

Industry view of the future of Copernicus

Position paper from the European Earth Observation Services industry

Summary:

The present paper describes the position of the European Earth Observation (EO) services industry [represented by EARSC] on the evolution of the Copernicus Programme in a long-term perspective.

The main points covered in this paper are the following:

- 1. Introduction**
- 2. Developing an agile Earth Observation system**
- 3. Supporting the Green Deal's objectives**
- 4. Contributing to security and emergency management purposes**
- 5. Recommendations**

European Association of Remote Sensing Companies - EARSC:

EARSC represents the Earth Observation geo-information services sector in Europe with today over 135 members coming from 25 countries covering the full EO services value chain including commercial operators of EO satellites, resellers of data, value-adding companies, geospatial information suppliers, consultancies and system/software providers. The sector plays a key role in providing value-added, geospatial information to its customers in Europe and the world. In 2020, the sector revenue in Europe was over €1.7b giving work to over 11600 highly skilled employees; The sector is dominated by SME's with over 95% of the companies having less than 50 and over 60% less than 10 persons employed. This paper reflects the views of the full members of EARSC, which are commercial companies, coming from Member States in the EU or in ESA, providing services (including consultancy) or supplying equipment in the field of remote sensing or using EO data. EARSC observer members are informed and may have commented on the paper but are not necessarily endorsing its conclusions.

For any further information on this position paper, please contact us at: info@earsc.org

1. Introduction

During the “[EU Space Conference - Copernicus Horizons 2035](#)” held in Toulouse in February 2022 Commissioner Breton acknowledged the success of Copernicus being the “best Earth Observation system in the world”¹. He also stressed the necessity to work on a “modernisation strategy” to rethink how it can better answer evolving needs towards becoming **more green, digital, and reactive**. Building the “Copernicus of Tomorrow” would then require focusing on two main objectives for Europe: (1) a Europe which is a pioneer in the battle for a green planet; (2) a Europe which is resilient and capable of projecting its own strategic power.”

EARSC considers the role of the EO industry of **paramount importance in the evolution of Copernicus as it is a key component of the ongoing digital transformation**.

The objectives supported by EARSC are the following: to **reinforce** the voice of the European Earth Observation data and services industry, **strengthen** the participation of the European industry in Copernicus, **ensure** that Copernicus’ evolution supports and complements the development of the private sector, leveraging and not crowding out existing commercial capabilities, data and services². All these objectives must be met having in mind the ongoing competition at a global scale.

2. Developing an agile Earth Observation system

The Copernicus programme has established Europe as a global leader in Earth Observation and is now the most advanced EO system in the world. Its public and commercial (CCM)³ satellite imagery provides valuable information at unprecedented quality and frequency. They can be leveraged across a wide range of applications, responding to evolving user needs.

Nevertheless, much remains to be done to support the further uptake of Copernicus data and services.

The modernisation strategy of Copernicus aspires to maintain the continuity of Copernicus services and add new elements. The overall objectives are to enhance the performance of data and amplify the role of Earth Observation within potential user communities. EARSC welcomes these ambitious objectives and would like to react to the industrial role through the following points:

- *Data*

The **continuity of services** is a priority for the industry.

¹ Find more elements in Annex.

² Note that this paper is complementing our previous [position paper](#) from April 2020 presenting the industry’s view on the evolution of the Copernicus programme in its next phase.

³ [The Copernicus Contributing Missions](#) (CCM) are missions from ESA, their Member States, EUMETSAT and other European and international third party mission operators delivering complementary data for Copernicus.

Looking to the future, the industry would like to emphasise on the **importance for Copernicus to improve capabilities**⁴. Today, multiple commercial data providers offer unique geospatial datasets that are interoperable and complementary to Copernicus data. This presents the Copernicus programme with an opportunity to leverage the latest technology already on orbit and at a fraction of the cost. Copernicus must take advantage of this availability and diversity to improve the capabilities of the data it provides. **The accuracy, frequency, variety and performance of the data will be key to provide efficient and innovative EO derived products and services.**

Additionally, the evolution of Copernicus Sentinels needs to be developed in complementarity of existing and upcoming investments from the commercial actors, providing long term support to the Copernicus programme.

