EARSC position paper on an ESA Mandate to Develop the Downstream Sector

Introduction

As a result of the consultation between ESA and industry during the "High Level Industry Forum" organised by ESA in 2013, the 4th recommendation states:

> *"Industry suggests that Member States define an official/institutional mandate for ESA for the development of the downstream sector, bridging the gap between demonstration / developments and operations when no sustainable market can be addressed by an operator, driven by a community of users."*

As the organisation representing the European EO Services industry, EARSC fully supports this statement. In this paper, we set out some more detailed views and arguments on why we think the establishment of such a mandate is not only important but necessary for the development of the downstream EO sector.

Rationale

The EO downstream sector represented by EARSC includes all companies which are selling or undertaking business around the use of satellite data to deliver geo-information services. This includes the satellite operators selling their own or others' data, the value-adding sector which turns the raw imagery into geo-information, the GI sector which uses geo-information derived in some part from satellite data and sellers of ground infrastructure and software. EARSC believes that this sector is most in need of such measures, and as a result, is the sector which has the most potential to deliver significant increases in jobs and economic growth for Europe. There are three main reasons for this:

- An analysis by Euroconsult shows that market for downstream space services is currently split in the order of 76% to satellite communications, 21% to satellite navigation, and just 2% to Earth Observation. This shows that particular focus is needed to grow the EO sector.
- Public sector customers represent a very significant part [51%] of the downstream EO sector's current market. This market is unstructured and fragmented, with multiple end-

user organisations at national and European levels, and in its present form has very little impetus to adopt space services on a scale that will enable the EO sector to expand.

- Due to the restrictions that exist in public sector organisations in Europe, the amount of profit companies can derive from this market is very limited (typically 8%), and this limits the sector's ability to invest in its own growth. The majority [67%] of companies in this sector are micro-SMEs with less than 10 employees.

EARSC therefore encourages ESA to ensure that measures adopted in response to recommendation #4 are focused on the downstream industry sector with particular attention to the EO services industry. By industry we particularly mean private sector companies in Europe, as these are the organisations best placed to deliver economic development, growth and jobs through exploitation of R&D, innovation, exports. It is worth recalling that European industry does not have some of the advantages of its US counterparts, such as a defence customer as 'anchor tenant' or ready access to venture capital for higher-risk or speculative initiatives.

Recommendations

Our top 5 recommendations to ESA are as follows:

1. **Stimulate the full exploitation of space data and the development of innovative applications, with industry-led initiatives.**

   - ESA already supports significant R&D activities for exploitation of EO data, however many initiatives are led by academic or public sector institutions. With industry in the lead for such R&D activities, there will be greater focus on ensuring that exploitation and economic potential is considered from the beginning. EARSC would like to see more downstream initiatives targeted specifically at the private sector.

   - A particular challenge for EO service development and delivery is the availability of development and deployment infrastructure. ESA can help to ensure that suitable infrastructure is available to facilitate access to multiple and complex datasets (not just space-derived) and try out cost-effective mechanisms to promote data exploitation with new users. EARSC strongly supports ESA's plans that this infrastructure be user-centric helping to create virtual communities around data, tools and other resources of relevance to those communities. The "Thematic Exploitation Platforms" (TEPs) are an excellent start, but EARSC would like to see TEPs that have a business focus rather than science focus, made accessible at low or no cost to the downstream industry.

   - ESA can also do a lot to promote the awareness of EO services to different end-user sectors. EARSC would like to see continuation and strengthening of initiatives undertaken by the ESA Value Added Element (VAE) programme, many of which have been done in conjunction with

EARSC, to reach out to commercial sectors such as insurance, agriculture and the oil & gas sector.

- ESA can also help to enhance the perceived maturity of the downstream EO sector, for example with initiatives to develop European standards for the industry. Again, ESA has already undertaken activities with EARSC in this direction, working to develop customer-led certification and product specification schemes for the EO service industry, and we would like to work with ESA on more substantial initiatives in this direction.

2. **Create financial conditions for new initiatives to thrive and prosper.** EARSC is keen to see more financial support given to private initiatives - such support is largely absent in Europe.

   - The large majority (95%) of EO service companies are SMEs with less than 50 employees; companies of this size have particular difficulty accessing venture capital especially in the mid-range i.e. €5m - € 50m. We encourage ESA to help facilitate access to finance, especially by SMEs, by promoting the further development of innovative financial instruments and better use of existing instruments.

   - We understand that finance and investment needs to take account of the risk, as well as the maturity of the technology relative to the market (TRL/ARL), and factors such as the company profile (large/small). ESA can help financial institutions gain a better understanding of these factors as concerns the downstream space sector.

   - SME's have limited resources to invest in new product and service development themselves, and access to 100% R&D funding for the private sector is essential. EARSC would welcome more fully-funded ESA R&D initiatives in the downstream area, not just for feasibility studies but also for demonstration projects.

