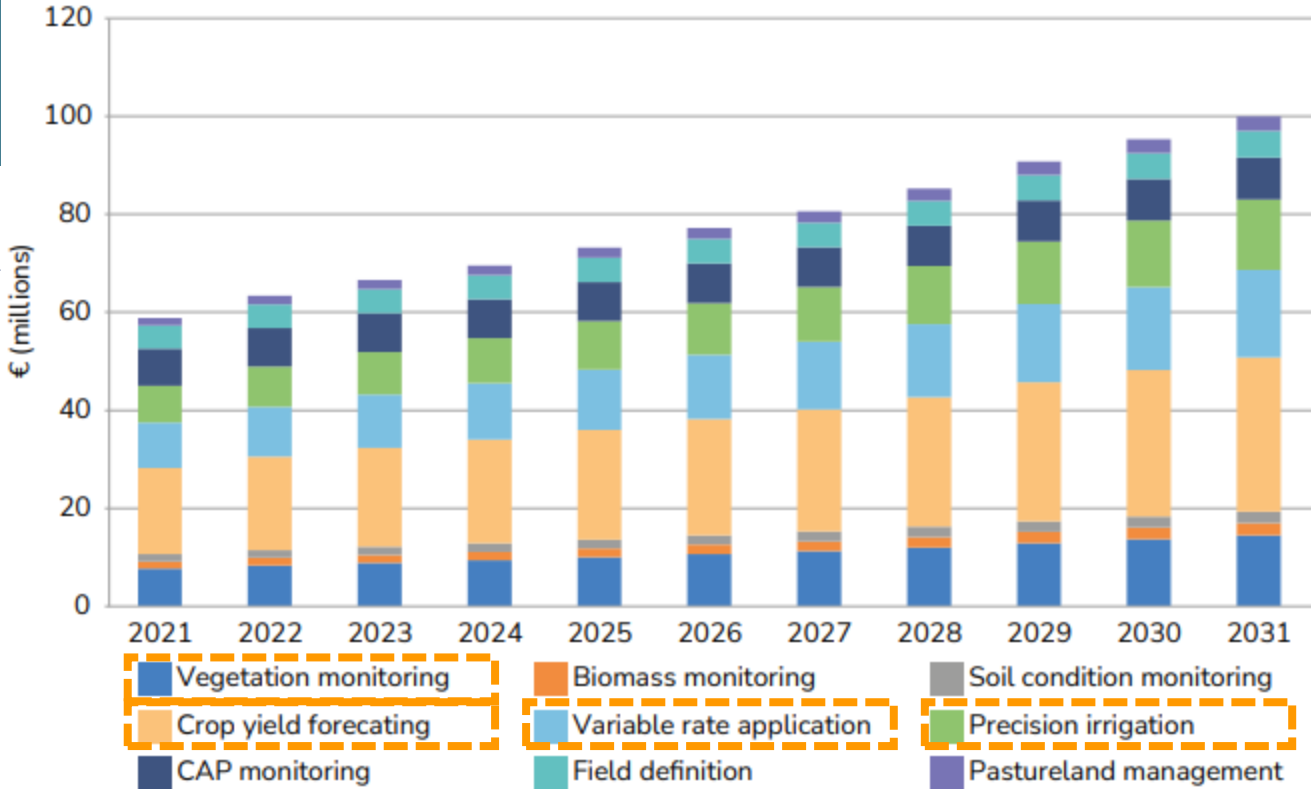
<https://www.mckinsey.com/industries/agriculture/our-insights/agtech-breaking-down-the-farmer-adoption-dilemma>

EO data and service revenues are set to double over the next decade

Distribution of revenue by segments (€m, 2021)

