

Introduction

Europe has a strong and diversified Earth Observation (EO) services industry capable of providing many products and services derived from satellite observations, other platforms and various geo-data across a wide range of applications. By its very nature EO has a global reach due to the satellites which carry the EO instruments orbiting the Earth or at least viewing one hemisphere of it. The industry is already active on the world market and today around 15% of revenues are coming from “export” markets. There is a large opportunity for these revenues to increase significantly over the next few years. However, most (>95%) EO companies are small or even micro-sized and find it especially difficult to develop a presence outside their home market. In order to facilitate the development of these markets, COSME has co-funded an international market development project run by EARSC, Pôle Mer Bretagne Atlantique (marine sector experts) and the Cluster Lucano Bioeconomica (agricultural sector experts). This project focuses on developing international (specifically Australian and Chilean) markets for marine and agricultural EO services, developed by the European private sector on top of Copernicus and private data.

Copernicus investments have been made primarily to serve public need, but they can also be used to generate economic benefit for European business. The free and open data policy offers the potential to grow the international market for downstream services, including those developed by European SMEs and micro-sized companies. However, while this policy is used to engender goodwill among national governments, this does not directly translate into increased opportunities for European business. To deliver economic benefits to European business from the Copernicus investments, an EU policy on Economic Diplomacy and internationalisation, providing a framework for a combined effort between industry and the public sector, is required. In furthering the development of external markets for European EO companies, EARSC promotes the following actions at both European and international levels.

Actions to promote international competitiveness

The EC supports the expansion of European industry to global markets through a range of initiatives e.g. Cluster Go International, IPR helpdesks, EU-Japan Centre for Industrial cooperation, Business beyond Borders and many more. The Earth Observation sector has been singled out in e.g. the Cluster Go International programme, with a dedicated budget to support international market development of the European EO sector. This support is greatly welcomed by the industry as represented by EARSC. To ensure that these resources are used effectively, when promoting European companies as a whole, a wide range of interests and priorities must be considered: European EO companies target a diverse range of countries and verticals.

Before promoting the sector abroad, it is important to ensure the required skills and competencies to succeed abroad are available/developed. This can be achieved through consideration of the following actions by e.g. COSME or specific R&D actions developed by DG RTD.

Internal adoption. Championing the benefits of EO based solutions in the international market will be most effective if the EU and Member States themselves are seen to be exploiting these technologies. The first step to building credibility for the EO sector in international markets is thus to enhance uptake of industry-supplied EO-based solutions within internal markets, creating useful references for the industry. We promote a systematic screening for the potential use of EO products within the Member States, the development of an environment that encourages the use of commercial EO products/services, and the use of innovative procurement practices, e.g. pre-commercial procurement to increase internal uptake of EO-technology and help to build the required expertise and credibility to effectively develop international markets.

Maintaining and promoting scientific leadership.

The H2020 framework provides support for European companies to engage in R&D in to provide industry-leading solutions in a global market. The continuation of this support under Horizon Europe framework is critical to maintaining this leadership. The Horizon Europe framework could expand the use of calls targeting specifically the development/adaptation of services for international markets, particularly those corresponding to ODA needs.

Promotion of EO as a cross-cutting technology.

Whilst dedicated, focused projects are welcome and necessary, a broad uptake of EO as an accepted tool across target markets within Europe is critical to fully exploit the technology's potential. For example, the development of smart cities, smart farming, smart logistics, construction and extractive industries can all be positively impacted through a further adoption and inclusion of EO data-based services, enhancing their international competitiveness and thus export potential. Open Research & Development (R&D) calls should be used which enable industry-led proposals to improve uptake of EO-based data over a wide range of projects.

Supporting partnerships. Despite differences in interests and priorities, several SMEs working together can often provide a more complete offer and address larger opportunities than one SME acting alone. An internationalisation effort should therefore also include measures to encourage partnership building amongst teams of European companies. Specifically, actions linking consortia of EO companies with European vertical market actors to exploit international markets (e.g. the EASME Cluster Go International programme) not only demonstrate European collaboration, but also develop sectoral competence within service providers which can then drive innovation and growth in home markets.

Economic diplomacy. The industry supports the European Commission/EEAS efforts to develop an economic diplomacy strategy. In particular, coordinated joint actions between the Commission, industrial players and the providers of Copernicus services (the European Entrusted Entities or EEEs)

could constitute a valuable strategy to position European capabilities on the international market.

Exploiting public and private data. The European industry has excellent experience with both the Sentinel satellites and data from other satellites. For example, European companies have been working with commercial data from TerraSAR-X, Pleiades and Cosmo-SkyMed as well as scientific data from institutional missions for many years. This broad experience can be extremely valuable in export markets where products need to be adapted to local conditions. Particularly, the temporal or spatial resolution provided by Sentinel data alone may not be sufficient to address the local needs and may therefore have to be complemented by higher resolution commercial data. In this context, an alliance between EO downstream service providers and upstream commercial data providers could encourage a competitive advantage for European EO service providers on a global stage.

Developing international markets

In parallel with preparing the European sector for international expansion, Europe must ensure that these markets are able and inclined to use European data and services to improve their own governmental and private sector performance/decision-making. This can be achieved through the activities described below.

Encouraging international partnerships. The potential to develop locally-tailored value-added services on top of Copernicus or private data presents one of the key opportunities for European companies to penetrate international markets. Specific R&D support actions, e.g. under H2020, could be implemented alongside Copernicus cooperation arrangements to promote pilot product/service development co-funded by the EU and the third country and co-developed by European companies and local entities. These local partners can, at a minimum, provide local thematic expertise and connections to relevant stakeholders as well as help to ensure access to the in-situ data necessary to derive local products and services. Through

specific agreements, Copernicus could support easy access to such data and foster these international partnerships. **The free and open data policy would be used in this way as an economic diplomacy tool** to help strengthen ties with third countries and promote technological and data exchanges that will directly benefit the European Industry.