3. **Provide specific support to the transition of proven demonstration concepts into commercial operations.** ESA has rightly recognised the "valley of death" that lies between a demonstration project and its successful operational implementation as a service.

   - In order to help bridge the above mentioned gap, EARSC would welcome ESA downstream EO applications initiatives that fully fund the initial service delivery phase of demonstration projects right up to the point where customers make actual, firm commitments to purchase the services on a fee-paying basis. ESA's role here would be to spot concepts that have been successfully demonstrated but risk falling in to the 2nd "valley of death", and provide financial and other forms of support to ensure they do not fail at this critical stage.

   - EARSC would also be keen to see specific ESA initiatives to connect successful demonstration projects with new and potential end-users. ESA has the gravitas and resources to reach out to new industry sectors and promote the benefits of space to them in a way that individual companies, particularly SMEs, simply cannot. EARSC would be pleased to work with ESA to build up a portfolio of success stories that can be promoted in this way.

- Improvement of processes, for example to speed up the time taken from initial concept to successful demonstration and beyond, and to provide greater assistance with development of business cases.

- Steps taken linked to the IAP, to set up the BIC's and to encourage investment funds coming from non-space sources are welcomed and could be developed further. EARSC is ready to support and help develop such initiatives.

4. **Support access of European industry to the global market.** EARSC appreciates the deep working relationship that EARSC and ESA have built on this topic, in particular with reaching out to international financial institutions such as the World Bank and Asian Development Bank.

   - Customer-led ESA initiatives, such as those promoted by the ESA Value Added Element (VAE) programme, are extremely valuable to the downstream EO industry sector and should be increased. These provide targeted access for European service providers to establish export relationships. ESA's role as institutional reference is absolutely vital for EU companies to win business with such customers.

   - EARSC has noted the ESA proposal ESA/PB-EO(2014)10 "Implementation Approach for the Development of EO-based Applications and Services" of January 2014 and is very supportive of its recommendations, which are broadly to encourage use of space at national and international levels and in the private sector. A programme around this that helps European service providers exploit their current capabilities in new markets would be extremely valuable.

   - Support from ESA in this area should not be limited to financial support, but encompass broad support to European industry in different forms: this could include researching and providing knowledge on different export markets; organising trade missions to specific customers or sectors; compiling and providing some level of competitive analysis, informing European industry where to focus; or forging links with trade associations in export markets order to establish links to new consumers of European services.

5. **Create a clear institutional market for EO services in Europe.** This recommendation may be more for the attention of the EC than for ESA, but we believe ESA's support to the concept would be essential to bring about any change in this area.

   - EARSC encourages the EC and ESA to help European industry overcome the lack of an obvious 'anchor tenant' for EO services in Europe. One way to do this would be to create the conditions for anchor tenancy by federating demand for EO products and services across European public sector organisations, and making the federated needs and requirements accessible to the downstream sector (particularly SMEs) across Europe. This aggregation of demand would create a large market and encourage industry investment.

   - Alongside this, EARSC is keen to explore whether it is feasible to boost the emerging Earth observation market through incentives such as long term contracts with Earth observation

industry. This would enable industry to raise funding and invest in new systems. ESA could play a role in facilitation of such long-term contracts between public sector organisations and private sector service providers by identifying requirements that can be met using downstream space applications and building capacity in industry to meet those needs.

- As a minimum, while the above more ambitious initiatives are explored, EARSC would welcome initiatives that provide industry with a long term and clear perspective of the institutional market. Again, this is important to enable industry to invest in new projects, new technologies. The boundary between public and private sector activities within this market should also be made very clear: industry will not invest in development of services if there is a perceived threat that public initiatives (such as Copernicus) will provide the same or similar services for free.

Conclusions

EARSC considers that ESA should be given a mandate to help develop the EO downstream sector in Europe. The time is right to take additional measures to ensure that this sector is able to capitalise to a maximum upon the investments already made in Copernicus and the Sentinels. Such measures will help drive economic benefits through the adoption of EO geo-information services by public bodies hence improving their basis for decision making and also through the growth of a new and important industry sector delivering these services. Growth can come from increased take up of services in the wider commercial (B2B) market as well as exports to mainly public customers outside of Europe.

EARSC considers that working in partnership with ESA can bring the best results. The industry network acting with the support of the European institution responsible for space offers the strengths necessary to attack the export markets as well as bringing other business benefits (financing etc). Hence EARSC fully supports the HLIF recommendation 4 and strongly encourages Member States to extend the ESA mandate as requested.

EARSC represents the Earth Observation geo-information services companies in Europe. Today EARSC has 74 members coming from more than 20 countries in Europe and including nearly 50% of the total number of European EO service companies. Over 60% of these are small or medium sized enterprises. Our members include both commercial operators of EO satellites and downstream, value-adding companies. 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 European EO services sector is estimated to be around €750m and giving work to over 5000 highly skilled employees. The industry is growing at over 10% per annum.