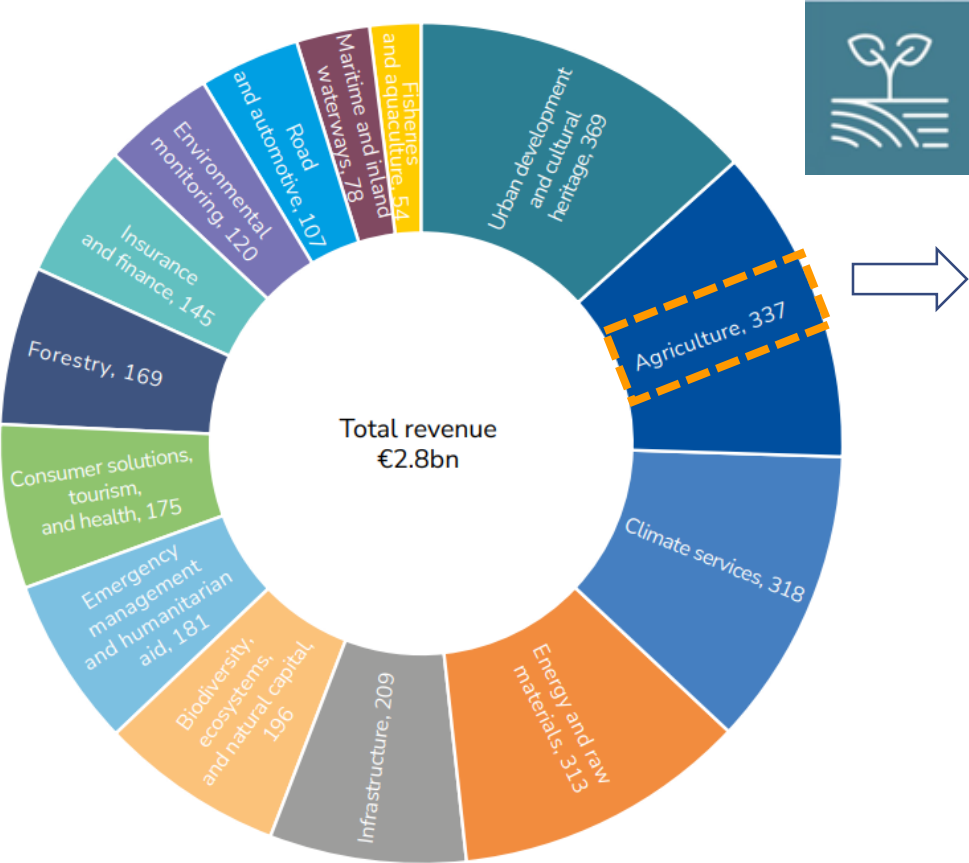


Revenue from EO data sales by application

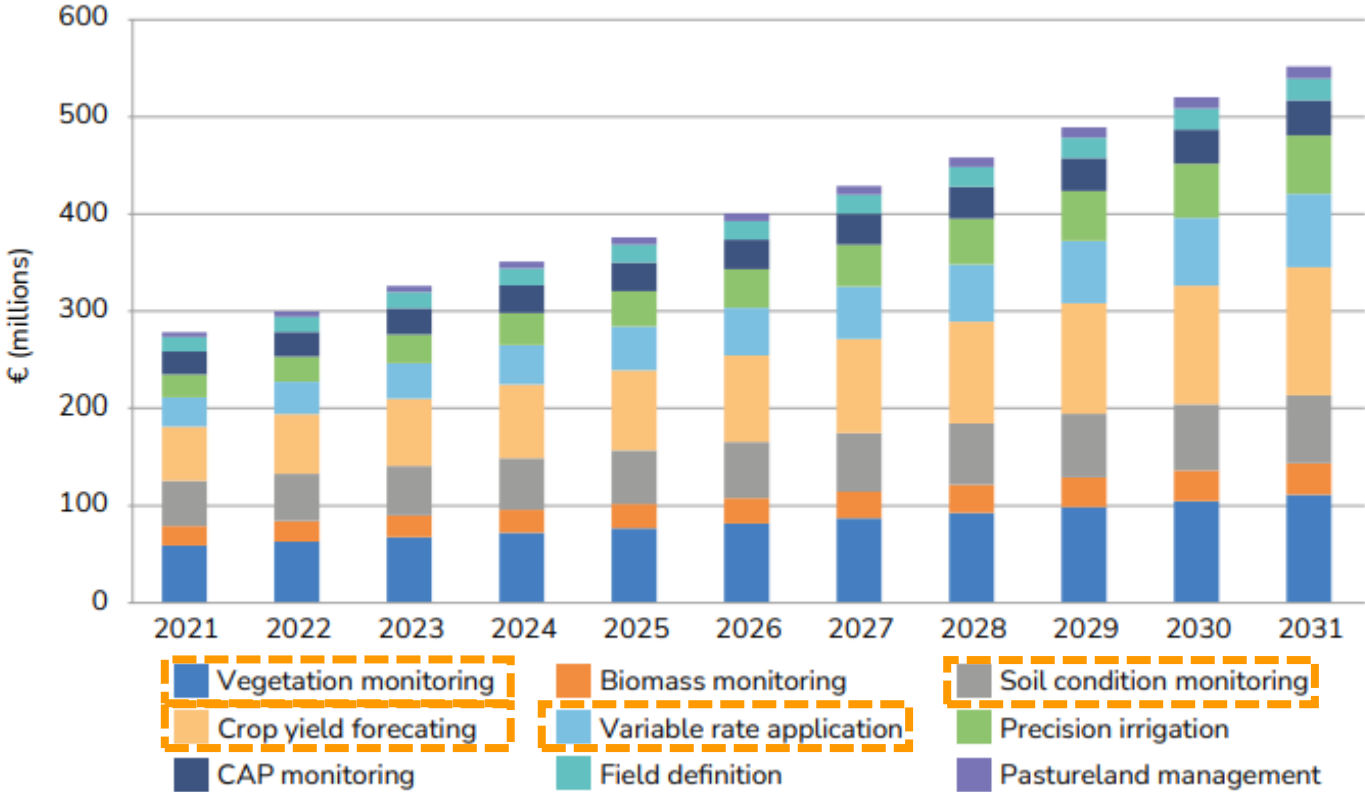


EO data and service revenues are set to double over the next decade

Distribution of revenue by segments (€m, 2021)

