

## **EARSC Views on**

### **European Space Strategy**

Developing the Downstream EO Services Sector in Europe.

*EARSC, the European Association of Remote Sensing Companies represents the Earth Observation geo-information services sector in Europe. Today EARSC has 75 members (64 full members and 11 observers), coming from 22 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 EO 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 2012, the revenue of the sector in Europe is €750m giving work to 5000 highly skilled employees and is growing at around 10% per annum. The sector is dominated by small and medium enterprises with over 90% of the companies having less than 50 and over 60% having 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.*

## European Space Strategy

Developing the Downstream EO Services Sector in Europe.

### Introduction

The downstream, EO services sector in Europe faces a rapidly changing environment. After many years where demand has grown steadily based on a limited supply of public and private satellite data, the number of sources is exploding just as in Europe the Copernicus programme starts to become operational. Enabled by the technology advances in the IT industry, the shift of focus is moving away from dedicated and bespoke services to a rich panorama of on-line services serving a new emerging market for geospatial information. These developments herald new opportunities for the European industry but also new threats. In this short paper, building on a similar one from 2015, we shall outline these and make some recommendations on how they can be addressed. Our overall message will be that to succeed, the public and private sectors need to work together in a close and effective way and that an industrial policy for the sector is sorely needed.

### Context

The European EO services industry has seen steady growth over the last few years of between 8-10% such that today, it comprises over 500 companies distributed throughout Europe generating revenues of €950m<sup>1</sup> in 2014. However, most of these companies are small (65% have less than 10 employees and 95% are <50 employees) and fragmented amongst the 28 European Member States. Whilst the technological skills are first-class, they lack the means to access a global market.

The EARSC survey also confirms that some 65% of the revenues of the sector comes from governmental sources so that whilst the industry has managed to make progress in commercial markets it is still highly dependent on procurement and support from the public sector.

In the US, an anchor tenancy approach which has underpinned the business of DigitalGlobe for the last 10 years, is being complemented by new measures to procure data and Geo-intelligence (GEOINT) from private sources. The NGA CIBORG initiative will give a strong boost to commercial data suppliers and measures to outsource the supply of GEOINT will do the same for value-added companies. Europe lacks the organisational structure to offer the same policy advantages.

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<sup>1</sup> Survey into the State and Health of the European EO Services Industry, EARSC, September 2015.

In the upstream, space-manufacturing sector, the European industrial policy managed by ESA over 30 years has led to a situation where the European industry has built 2 leading prime contractors competing on the global market and an established supply chain throughout the Member States. Today, the European industry derives over 50% of its revenue from commercial business contrasting with the US where only 10-20% comes from commercial sources and the sector is driven by government, military business.

As new technologies become available to support the delivery of geospatial information to meet policy needs, security of the supply of satellite data is still of fundamental importance but diversity of sources is making this of less concern. Instead the focus must now move to the sustainability of information since the strategic aspects and European non-dependence is as important as ever. It is not just satellites that feature in these considerations but the whole value-chain covering all types of data sources and value-adding capability together with the technology necessary to handle and deliver these products into the hands of the policy makers.

New technologies and business models have opened the way to more private investment as can be seen especially in North America with the advent of Skybox Imaging (now part of Google), PlanetLabs, Urthecast and many others. New space nations are launching their own satellite capacity and space-derived imagery is becoming a commodity. By reducing the cost of the imagery, the market is being opened to new players in the downstream sector and especially data coming from the Sentinel satellites which will be made available for free. These disruptions to the marketplace are causing companies to rethink and agility in the market is key.

At the same time the power is shifting from the data supply side where Europe does have strong players in the global market to the processing and distribution of information. This requires platforms capable of enabling ease of access to data from a multitude of sources, with large and distributed processing capacity so providing value-adding companies with distribution systems which reach out to all corners of the market. This trend is favouring the large IT companies which are particularly strong in the US but largely absent in Europe. As they become a key channel to the market those owning the platforms will take control of the distribution of critical geospatial information.

The good news is that Europe does not have to compete with the business models of the goliaths of Google, Microsoft, Amazon or Apple etc. But we do need to establish rather urgently a competitive business platform in geospatial services. Public demand in Europe alone is insufficient to sustain the business, hence Europe's industry must compete and be successful in the world market. Europe has a choice, it can rely on purely public sector supply and demand, with the associated costs to governments to sustain European capability, or it can create the conditions to help develop one or more global players in geospatial services.

### **Copernicus as a Key Economic Instrument**

From the outset, Copernicus was conceived as a programme to bring a more coherent and efficient approach to the development of satellite observation capacity than the fragmented national efforts

had up to then delivered. With the goal to deliver critical geospatial information to European policy makers, it was set against a background of past privatisation efforts, and was born in the shadow of the unsuccessful European efforts to bring private investment into Galileo through a PPP scheme. Hence Copernicus became a fully public programme devoted to meeting public needs.

More recently, it has become recognised also as an instrument for economic policy. This dual aspect is very welcome but we have lost many years which could have been used to position the European actors in order to maximise the potential for exploitation. As we noted above, it took 30 years to achieve a European organisation of the upstream sector. We do not have 30 years to do the same downstream. What can we now do to try to recover this lost time?

