



# **A SPACE STRATEGY FOR EUROPE**

**Contribution of the European space industry**

## Executive summary

- While space has become an indispensable tool serving the wellbeing of the European citizens, economic growth and the achievement of numerous public policies, the competitiveness of the European space industry, widely recognized, is constantly challenged at the international level with the emergence of disruptive new players and new forms of industrial organizations.
- In this fast-moving context, the revision of the European Commission's strategic guidelines for the future of the EU space policy appears very timely: the European space industry intends, through this position paper, to provide EU institutions with a state-of-play of our reflections – emanating consensually from our members- with the objectives of:
  - Ensuring that Europe remains at the cutting-edge of innovation and competitiveness in the space sector.
  - Optimizing, in times of budgetary constraints and financial pressures, the use and application of the European space policy as an instrument benefiting economic growth and societal progress in the European Union.

With these objectives in mind, after reminding some key characteristics and specificities of our sector's business, this position paper is:

- i) Stressing the importance of a European independent, reliable, safe and cost-effective capacity to conceive, develop, launch, operate and exploit space systems.
- ii) Highlighting how the EU Space Policy shall be conceived as a key tool enabling economic growth and job creation in Europe, fostering its innovation potential, supporting scientific progress and responding to public policy objectives.
- iii) Calling for further synergies to be developed between space and other EU public policies - in particular security, environment and digital policies, considered to be promising areas of policy development in the long-run.

*The European space industry stands ready to provide the European Commission with a tailor-made contribution at the occasion of the public consultation on the “space strategy for Europe”, and to refine any point of interest raised in this position paper.*

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## Background information

### *Eurospace: who are we?*

- Eurospace is a long-established European Trade Association (created in 1961) and the only European Association representing the interests of the European space manufacturing Industry (membership from 14 European countries, all ESA members, with a coverage of more than 90% of the total European manufacturing industry turnover and 90% of employment). As an independent association based in Paris, Eurospace also acts as the space branch of ASD (“Aerospace and defence industries association of Europe”) in Brussels when it comes to liaising with the EU institutions. We are a members-driven organization based on the principles of consensus, transparency and trust.
- Eurospace is an acknowledged and reliable interlocutor to both the European Space Agency and its member States as well as to the EU Institutions (European Commission, Council & Parliament, EDA ...). From this standpoint, we are a recognized actor of European Space policy & strategy at the global level.

### *Key characteristics of our sector*

- Industry is distributed all across Europe, with its main industrial sites being located in France, Germany, Italy, United Kingdom, Spain and Belgium.
- Two large industrial holdings (Airbus Group and Thales) are directly responsible for about 60% of the total space industry employment (about 38 000 employees in total).
- In addition to Airbus Defence & Space and Thales Alenia Space, our main members also include OHB, RUAG, Telespazio, Safran, standing for 20% of the employment.

### *Main areas of business*

- Design, development and manufacturing of satellites for operational applications (telecommunications systems and parts, Earth Observation systems and parts, navigation/positioning systems and parts...).
- Launcher activities, including launch systems sales (mainly to Arianespace), development and consolidation activities in support to the Ariane and Vega Systems
- Scientific activities, including systems and technologies with science and systems and parts, and manned-space related activities.
- Ground systems (engineering, support services, production and development of ground stations...).

## **Introduction: the European space industry, beyond mind-blowing myths**

As a preliminary remark, several salient facts and figures are to be emphasized regarding the characteristics of the space sector in Europe and abroad. Too often indeed, the specificities of our industry may be misunderstood due to hasty assimilations with other economic sectors. Thus, it is important to bear in mind that:

- ❖ Space has become part of our daily life: European citizens rely on space technologies when they use their mobile phones, do financial transactions, take an airplane, watch the weather forecast...As a derivative, the EU space policy is a transversal leverage to serve plenty of EU sectoral policies such as external action, humanitarian aid, maritime policy, Common Agricultural Policy, border surveillance, security, transport infrastructures management...
- ❖ Space is a vector of independence and security for the EU, limiting reliance on non-European systems and technologies. In this respect, this is not a casual economic sector: it has a clearly assumed strategic dimension.
- ❖ EU non-dependence shall not be taken for granted: the European Space Technology Platform (ESTP) estimates that on average, 60% of the electronics aboard a European satellite is imported from the USA.
- ❖ The European space sector is proportionally small (38000 employees against a minimum comparable workforce of 250 000 people in the US) but nonetheless efficient and competitive: we capture a significant share of the accessible commercial space markets, and a stable market share (about 50%) of the launch services market.
- ❖ So called “new space”, i.e. the emergence of private actors investing strongly in the space sector (e.g. Elon Musk in the US with Space X) shall not be understood as a withdrawal of the public authorities’ involvement: on the contrary, this is generally public demand that drove and allowed the emergence of these new actors, by ensuring long-term commitment in using service, greater degree of freedom being provided in the implementation of the space programmes themselves.