- *Data access and Data policy*

Data access is crucial and should be one of the most important drivers of the evolution of Copernicus. Currently, a complexity in accessing the data prevents all users from fully exploiting the potential of the data. It is then crucial to guarantee easy online access to full historical data through European infrastructures.

Copernicus should provide as early as possible: online access and analytics including robust APIs, ubiquitous delivery mechanisms, simple and intuitive to use with the minimum of training and compute overhead. As much as possible, existing European capabilities should be utilised in the process, leveraging European platforms and developments.

Also, the data policy should ensure European players' competitiveness in the ongoing global context. **Trade and other ad hoc agreements** with non-European countries for the use of public and commercial data should be envisioned to seek for reciprocity of data provision. An example would be to allow access to space funds in partner nations to broaden and stabilise European commercial space investment.

- *Strengthening the competitiveness of the industry*

It is vital to maintain the industry's ability to serve the users' ever-increasing needs for information. This would thus strengthen Europe's strategic leadership and grow its commercial space sector, driving job creation and economic activity. To this end, adequate budgetary means and **greater cooperation between the public and private sectors are necessary.**

⁴ For example : concerning the latency from sensing to delivery, the use of Copernicus Data could provide much more value and generate more business opportunities in the emergency market if it was provided faster; concerning the revisit, a geostationary satellite with good spatial resolution would provide significant value to many applications (fires, floods, maritime emergencies, maritime security & safety, ect).

- *Anchor tenancy*

Europe should put in place a **significant, stable and long-term demand for EO services**, act on regulations and encourage Member States to do the same. Substantial market traction from government demand increases the industry's attractiveness for private finance, and activate the opportunity of consolidation through Mergers and Acquisitions (M&A) and increase funding rounds. The demonstration of government demand at the European level will cause a trickle down of confidence resulting in exponential demand across local and regional levels of government and other actors. In that regard, the model of **anchor tenancy** or alternative public-private arrangements should be considered.

- *From EO to Earth Intelligence*

The 'New Space' approach has been characterised by the entrance of new commercial actors alongside traditional corporate investors. This has led to increasing data volume and fostered further innovation in the downstream segment of the value chain, thus enabling multiple actors to become an integration point for Earth Observation data and value-added services. If we do not pave the way to a **transition from Earth Observation to Earth Intelligence**, the EO downstream industry will lose the opportunity to become the integration point of earth-related information, being a commoditised data source. New computing technologies will also need to contribute, activating new digital business models and enabling innovative value-sharing processes among actors and new go-to-market approach based on service model business, scalable in time and space.

3. Supporting the Green Deal's objectives

- *Unlocking the potential of EO data and services for the Green Deal objectives*

As the EU aspires to lead climate mitigation in the face of global warming, it is critical that action be informed by reliable and accurate information and services powered by EO data. Thanks to unprecedented technological innovations, EO now allows decision-makers to identify risks, tailor policy response and resource allocation, monitor progress and identify trends. However, the potential of Earth Observation data and services is not fully exploited. With the current and next-generation of Sentinels and the commercial satellite systems collecting vast amounts of data, **European policy efforts and investments must support the development of innovative applications to analyse and utilise these huge existing and upcoming amounts of data.**

- *Support of a systematic integration of EO capabilities in policies and legislative acts*

The Earth Observation downstream services sector advocates for a systematic integration of public and commercial EO-derived data and services in the legislative and policy initiatives in the field of environmental protection and climate change mitigation and adaptation.

4. Contributing to security and emergency management purposes

The Earth's rapidly changing climate has consequences in environmental security that can lead to humanitarian disasters and regional tensions in areas ranging from food security to widespread fires and floods. Considering the increasing needs for global civil security, the industry wants to underline that EO can provide crucial information to the relevant stakeholders in **supporting civil preparedness and response to environmental disasters**.