Identifying appropriate opportunities. EU missions can play a key role in developing export markets through development of an awareness of the local landscape and identification of EO service opportunities as they become evident. The European External Action Service (EEAS) or DG DEVCO could act as a primary actor for these activities, providing market intelligence, acting as “radar” for local opportunities and adequately supporting an overseas strategy through the space task force. Such a primary actor can work in synergy with other relevant European Commission agencies, e.g. DG GROW and DG DEVCO, to coordinate economic diplomacy initiatives with other sector-specific policies. This relies on the lead organisation’s staff being well versed in the capabilities of EO as a cross-cutting tool, as described above. These staff could be briefed by appropriate EO experts so they can effectively identify EO uptake priorities in their region, including consideration of the most useful applications and the ability of local actors to integrate the resulting data into their decision-making processes.

Where European industry encounters difficulties entering a seemingly attractive market, the EC could investigate co-funding the establishment of an industry ‘front-office’ dedicated to identification and response to local tenders, to be delivered by European suppliers. This office could become progressively self-funded by those companies delivering products/services in response to tenders in that third country. Of course, a careful selection and consultation process with companies interested in penetrating that market along with any companies that have successfully penetrated that market should be engaged in first to avoid market distortion.

Establishing/confirming global environmental leadership. Copernicus can play a key role in

informing international environmental policies. The European Environment Council emphasised the role of European climate diplomacy in encouraging implementation of the global agreement on climate change reached in December 2015 (the Paris Agreement). **Specific reference to the use of Copernicus in achieving these goals can help EU industry in international outreach.** Copernicus and the EO Industry have the technical capabilities to offer a significant contribution in monitoring the effect of climate change and implementing strategies for climate change adaptation, as well as a range of other societal challenges e.g. deforestation and forest degradation, water management, fire response, flooding, urban sprawl etc. These capabilities can contribute in an international context to strengthening the role of Europe as a major player in climate diplomacy.

International development policies. Copernicus can be used to support Development Aid policies and so enable the use of EO data and services. Incorporation of EO in support of development actions can lead to **more effective monitoring of resources and programmes.** Such integration could be achieved via direct actions by DG DEVCO, supported by promotion to high-level government officials. Further actions may be possible linked to International Financial Institutions (IFIs) e.g. World Bank, Asian Development Bank, European Investment Bank etc., to incorporate EO products and services in their work for planning, implementation and monitoring purposes. The ESA sustainable development initiative, EO4SD, provides a valuable mechanism to help IFIs and their client nations harness the benefits of EO in operations and resource management, particularly in the areas of urban development, agriculture and rural development and water resources management. We encourage ESA to continue such actions, e.g. Space for IDA, to engage with IFIs to promote Copernicus data, European industry products and services and capacity training capabilities. The Group on Earth Observation (GEO) can also be leveraged to develop opportunities for implementation of EO services in SDG monitoring, specifically through its contacts with national government representatives and statistics offices and through its EO4SDG programme which

aims to promote the uptake of geospatial information and EO products to contribute directly to or support the production of SDG Indicators.

Developing capacity to use EO products. In addition to the development of capacity to use EO products in European MS agencies, capacity training programmes for third countries' agencies could be developed and promoted globally. **These programmes can benefit from the knowledge developed within the European private sector** over the past decades on capacity building and user training. The European EO sector has reached a level of maturity that allows it to act as an enabler of local capacities in technological and business terms e.g. the development of local EO companies or local branches to act as partners in potential joint ventures, and in user-driven terms e.g. increasing the understanding and uptake of EO technologies in key target markets such as agriculture or land monitoring.

A public-private approach. The EEAS and DG DEVCO can support industries in penetrating specific markets by providing local contacts and advice in overcoming procedural and cultural barriers and facilitating private sector exploitation of the EU brand. Similarly, the EEEs can collaborate with industry to promote the Copernicus services model to third countries, contributing to an increase in uptake capacity and market generation for EO products/services and training services.

The downstream impact of these activities can be reinforced by encouraging countries to implement policies that **foster an SME-friendly environment** in their region, as embedded in the GMES&Africa implementation concept. An increase in innovative young companies increases the likelihood that local solutions based on European services or data will be developed.

The role of EARSC

Under its core goal of helping the European EO sector develop new and existing markets, EARSC engages in a range of activities to support the international market development of the European EO industry. These measures include:

Conducting market research. Under the COSME co-funded IDEEO project EARSC has performed demand, supply and policy assessments on 6 countries for potential expansion of EO based services in the marine and agricultural markets. These data are supported by a concrete route to market through relevant umbrella organisations and institutions within those target markets.

Promoting European competencies. EARSC is pleased to support European Institutional efforts to promote the European EO sector by presenting the competencies and accessibility of the European EO sector at a range of events, e.g. TAIEX-IP mission to Bangkok in 2018, the Copernicus benefits for Singapore workshop in 2018, and the Philippines National Conference on Copernicus Systems and Applications in Manila in 2019.

Facilitating international collaboration/sales. One of the key pillars of EARSC is the development of a suite of online tools to help companies become more visible on the world stage e.g. the ESA-supported EOpages and eoMALL, both of which were actively promoted at the aforementioned international events. These tools allow international agencies to discover European talent (for collaborations) and services (for immediate solutions), respectively.

European Association of Remote Sensing Companies - EARSC

EARSC represents the Earth Observation geo-information services sector in Europe with today 121 members (111 full members and 10 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 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. This paper was prepared with support from the COSME co-funded project IDEEO (GA 783382).

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