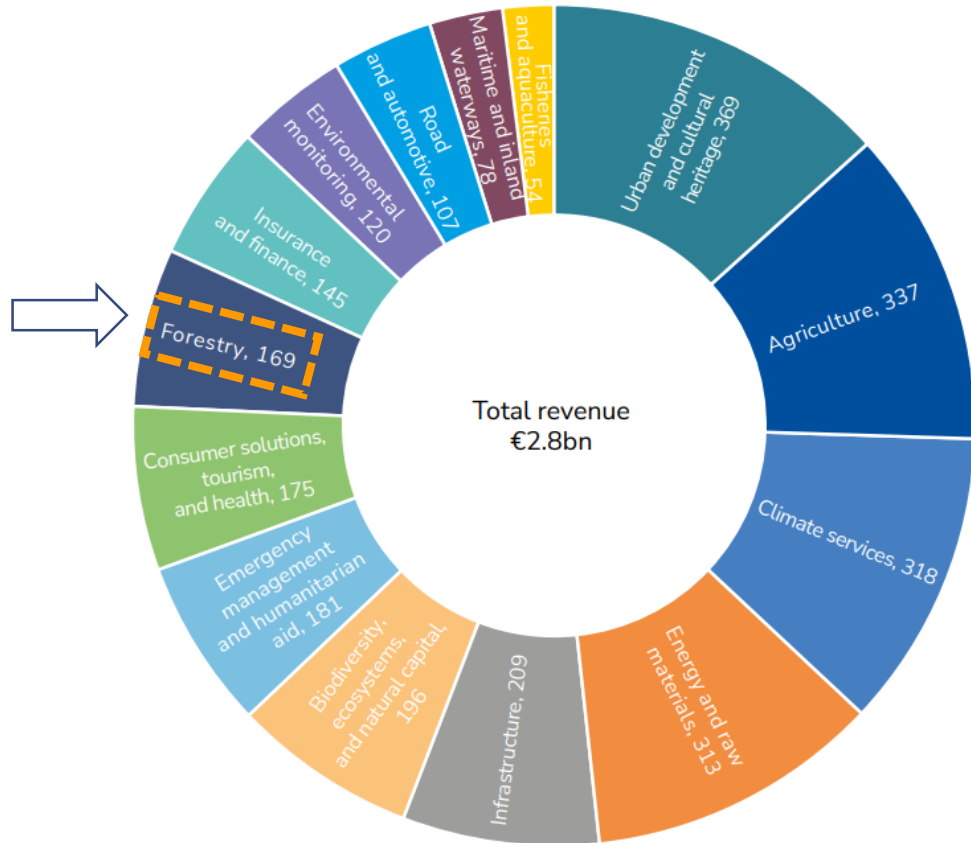


Revenue from EO services sales by application



EO data and service revenues are set to double over the next decade

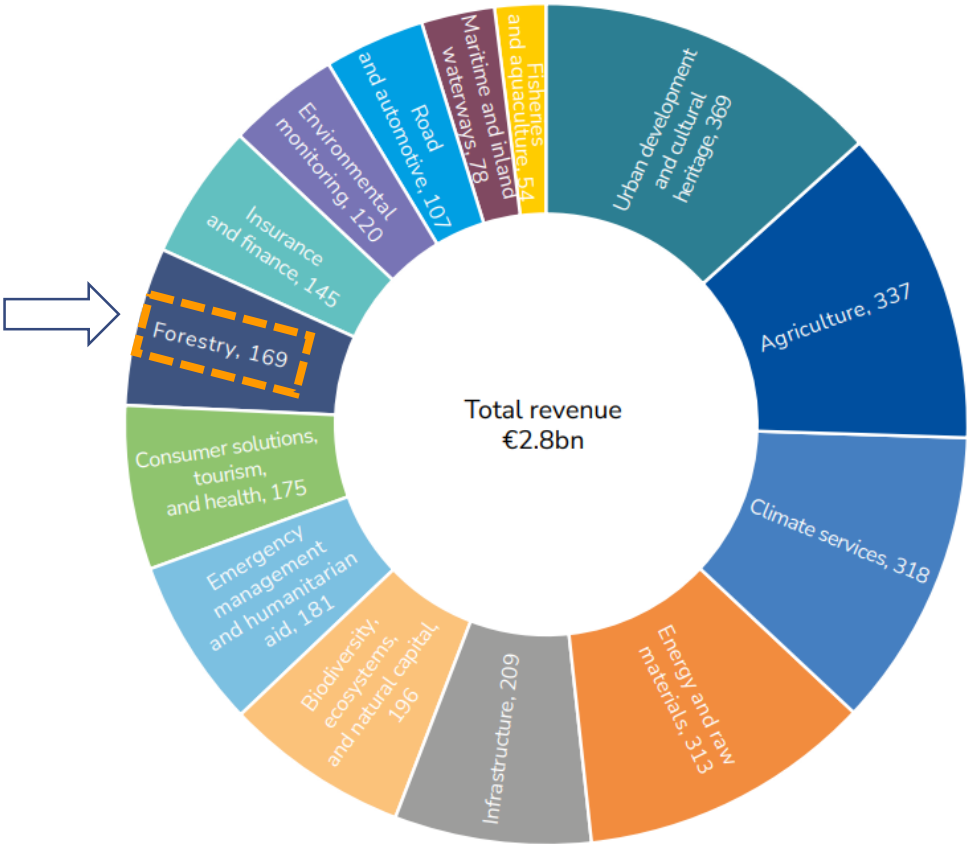
Distribution of revenue by segments (€m, 2021)



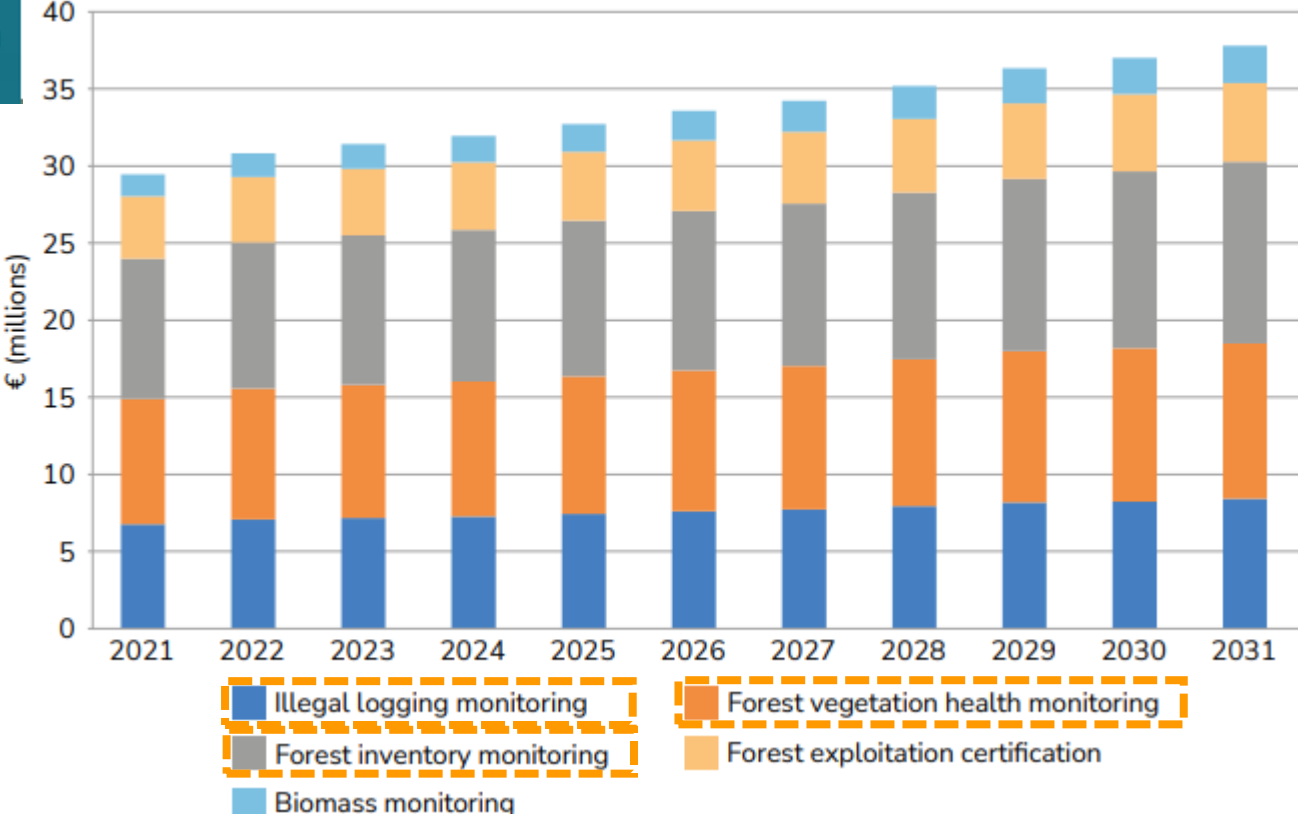
- EO/Copernicus essential for various EU regulations
 - EUDR (Regulation on deforestation-free products)
 - Regulation on a Forest Monitoring Framework
 -
- High adoption of EO/Copernicus for country-wide or regional forest monitoring while
- Low adoption of digital and space based tech. amongst private forest owners
- AI/ML : Move from simple monitoring to prediction
- Emerging applications (voluntary carbon projects, biodiversity indices,)