## (Safe) space must remain accessible to Europe

Independent access to space relates of course first and foremost to **launcher development and operations**, which should be adapted to meet the needs of European and public institutional customers, but also in order to be competitive on the commercial market.

At the same time, this notion of independent access to space cannot be dissociated from the **independent capacity, of Europe, to conceive, develop, launch, operate and exploit space systems; which extends to the whole programmatic cycle** and ranges therefore from technology autonomy and cyber-defence to supply-side considerations. This implies the availability of a first rank industry, able to design and produce world-class space systems and associated ground segments, delivering the state-of-the-art systems required by public and private customers worldwide.

This has therefore a threefold implication (developed hereunder):

- In terms of unrestricted access to the technologies required to deliver the state-of-the-art to European industry customers;
- In terms of developing European domestic markets for space systems and services;
- To finish with, this issue of accessibility implies also that space be safe to operate.

### *R&D*

As identified by the European Commission, the key challenge for Horizon 2020 is to favour growth and employment. Nevertheless, in the framework of H2020-Space, **implementation rules have not been effectively settled in order to support industrial leadership**.

Thus, future work programmes should be driven by the objectives of supporting the competitiveness of the European industrial base on the commercial markets, **which requires the industry's needs to be better reflected in the structure of the calls**. In order to create the conditions for harmonious and efficient exchanges between the European Commission and industry on these matters, the European space industry supports the elaboration of an appropriate framework of discussion with industry, i.e. a direct, formal, link between the European space industry and the European Commission.

In addition, one of the main objectives of the space strategy must be to ensure **European non-dependence in the field of space key-enabling and critical technologies**, i.e. the possibility for Europe to have unrestricted access to any required space technology.

For this purpose, the industry is transversally recommending to:

- **Insert priorities on technologies and manufacturing for industrial readiness in all areas** (in order to reflect a consistent functional and supply chain approach).
- **Ensure a proper balance between short term and long term impact**, and consequently quick win effects, and between low TRL and higher TRL innovation (including In-Orbit demonstration to favour time to market).

More specifically, Eurospace's suggested way forward is:

- On PROTEC, the calls should ensure that space will remain safe to operate.
- On EQ, a properly organized consultation of all stakeholders should allow to identify and consolidate industrial priorities.
- On COMPET, the main stake for the European Commission is to meet the industry's needs and expectations to maintain its access to state-of-the-art technology and systems.

### *Consolidation of European institutional markets*

- The situation of our industry is quite unique: **Europe lacks a continuous and significant level of public demand in space infrastructure and/ or services**, as opposed to the situation in all other space-faring nations, where the public demand is the first guaranteed basis to stabilize the activity and foster competitiveness of the domestic space industry.
- When benchmarking Europe with other main space-faring nations, **clear structural weaknesses can be highlighted on the European side**: indeed, there are **limited space military programmes** as compared to all other space powers (USA, Russia, China...) and **no EU ambition for Europe-made manned systems**. It explains that:
  - European institutional investment in space is comparatively – and significantly – lower than in other space-faring nations (about three times lower than in the USA, four times lower than in Russia).
  - European space domestic market (for launchers and satellites) is limited in size.
  - In the meantime, budgets dedicated to R&D policies are much weaker in Europe (10% of sales turnover, compared to 25% in the USA...).
- The space strategy for Europe should duly **take into account these weaknesses and support the European space industry in other fields of activity**.
- Thus, the space strategy should state what the long-term ambitions of Europe **in the area of space exploration** are, in conjunction with current and future international cooperation in this field.
- As the European space strategy intends to “embed the space policy in the larger EU policy agenda of this Commission” and describes space as a “strategically important tool supporting a number of economic activities and policy areas”, **the European space industry welcomes very positively this raised level of the EU’s ambitions in space, which is a synonym of increasing institutional needs**.

Taking stock of other space-faring nations’ strategies and in line with the European Commission’s objective to achieve technological non-dependence and security of supply, **we consider that this development of institutional needs and markets should benefit jobs and industry based in Europe**, whenever the use of European space assets can fit the European institutional demand.

### *Security in space: “space must be safe to operate”*

This obviously has firstly to do with **debris mitigation**.