Whereas Copernicus can support civil security through the Emergency Management Service⁵, we should not overlook the need of **robustness and resilience of the entire Copernicus data and services**. In particular, the redundancy of the infrastructure is critical and the capacity to react should be further developed expanding the constellation low latency application services.

5. Recommendations

Members of EARSC have been highly involved in the Copernicus programme, and are continuously developing efforts also to expand the commercial applications derived from it, both in Europe and abroad, contributing thus to Europe's global leadership in EO. The industry is looking forward to the opportunities offered by the evolution and the modernisation of the Copernicus Programme in a medium and long-term perspective.

Building upon these elements, the European EO services industry would like **to recommend the following points**:

- The Copernicus programme should contribute to the competitiveness of the European industry and be further supported in the long term and adequately funded, whilst remaining open and free, for all European actors.
- The program should fulfil the demand anchor for services provided by European Industry and guarantee efficient use of taxpayer money whilst ensuring synergies with commercial investment.
- A systematic integration of EO capabilities in policies and EU legislative acts whilst encouraging the implementation of EO-based policy support at the European level and supporting the adoption of similar practices at national, regional, and local levels through demonstrator projects targeted at public institutions to increase confidence at the demand side.
- To maximise the maturing power of Europe's commercial space actors (Large System Integrators, Mid-Caps, SMEs and startups), and foster competitiveness, both in Earth Observation and value-adding services, the Copernicus programme should leverage the variety of existing commercial missions and pertaining complementary EO datasets.
- All the data acquired by the Copernicus programme should be available through high-performing, easy-to-use and interoperable digital access and secure technologies. Existing European solutions should be supported in the area of data access and analysis.

⁵ <https://emergency.copernicus.eu/>

Annex

Back in 1998, a group of experts signed the Baveno Manifesto, proposing the creation of a European environment monitoring programme. This vision gave rise to the Copernicus programme; the largest and most ambitious Earth Observation programme ever implemented worldwide. Since then, many evolutions, both at a technical and political level, shaped the programme. The adoption of the [2021-2027 EU Space Programme](#) in April 2021 secured an envelope of 5.42 billion euros for Copernicus and the development of the six Sentinel Expansion missions to expand the current capabilities of the Copernicus Space Component in the upcoming years. Twenty-four years later, the Copernicus Programme has proven to be highly successful, serving European needs and recognizing the important role of the industry. Given the opportunities in terms of technological development and industrial growth, the European Earth Observation services industry has always supported Copernicus. Whilst Copernicus is first and foremost a public programme serving public information needs, its data and information can be also complemented by commercial and other data sources and be used for commercial business purposes. Copernicus' success in this area is proven by its capacity to incentivise private investment, fostering an innovative commercial ecosystem that complements and enhances public provision of data and services under the Copernicus programme.

The past two years have certainly shown the potential of Copernicus and Earth Observation capabilities for Europe. The consequences of climate change have demonstrated the vital importance of the European Union taking action to develop innovative solutions for tackling current and future environmental challenges. At the nexus of the **green and digital transitions**, Copernicus enables us to understand our Earth better and support policy makers in taking decisions that improve sustainability and resilience. As climate change and environmental degradation are an existential threat to Europe and the world, the European Union has set as a priority [the European Green Deal](#) with a package of legislative measures to transform the European continent into a modern, resource-efficient and competitive economy by ensuring no net emissions of greenhouse gases by 2050. The current geopolitical context also put the focus on ensuring a strategic autonomy for the EU with a more resilient Copernicus. Last but not least, the European Union has established EUSPA ⁶ which is running an ambitious program for downstream space applications, including EO ⁷.

⁶ <https://www.euspa.europa.eu/>

⁷ <https://defence-industry-space.ec.europa.eu/system/files/2022-03/EUSpace%20Factsheet%20EN.pdf>