

Copernicus Evolution: Fostering Growth in the EO Downstream Services Sector

Summary:

Copernicus is a European programme designed to meet the needs of the public sector for space-derived, geospatial information in support of policy making. Public expenditure on the programme can also be used to support economic goals through commercial use of the data and information that Copernicus produces. The EO services downstream sector is enthusiastic about the opportunities that this can present and has been an active participant to the programme from the outset. Now, as the European Union evaluates its next steps, we consider that it is time to **re-enforce the governance to include the voice of industry** alongside other stakeholders. This should go hand-in-hand with an **industrial strategy** based on a **service-led approach** and coupled with a **Strategic Research and Innovation Agenda** to help develop the sector.

Copernicus

Since its inception in 1998, Copernicus has become a key European programme; a flagship of the EU. It has fulfilled the early vision to provide a long-term commitment to *“the development of space-based environmental monitoring services, making use of, and further developing, European skills, and technologies”* and is now a highly-successful example of European co-operation.

After the initial operations phase (2010), Copernicus became operational with the adoption of the council resolution (2014) shortly followed by the launch of the first satellites. Today, Copernicus is the largest Earth Observation Program ever implemented worldwide. As the system becomes fully operational, thoughts are turning to the next financial perspectives, when a renewed commitment will be made. This is driving a reflection on the evolution of the programme into the next decade.

Whilst Copernicus is first and foremost a public programme delivering public information needs, the same data and information can be used for commercial purposes and be complemented by commercial sources. In the age of the digital economy, data becomes a key “raw material” to develop new products and services. The recently adopted space strategy for Europe¹ recognises the importance to:

“maximise the benefit of space for the society and the economy, by creating a European market for space based applications and services. For this we need to shift our focus from building the infrastructure to creating the right environment for the space data economy.”

EARSC fully supports this goal and that in addition to its public, geo-political, strategic importance Copernicus provides an opportunity to develop European commercial capabilities. This was more recently affirmed by Commissioner Bienkowska saying²:

“we need to foster a competitive and innovative European Space sector”

Whilst many, very positive measures have already been taken, we consider that, building on the public expenditure, additional actions can further enhance the economic potential. In particular, an industrial strategy for the downstream industry and a voice in the programme governance becomes essential. This paper provides the views of the EO services industry sector, represented by EARSC, on how the evolution of the programme can deliver further growth for the European economy.

European EO Services Industry

EARSC, on behalf of the EO services industry, strongly supports the actions which have been taken and recognises the many successes achieved. The industry has been an enthusiastic supporter of Copernicus from the very beginning, recognising the transformation potential it provides for the sector. This led to active participation to and investment in, R&D pre-operational programmes devoted to designing and setting up the services with users.

In 2016, the European EO services industry had revenues of €1b, growing at over 10% per annum and supporting 7000 highly skilled jobs. But as we prepare to enter the 4th phase of the “Copernicus”

¹ COM (2016) 705, A Space Strategy for Europe.

² At the launch of “Copernicus goes local” in the European Parliament on 6th June.

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programme, the EO services industry faces a rapidly changing competitive environment with a strong shift towards a market for digital services favouring actors in the IT sector; dominated by US players. This creates both an opportunity to use and benefit from the heavy investments possible by the likes of Google, Microsoft and Amazon but also a threat of subjugating control of a company's business model to the decisions of others.

Copernicus holds the key to ensuring European companies are positioned to exploit this new, emerging market. As the sector develops, with new commercial sources of data become increasingly available and new innovative applications are developed, the **industrial perspective** and initiatives taken must be reflected in the evolving programme.

An Industrial Strategy for Developing the Downstream Sector

An industrial strategy for EO services should be built upon 3 pillars:

1. Sustained Access to Data.

Copernicus has been established along classical lines where the public-sector buys and operates space infrastructure. This has led to the free and open data policy supported by the downstream industry as a means to promote innovation in new products and services.

When Copernicus was decided, the commercial market was less developed and at the time a service-led approach was not considered. Since then, the market has changed substantially with many new companies entering into the competition to supply data and services.

As introduced in the space strategy, **a service-led approach should be considered in all aspects of the programme.** Where the commercial demand is strong, private investment can be mobilised. Where it is less strong then a commitment to buy data – an anchor tenancy – can reduce risk and allow private sector investment alongside funding from the public sector. Only where a commercial market is absent should a fully-public, infrastructure-focused approach be considered.

This approach can enable data providers to invest and scale-up through enhancement of the Copernicus Services and thus provide the downstream sector with a high-quality offering. Hence, when new data sources are necessary to meet new information needs, for example for carbon monitoring, polar observations or security, the **commercial sector views should be introduced at a very early stage** to:

- a. Ensure that modifications to the specifications are considered which can enhance the commercialisation potential.
- b. Maximise private engagement where new Sentinel satellites and commercial sources are complementary.
- c. Discuss and prepare the appropriate procurement model for the data and information including the appropriate data policy.

Where the market is under-developed, demonstration missions can test the public-sector demand and establish the processes and structures to incorporate geospatial information into decision making. At the same time the commercial market for the same data should be tested. If the need proves to be sustainable, the reduction of the market risk will allow an effective **public-private approach with the**

potential to bring private investment. Once the market risk is understood, a data-buy or anchor tenancy policy should be followed.

2. Organise, Understand and Expand Demand

Further efforts to expand the demand from both the public sector and the commercial market are necessary. According to the EARSC industry survey³, public users constitute 50% of the EO services market. In partnership with the public sector, industry will continue to invest, to organise, to understand and to expand the overall market.