- Reflections on relevant regulations shall be undertaken given the multiple projects of big constellations under development so as to face the various threats putting in-orbit infrastructures at risk.
- Such regulations shall be discussed at international level, and industry welcomes them in order to ensure consistency and avoid distortion of competition if providers are not imposed the same constraints worldwide. Europe should prepare itself to take an active part in such negotiations.

However, there is more at stake than limiting the generation of debris or Space Surveillance and Tracking from the ground.

With respect **to space weather**:

- A priority should be **to keep improving the scientific knowledge about the phenomena influencing space weather**, in order to prepare the ground for a potential programme (i.e preparing basic technology allowing longer-term acting debris removal activity).
- On the longer-run, **Europe should actively prepare the next steps towards in-orbit detection and surveillance to track smaller objects, operational space weather** - to anticipate solar bursts and other natural phenomena of which we know so little - or, in the longer term, active debris removal - which might become necessary - and in which Europe shall play its role as a major space power.

## The EU space policy, a scalable tool serving EU jobs, growth, investment and competitiveness

### *Affirming the importance of completing a dedicated EU space industrial policy*

The European space industry has been maintaining a world class technological level in spite of a wide range of pressures from our international competitors. In this context, **the strategy should recall the role of an EU space industrial policy**, aiming at:

- **Setting the conditions in order to “maintain and develop a strong, competitive and diversified industrial base in Europe, improving employment and knowhow of the sector”**, as a follow-up of the conclusions of the EC 2013 communication on an “EU space industrial policy”<sup>1</sup>.
- Ensuring a **level-playing field** with other major space-faring nations.
- Reiterating a clear willingness **to support the competitiveness of the whole supply chain**, making Europe able to keep producing and exporting state-of-the art systems.

### *Evolution of EU space flagship programmes*

In the cases of both programmes Copernicus and Galileo, **the ultimate goal of investment in space infrastructures shall be considered as a leverage to serve downstream user communities’ needs as well as scientific communities’**, implying a continuity in data delivery, storage and processing.

For this purpose, the development of the Galileo and Copernicus programmes, with their own schedule, needs to be carefully monitored **to make sure their respective budgets are optimally spent over the MFF timeframe**.

More specifically:

#### On Galileo

- As the Galileo services provision is expected to start early 2017, **the European space strategy shall provide a proper coordination scheme of all actors involved in Galileo** (EC, ESA, GSA, REA, the future Galileo services operator, Member States...) to ensure a smooth and on-time management of the programme in its various facets: development, procurement, capture of user needs, frequencies, security accreditation...

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<sup>1</sup> <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52013DC0108&from=EN>

- To mitigate industry's uncertainties, **the European space strategy should also introduce preliminary reflections on European Commission's orientations with respect to the evolution of the system's next generation.**
- The European Commission should send **strong and undeniable political signals on the long-term viability of Galileo**, underlining that **the programme's existence shall not be questioned.** This is **key in order to instore a climate of confidence** among stakeholders, potential investors and users.

### On Copernicus

- The **process for the definition of Copernicus next generation should also be clarified** by the European Commission in the framework of the strategy. In particular, high expectations lay upon the modalities of industry's consultation, **allowing the expression of industry's creativity and know-how.**

### *“EU space economic diplomacy”*

Unlike its international competitors, the European space industry highly relies on the commercial business and export sales. Indeed, 36% of the European space industrial output is devoted to local institutional markets (against 64% to commercial activities), while this ratio in the US industry is 60 % (against 40% on commercial activities). Logically, **it makes it all the more challenging to sustain the current level of excellence of our industry**, since we are much more exposed to the hazards of commercial markets.

That is why our industry has always been **so successful on export markets and should be supported** in this respect: so far indeed, this “business-oriented” feature of the European space industry has been a strength and its continuation requires a clear and voluntarist approach for European space policy makers.

Given the very political nature of the contracts passed in the space sector, often at the crossroads of strategic and national interests, **the EU could thus offer a stronger support to its industry so as to facilitate the access to new markets.**

For this purpose, **the EU could fully take advantage of its dense diplomatic network all around the world, orientating the priorities of these delegations towards offering bespoke services to EU companies**, such as facilitating the set-up of opportunistic trade missions, B2B meetings between European space manufacturers and prospective customers, or supporting the identification of key trade fairs and ensuring a follow-up in the commercial relations. Considering the EU's role in trade policy as well as in development cooperation, **the inclusion of space, when negotiating trade agreements or cooperation partnerships with third parties, should be considered – provided that the Commission ensures an active involvement of industry** in this framework.