EO data and service revenues are set to double over the next decade

Distribution of revenue by segments (€m, 2021)

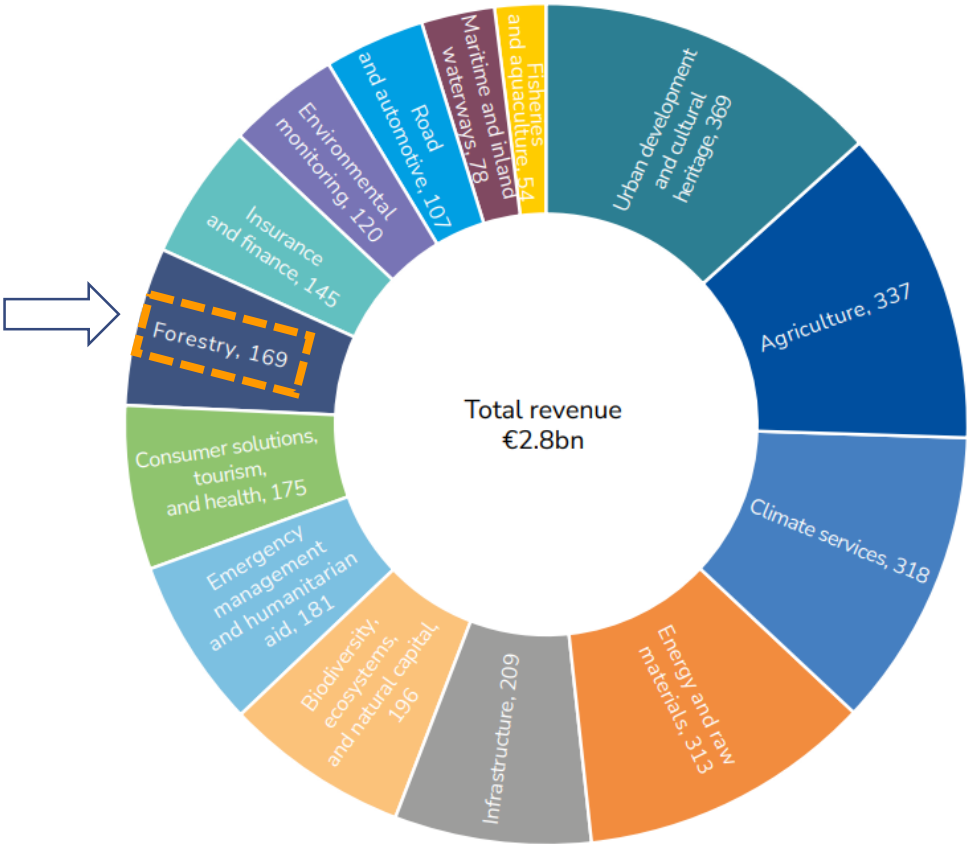


Revenue from EO data sales by application

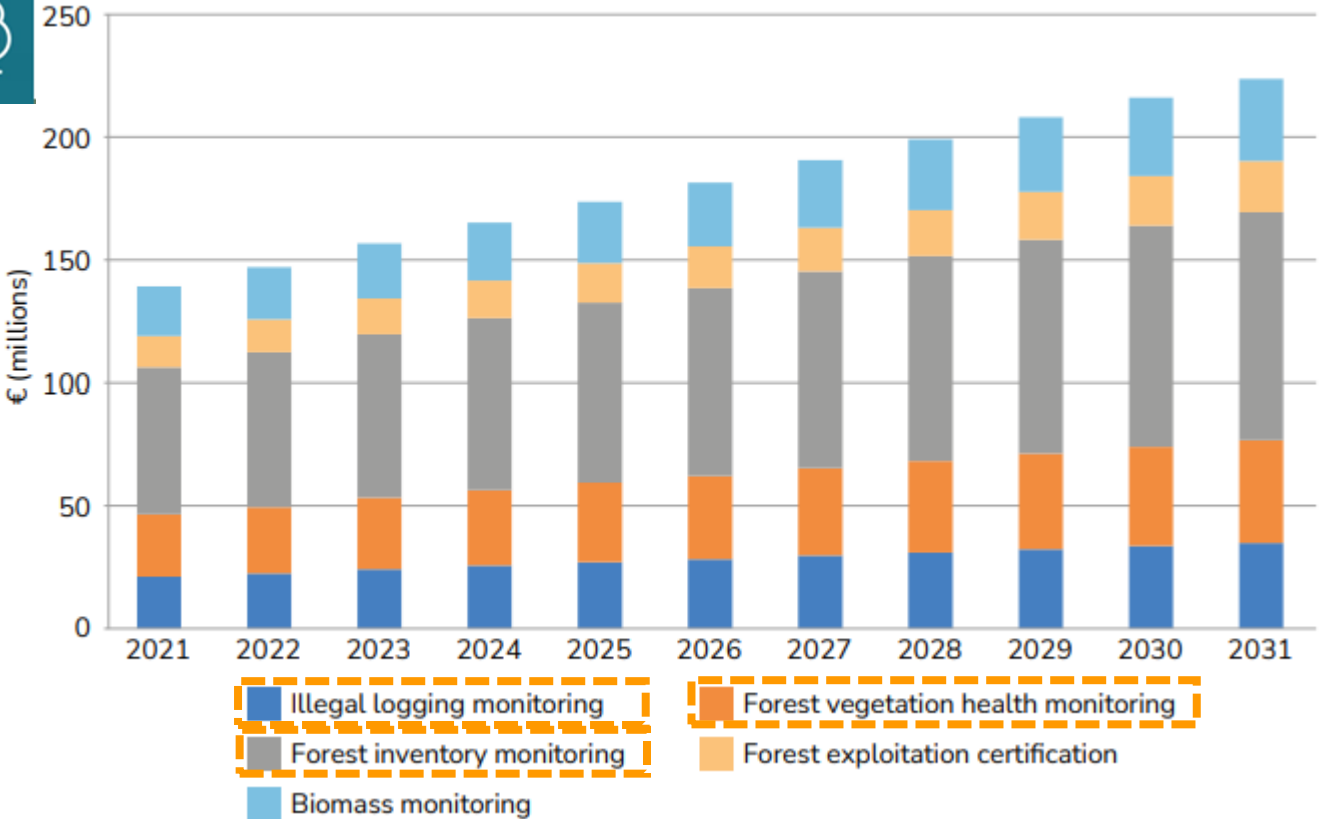


EO data and service revenues are set to double over the next decade

Distribution of revenue by segments (€m, 2021)



Revenue from EO services sales by application



Much more to read.....



New edition including Earth Observation and GNSS user needs and requirements for both Agriculture and Forestry to be released in Q1 2024

EUSPA funding tools stimulating innovation and fostering EU space ecosystem, incl. start-ups & SMEs



Develop your solution



- Cassini Hackathons / Challenges
- Cassini myEUspace
- Cassini Business Accelerator
- Horizon Europe
- Fundamental Elements

Get advice



- Technical advice
- Business advice
- EUSPA Space Academy

Connect with investors



- Very early stage – EBAN, crowdfunding
- EIC Accelerator
- Venture capitals
- European Investment Fund
- European Investment Bank

Find customers



- Contacts with industry
- Networking events
- Dedicated promotion

Subscribe to our entrepreneurship@euspa.europa.eu newsletter to get monthly updates on available opportunities for startups

Horizon Europe Call 2023



Strategic autonomy in developing, deploying and using global space-based infrastructures, services, applications and data