On the public-side, 7 different public-sector bodies – the EEE's - have been assigned the responsibility to procure and deliver the Copernicus Services. The industrial participation in the supply-chain for each service differs significantly according to the nature of the service and the competencies of the EEE. We estimate that around 25% of the budget for the services is spent with industry which is critical given the potential for industry to leverage capability into new markets. A stronger procurement capacity within each EEE would help so **that industry can play progressively a greater role.**

Each EEE is well-placed to organise, to understand and to expand the public demand. This works best where the EEE has a direct, operational responsibility at European level to deliver this information to public stakeholders. Where this is the case, we consider that they are best placed to continue this effort. A stronger partnership with industry is needed **to ensure that the public-market demand is transformed into an efficient and effective supply.**

Where there is no such direct responsibility, an EEE is playing a role which risks to become competitive with the industry sector. This is the case for all EEE's as additional products and services are brought under the responsibility of the Copernicus Services. The EC proposes to introduce measures to help bring clarity to the roles of the public and private sectors. We welcome this move and will support the goal to **stabilise the boundary between public and private actions** for Copernicus. The issue is less, where the boundary lies, as to it not shifting so discouraging private sector investment.

Evolution of Copernicus should in every case take account of the capability for supply coming from the private sector. New proposals, for example products for monitoring coastal regions or ground movement, where industry already has capacity, should be organised in such a way as to **take maximum advantage of the industrial capability.**

Existing procurement is not enough; the use of Copernicus should become more explicitly linked to public policy. Copernicus can be used to **stimulate pilot projects demonstrating how the use of EO products and services can re-enforce existing policies** and even stimulate new policy initiatives. In some cases (as in the case of Swedish forestry⁴) lighter regulation can result; in others (eg. CAP), new measures become possible better linked to societal goals. In this respect, **public agencies need to become an instrument of industrial policy** so promoting economic development as a benefit of public expenditures.

³ EARSC Industry survey 2017; The State and Health of the European EO Services Industry; July 2017.

⁴ Forestry Management in Sweden; Case analysis on the Economic Benefits of Sentinel Data; EARSC January 2016 – study funded by ESA.

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Copernicus requirements should incorporate needs that increase the potential for commercial exploitation of the data. We consider that an improved process should be put in place to gather the requirements from all stakeholders ie the arrangements which exist between the EEE's, the industry and the EC should be made to work better. Greater co-ordination between the public and private stakeholders will improve the overall process and efficiency but it must be **built upon the mechanisms already in place** since to bring a new, additional player into the picture would in our view be very counter-productive and disruptive. Industry is ready to play its role in a process which must operate **under the direct authority of the European Commission** to ensure a level playing-field.

3. Unleashing Downstream Capacity

As Member States have invested in the upstream technology, downstream actors have emerged to exploit new capacities. Yet the diversity of actions has created the fragmented industry which exists in Europe today. This is exacerbated by the presence of many public bodies, legitimately fulfilling their mandate yet encouraged to exploit their capacity in ways which compete with the private sector.

In the US, a clear distinction and definition of the role of public agencies is one key factor contributing to strong, private investment into new ventures for launching satellite constellations or EO products and services. In Europe, it is more complicated with 28 Member States having different views and differing institutional settings. The EC can take a lead to organise a coherent picture for Copernicus to **ensure an appropriate arrangement** reflecting public sector and private sector suppliers able to meet market demand.

Whilst competition is a good thing amongst companies operating with more-or-less equal rules, when public bodies enter this arena it becomes an un-level playing field. Public supply of Copernicus Services shall be preferred only when no proven commercial capacity is available. **R&D actions shall foster industry to build missing capacity where it is appropriate to do so.**

Downstream industry seeks also to build upon the core Copernicus free and open public services to develop more market demand. The **EEE's and the private sector need to work much more closely together** to enhance exploitation of Copernicus. An informal partnership can bring a significant step in enhancing an entrepreneurial culture.

Research and development actions should be intensified within a strategic road-map ie a Strategic Research and Innovation Agenda⁵ brought forward by the industry. A key element of this is enhanced co-operation and partnership between industry and the public stakeholders to **ensure that the results of R&D projects are used where possible to enhance Copernicus**. This can be linked to specific measures through action on skills (cf Erasmus+) linked to the evolving industry-sector skills needs, further supporting growth in the sector.

Additional initiatives should also be pursued to attract private finance. Advances have been made but institutions such as the EIB lack the technical expertise to provide debt and equity specialized for the

⁵ *Assessment of the role and participation of the European services industry in the EU Earth observation research and innovation actions: Final Report June 2017. PwC & EARSC.*

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new emerging industry. **A specific financial facility should be established**, managed by existing institutions and backed up by adequate technical knowledge.

Conclusions

Copernicus has been successfully created as a tool for European decision makers. It provides an excellent opportunity to capitalise on the public expenditure whilst evolving into an even more powerful tool to deliver economic growth and jobs.

Excellent steps have been taken, but further efforts are needed if we are to consolidate on this and other measures. Helping Europe cultivate a stronger entrepreneurial spirit must remain a key goal. **A stronger partnership between the drivers of the programme and industry** is necessary.

The industry view has been almost absent in developing the Copernicus programme so far. Given its goal to foster the development of the downstream sector we find this lacuna hard to understand.

To correct this anomaly, and to realise the goals described in this paper, **a revised governance structure is necessary. The industrial voice must be introduced**, bringing the views of the commercial sector to the table alongside that of other stakeholders so improving Copernicus as an instrument of public policy.

European Association of Remote Sensing Companies - EARSC:

EARSC represents the Earth Observation geo-information services sector in Europe with today 90 members (80 full members and 10 observers), coming from 23 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, geo-spatial information to its customers in Europe and the world. In 2016, the sector revenue in Europe was over €1b giving work to 7000 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.