Another dimension of this “space diplomacy” should be **to put space on the EU diplomatic agenda** whenever there are opportunities to promote European space capabilities and seek reciprocity with respect to other space-faring nations' business conditions. Eventually, **“space economic diplomacy” should also protect Europe's interests on the international scene** on the following aspects:

- with respect to **legal conditions connected to the commercial exploitation of space resources**: the EU, as a recognized trade actor on the international scene, could

carry the voice of its Member States and negotiate on their behalf with other prominent space-faring nations.

- Similarly, when it comes to **space debris surveillance and removal, the EU should take an active role in related international political discussions.**

### *Access to innovative funding*

On the basis of recent evolutions in the US space sector (i.e. the rise of private investors' involvement), **new and innovative sources of funding could be explored more in details** by the European Commission's services: the workshops organized on "Access to Finance for the Space Industry" in the course of 2016 are welcomed and encouraged by the industry as a first step

### *Towards the acquisition of space services: a change of paradigm maximizing the efficiency of EU institutional demand*

- In order to promote a "user-oriented" EU space policy, **the European Commission should further progress on its efforts to "decompartmentalise" space and encourage its integration with other sectors** (e.g through joint calls between H2020/Space and H2020/Societal challenges) with a view of achieving a better identification of public/ private needs for space-based data or services.
- Then, the European Commission should contribute to setting up **dedicated mechanisms enabling to translate these needs into relevant technical specifications.**
- Likewise, by reason of scale, certain tools or mechanisms (such as "central purchasing organizations", or pre-commercial procurements) can be better implemented at Union level, **to "mutualise" the costs and the risks** and allow individual users (EU institutions, national or local authorities...) and markets to benefit from space-based services that would otherwise be unaffordable for an individual customer (Govsatcom can certainly be a first concrete example).
- Finally, the EU plays a role in helping to achieve **the necessary critical mass to ensure the profitability of a service, and to promote its use**, not only as a customer, but also as a "prescriber" of the use of satellite data, through regulation (as it should be the case to promote, for instance, the use of Galileo in civil aviation).

## **Space, a key tool to shape tomorrow's EU policies**

### *Space and the digital economy*

The world has turned digital and **the EU space policy is a particularly relevant tool to address the objectives of the Commission's strategy for Digital Industrial leadership within the Digital Single Market**, by playing a role in the move towards a digitalized and data-driven economy in Europe.

**Space technology has a tremendous role to drive growth in promising sectors and applications related to the Internet of Things (IoT) or machine-to-machine (M2M).** Satellites are indeed key enabling infrastructures providing a capacity to access and disseminate information.

In this context, the “Space strategy for Europe” should ensure that space will be **part and parcel of the EU responses to the challenges raised by the developments of IoT and M2M technologies**, notably through **relevant R&T priorities** in the EU programmes dealing with these matters.

### *Space and security*

Space, by nature, is an **irreplaceable tool to complement and foster any security-oriented infrastructure**.

- The Space Strategy should therefore **take into account future needs for security & defence policies in the framework of the Copernicus and Galileo** programmes, paving the way for the identification of early defence and security user needs.
- Additionally, we take stock of the results of the feasibility study led by the European Commission, highlighting **growing needs for secured satcom services** (in particular from EU institutions -such as EEAS) and **the necessity to mitigate the fragmentation of the public demand** in the EU.
- In the meantime, the **current situation where some Member States are procuring their capacities in the US – through the WGS - does not seem satisfactory**, since it raises clear independence and strategic issues.
- From this standpoint, **an EU-led initiative on GOVSATCOM would be welcomed by industry, in order to pave the way for a potential future programme within the EU space policy**.

### *Space and climate change monitoring*

Several months after COP 21, **a momentum should be triggered at EU level to push in favour of short-term actions on climate change monitoring** if Europe intends to maintain leadership in this policy field on the international scene. **The space policy is an accurate tool to be mobilized** in this framework.

Indeed, other space-faring nations have already developed space-related initiatives aiming at monitoring CO<sub>2</sub> and CH<sub>4</sub> emissions. In addition, as an outcome of the COP21, efficient monitoring of the climate change phenomenon is a prerequisite before undertaking any further actions in line with the commitments of international partners made at the Paris Conference.

From this standpoint, reflections should be oriented towards tools required for efficiently monitoring all the parameters impacting climate change, such as CO<sub>2</sub> and CH<sub>4</sub>, which play a prominent -but not exclusive- role.

In this framework, **Eurospace fully supports the objective of developing an operational system at EU level**. For this purpose, it seems particularly appropriate to adopt a stepped approach focusing on:

- **Prompt start of a demonstration phase of satellite capabilities** for carbon-emission measurement - complementing in situ observations systems - with the perspective of setting up an end-to-end integrated monitoring system,
- **The prompt definition of adequate standards** in joint cooperation with industry, operators and users.