Deadline: 14 February 2024

| Type of Action | Topic | Indicative budget (EUR mln) | Funding rate |
|----------------|---|-----------------------------|---|
| IA | EGNSS - Transition towards a green, smart and more secure post-pandemic society | 3.5 | 70% (except for non-profit legal entities, where a rate of 100% applies) |
| IA | EGNSS - Closing the gaps in mature, regulated and long lead markets | 8 | 70% (except for non-profit legal entities, where a rate of 100% applies) |
| RIA | Copernicus-based applications for businesses and policy-making | 7 | 100% |
| RIA | Designing space-based downstream application with international partners | 6 | 100% |
| IA | EU GOVSATCOM for a safer and more secure EU | 10 | 70% (except for non-profit legal entities, where a rate of 100% applies) |
| TOTAL budget: | | 34,5 | |

Copernicus related



Innovation action (IA)

Activities to produce plans and arrangements or **designs for new, altered or improved products, processes or services.**

Research and innovation action (RIA)

Activities to **establish new knowledge** or to **explore the feasibility** of a new or improved technology, product, process, service or solution.

SWIFTT: Copernicus use cases

Satellites for Wilderness Inspection and Forest Threat Tracking



Protect forest health and production with an early warning system of forest threats, using space data and Artificial Intelligence



Coordinator (SME): **wildsense**

9 participants from: 

SWIFTT: Copernicus use cases

Sentinel-2 data used to track trees attacked by insect outbreaks

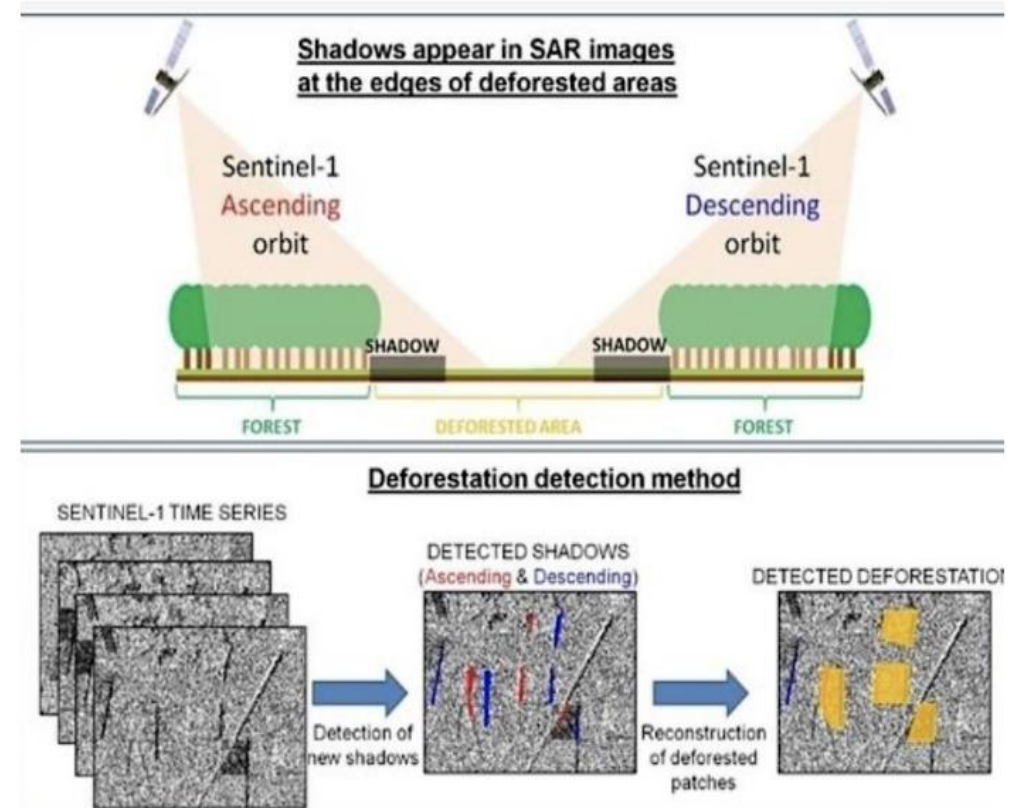
- The key metric used for this purpose is the **Normalized Difference Vegetation Index (NDVI) based on Copernicus Sentinel 2 data**
- ✓ When an insect outbreak occurs, the affected trees experience stress, leading to changes in their spectral signatures.
- ✓ This can be observed as a decrease in NDVI values over time.
- ✓ Analyzing changes over time forest managers can identify areas of infestation



SWIFTT: Copernicus use cases

Sentinel-1 radar data used to analyze the impact of windthrow on forests

- When a windthrow event occurs, the affected trees may be uprooted, snapped, or bent, leading to changes in the backscattering coefficient over time.
- By analyzing these changes in Copernicus Sentinel-1 radar data, we can:
 - identify areas impacted by windthrow,
 - assess the severity of the damage,
 - support decision-making for forest management and recovery efforts.