One lesson which should surely be learned is that in many cases, not just in the space sector but linked to all public policy, an industrial or an exploitation policy set up alongside the main policy goal can help governments meet their core needs whilst using the same instrument as an industrial motor. Had this been developed during the early days of GMES, then we could be much further forward than we are today.

Despite the lack of an overall approach, Europe has all the necessary skills, competences and technology to succeed. A market driven solution is needed today rather than one driven by national objectives or technology push. EARSC is promoting this through an industry-led initiative to create a European Marketplace for EO Services (see EARSC position paper). What do we need from the public authorities for this to succeed?

### **What must be done?**

An overarching strategy should be developed which can address the concerns of the EO services sector expressed in this paper.

Despite the various efforts made to date to bring about substantial growth in the downstream EO services sector, EARSC's research shows that the industry remains relatively small and dominated by micro-enterprises. These are ill-placed to succeed in a global market where the major IT players are increasingly dominating key parts of the value chain and whilst a European SME can benefit from this as an opportunity they also expose themselves to a serious threat. Google has already acquired Skybox and if a large market in information services does develop as many believe, any European success can be quickly stifled by competitive reaction from the IT companies<sup>2</sup> which are many times larger than European EO Service players<sup>3</sup>; some 10 to 20 thousand times larger on average.

The free and open data policy was/is designed to help the downstream sector but alone this is insufficient and Europe must find the ways to leverage the Copernicus investment into the market place.

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<sup>2</sup> Market Capital of Google/Alphabet is \$495b, Amazon is \$340b.

<sup>3</sup> Average European medium company (50 to 250 employees) revenue is around \$10m per annum (from EARSC Survey of the European EO Services Industry, 2015)

An abundance of national efforts has led to fragmentation and duplication of capabilities in Europe and has inhibited the development of European champions which can compete with the large US players. In some other sectors, aerospace being the best example, EU actions have caused a coalescing of efforts leading to global champions. A similar effort is now necessary in the EO services sector, recognising that the result could take one of several forms, but this will take time and national preferences mean that industry cannot achieve this alone.

There is much that can be done that would help our sector to overcome its main barriers to growth:

### 1. Leverage Copernicus and improve the public-private interface

Copernicus represents a great opportunity for Europe to take a lead in the market to deliver EO services. The significant public investment should be leveraged to stimulate industrial development and organisation. The free and open data policy is designed to maximise innovation and creation of new products, but the large number of micro and small enterprises will need to find willing customers.

One of the key aims of the Copernicus programme is to help bring about such a shift of attitude and perception amongst potential users and customers, especially those in the public sector, but the process is very slow. The private sector can play a key role in this process but cannot act alone. Of key importance is to ensure that the necessary infrastructure and mechanisms are in place which can make accessing all types of public data and information easier. Through a joint effort, privately owned data can be introduced alongside that from the public sources.

Indeed, this could be used as the basis for an initiative which could revolutionise the sector in Europe. Information services is likely to emerge as a major market sector in its own right, serving both commercial / industrial sectors and governmental needs alike. A large (distributed) data and information archive (in traditional paper terms it could be referred to as a library) could be the basis for combining both public obligations and private sector aspirations. The EC along with ESA and Eumetsat could take a significant step forward here starting with geospatial data sets on which many policies and markets depend.

#### **Key Measure 1: Enable easy and efficient access to Copernicus and other data and information.**

- Leverage Copernicus by facilitating the access to Sentinel data and Copernicus Services for exploitation by industry through a new platform service which also supports collaborative efforts by Member States.
- Ensure the availability of necessary, large-scale infrastructure allowing for the storage, management and processing of and access to big data sets. It should help facilitate pan-European networks linking bid and open data sources and providing access for public-service users including research.

- Consider a wider initiative for access to open-data enabling European open data to be easily accessed through common platforms so as to simulate a European information business and growth in the services marketplace.

### **Key Measure 2: Maximise the exploitation potential of Copernicus**

- Take action to stimulate the public demand for Copernicus products and services by public users; meeting their geospatial information needs. This will help to structure and develop the public market in Europe where public use of EO services is estimated to be around 50% of the overall market. Given its importance, without the motor of public sector demand, the downstream sector development is limited.
- Ensure the industrialisation of Copernicus services so that companies have home markets as a reference when seeking to develop others.
- Clarify the boundary between public institutions supplying geospatial services and private industry. Too often we find private industry having to compete with public sector institutions for EO service development projects.
- Adopt industrially focused quality measures to maintain the standard of services expected by policy makers.
- Funding of projects to develop international partnerships. The free and open data policy for Copernicus has been supported by industry as a means to bootstrap the market. But this is only an advantage to European companies if they are able to beat their competitors on the world stage. A programme to help the industry establish positions in these markets is urgently needed if the free and open data advantage is not to be lost.

## **2. Research and Development**

Whilst we appreciate that the EC does seek the views of user communities in defining programmes, as well as seeking impartial advice from advisory bodies, these can often be dominated by the research and space technology sector viewpoints, biasing programs towards scientific and technological requirements. A major proportion of R&D projects are still being undertaken by public institutions and national public funds, channelled through European programmes to meet operational requirements.