CASSINI Challenges

Are Now Open

Prize Pool
of €1 Million

cassinichallenges.eu

Commercialising space technology with CASSINI Challenges



New innovation competition to encourage EU space entrepreneurship and business development



Development of innovative solutions, products or services based on Galileo, Copernicus and their synergies with other technologies

Three tracks from ideation to product development to commercialization

Sustainable Future
Challenge



Emerging Technologies
Challenge



Next Generation
Challenge



We are looking for:

Thinkers. Challengers. Doers. Creators. Builders. Innovators.

CASSINI Challenges




€ 1.000.000
PRIZE POOL


30
AWARDS

9 February 2024

Deadline for the submission of a Prototype



19 April 2024

Deadline for the submission of a Product



Track "Submission of an Idea":

~~•The first 15 ranked applicants that submitted an idea – independently of the innovation area they applied in – will receive a prize in amount of € 10,000 each~~

Track "Submission of a Prototype":

•The first 10 ranked applicants that submitted a prototype – independently of the innovation area they applied in – will receive a prize in amount of € 30,000 each

9 February 2024
Deadline

Track "Submission of a Product":

•The first 5 ranked applicants that submitted a product – independently of the innovation area they applied in – will receive a prize in amount of € 100,000 each

19 April 2024
Deadline



Discover the CASSINI Hackathons

6 Hackathons (2021-2023)

60 Local Organisers

10 per edition

Hybrid

Local

European

Global Themes



► Why the CASSINI Hackathons?



Contributing toward solving important problems for society & industry



Fostering the next generation of entrepreneurs & problem solvers



Creating a truly a pan-European experience



Connecting industry with the EU Space ecosystem

<https://hackathons.cassini.eu/>

MATCHMAKING

CASSINI Matchmaking with Investors

CASSINI Industrial Partnering

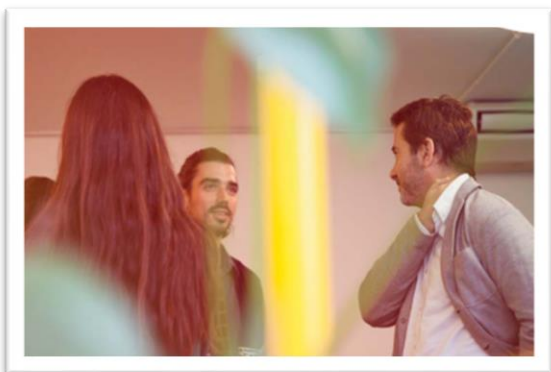


CASSINI Matchmaking

Objective: Step-by-step support to start-up, scale-up companies and SMEs to **improve their ability to attract venture capital funding** and **form industrial partnerships**

CASSINI Matchmaking will feature two tracks:

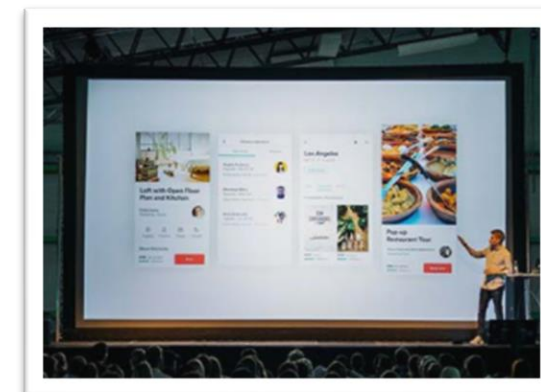
- **Investor matchmaking:** links between startups and VC funds
- **Industrial partnering:** links between startups and large corporations



- ✓ Startups, scaleups or SMEs can benefit from direct access to investors



- ✓ Investors can get in touch with steady, high-performing companies with a great business solution



- ✓ Corporations can fuel innovation and make their organisations fitter for the future [#EUSpace](#)

CASSINI Business Accelerator

CASSINI Business Accelerator will offer entrepreneurs qualified business development support to:

- Develop **go-to-market plans** and sales methods
- Accelerate activities leading to **revenue growth**
- Raise **expansion capital**
- Expand business networks
- **Seed financing voucher** to successful participating companies



40 startup companies to be selected in 2023

~~Applications open until 31 March 2023~~

<https://www.cassini.eu/accelerator>



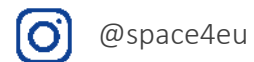
#EUSpace 



Linking space to user needs

Get in touch with us

www.euspa.europa.eu



EUSPA is hiring!

Apply today and help shape the future of #EUSpace!