Missing is the EO services sector perspective, to define from the outset how programmes will be exploited and how investments will generate returns. For example, no industrial representative from the sector has any voice in the Advisory board for the H2020 space research programme.

**Key Measure 3: Increase R&D effort towards EO Services**

- Put users' geospatial needs first. Too often the focus of European investment has been on the space sector and particularly the satellites and their operations; focused more on the scientific merits of the programme, and less on the end-user sectors and their geospatial information needs. In order for our sector to help deliver societal benefits through technology driven advancement, the geospatial information needs of users should drive the focus of R&D investment.
- Increase the R&D budgets available for EO services. The current EU investment in EO applications research is not adequate to support the development of an industry sector – especially considering the small proportion which will eventually help to drive commercialisation objectives.

**Key Measure 4: Improve industrial participation and exploitation potential**

- Give more attention to the exploitation of research projects so as to strengthen the focus on practical applications hence driving employment and growth. A possible measure is to require an exploitation plan as an output of a project with additional resources available for projects meeting exploitation criteria.
- Avoid duplication of what already exists (ie cloud services) and be focused on meeting industrial and commercial exploitation goals.

This will require a wider-held perspective that growth in the sector must be led by the industry with public sector actors acting together to support this role. A partnership approach is necessary with the active support of the EU and its member States.

### 3. Market Structure and Uptake

A key challenge to the EO services sector today is the lack of customers willing to pay for geospatial information derived from space. The market will only reach maturity when there is widespread understanding of the benefits that EO services can bring, coupled with an understanding of the value of those benefits which results in a willingness to pay for them.

The EC must also act to understand and organise EU information need through the EC services. The EARSC survey<sup>4</sup> has shown that 51% of the market for EO services is in the public sector. This has led to a favouring of local or national suppliers, whether in the private or public sector, perpetuating and encouraging the fragmentation in Europe and preventing the emergence of strong European players capable of challenging the US IT giants.

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<sup>4</sup> EARSC Industry Survey 2012; The state and Health of the EO services industry in Europe and Canada.

International co-operative efforts such as GEO have sought to make data and information available to users worldwide. Given the wholly institutional nature of the effort the activities have not embraced private sector capabilities but more recently have started to seek private sector engagement. Organised correctly, this can be a useful tool to help promote industrial capabilities to worldwide stakeholders. However, the ambitions of the public sector players, the academic networks and the GEO secretariat itself, coupled with the nationalistic approach of many of the governmental stakeholders is driving GEO itself into a conflictual position.

Hence, action is needed from public policies to help the European market to develop. Copernicus provides opportunities around public procurement whilst other means should be used to help stimulate the sector. It is notable that in the US, the industry has not developed through a central policy and strategy but through a collection of policies all enabling the development of business; the most consequent being the 2003 Commercial Remote Sensing act which deliberately puts the focus on the private sector wherever possible. A similar approach could be taken in Europe.

### **Key Measure 5: Enable private initiatives**

- Introduce EU legislation or other measures, stating that activities should by preference be implemented within the private sector unless that is not possible due to economic (no business plan) or strategic reasons (concerns of national security)
- The public sector to procure services wherever possible; for example a service contract policy rather than public procurement of space assets.
- Facilitate the emergence of new business models along with innovative concepts for upstream, midstream and downstream sectors, including new partnering schemes addressing public-public (P2P) and public-private partnerships (PPP). This will allow the sector to evolve towards a robust and sustainable European Earth observation capacity which, in turn, is expected to stimulate further investments driving employment and growth.
- Create a specific financial facility for downstream industry development backed by patient investors offering access to both equity and debt

### **Key Measure 6: Introduce or utilise policies enabling market uptake**

- Encourage the uptake of geospatial services through an anchor tenancy approach for current and future geospatial services including those coming from new missions.
- Stimulate government demand for products and services by linking the use of Copernicus Services to public policy-making through legislation and use by European Agencies.
- Use of EU international policies, offices and other resources to support the sector in its goals. For example through regional programmes, export initiatives and collaborative agreements.
- Enable the link between the Copernicus Data and Information Access Service and the international efforts known as GEOSS.



- Ensure the EU EO geospatial services sector can participate to international initiatives such as UNFCCC, GEO, REDD+ and others which have a clear need for information coming from global EO data coupled with specialised value-adding expertise.

Hence action is needed by the EC to help structure and organise this market and the industry which can serve it. Only the EC can act in this respect in its role to organise the single European market.

### **Conclusion: A Partnership**

A Space Strategy for Europe is needed. The EO services downstream sector is facing a strongly changing environment offering both opportunities and threats. The sudden entry of major IT players into the (space) sector has strong implications for all the European actors. We must react to this and to do so we need to work together.

A formal exchange with the industry has long been called for by EARSC in order that the service sector views can be heard and taken into account for the design of future programmes. An EC-industry dialogue should be established to achieve this. A platform built around space topics can work provided that the governance allows the geospatial sector view to be heard.