

Space: a cost-effective enabler of more effective security

“The EU Security Strategy acknowledges the need for a wide approach to security, calling upon an EU that is more capable, more coherent and more active”¹. The three requirements highlighted in Lady Ashton’s statement define the security needs of today as much as they specify the means needed to address them. Space embodies these characteristics and, as such, clearly appears as a key enabler for security. In light of ever-growing security needs, consistent investments must be made in space capabilities in order to enhance space’s unique ability to address the whole range of security needs in a cost-effective way, using a synergy of both civil and military assets.

Space is the key enabler for security

The rapidly evolving global strategic context has given rise to a new, expanded definition of security. Today’s security needs warrant a truly integrated approach between space and non-space assets, characterized by cross-cutting requirements and overlapping civil-military responsibilities. Space assets have clearly demonstrated the ability to address these issues², especially in the management of non-space systems and sensors (e.g. telecommunication for Airborne, UAV, land/naval sensors, etc...).

At the European level, a steadily growing awareness of the need for shared space assets for security has been expressed in several policy documents. A **holistic approach to security (civil and military)** has highlighted the relevance of space across the whole spectrum of security issues, from environmental monitoring to conflict prevention and maritime surveillance.

European independence is a priority of strategic importance as shown through the implementation of both **Galileo** and **GMES**, the future **MUSIS** system, as well as the new **SSA** programme which considers space assets as critical infrastructure.

Higher security needs require consistent investments

Europe’s decision-making autonomy is made possible by the European industry’s demonstrated technological know-how in the field of space capabilities. This unique expertise has to be safeguarded and developed by maintaining adequate levels of R&T investments and development program financing in order to uphold European non-dependence. The large amount of critical technology projects co-funded in recent years by the European Commission has required major industrial investment. In order to yield security dividends, they now need to be followed and guaranteed by adequate follow up investment from the EU.

In the security domain, the competitiveness of European industry is based on internal R&T and ability for innovation. Additionally, the limited R&T resources currently invested in Europe are allocated at three different levels independent from each other (local, national and European levels) in a manner not conducive to optimization. **A coherent strategy is now needed between all stakeholders regarding investments in R&T, R&D and programmes in order to allow research to translate into sustainable integrated solutions under European control.**

Space is the cost-effective contributor to more effective security: some examples

The Danish Agency for Science, Technology and Innovation in 2008³ and the Norwegian Space Centre in 2009 concluded that € 1 million in funding to ESA generated an additional turnover between € 4.5 and 4.6 million on average. Bearing in mind that the main advantages of space-based solutions

¹ Lady Ashton, keynote speech, Annual EDA conference “Bridging Efforts”, February 2010.

² Cf. Madrid Conference on Space and Security (March 10th-11th 2010): “Space can provide the most added value when seamlessly integrated with others. To achieve this, effective integration of space technologies such as Earth Observation (and especially GMES), satellite communication and navigation (Galileo with its PRS) will be required”.

³ “Evaluation of Danish Industrial Activities in the European Space Agency (ESA)” (publication), March 2008, p.4, <http://en.fi.dk/publications/publications-2008/evaluation-of-danish-industrial-activities-in-the-european-space-agency-esa-2013-assessment-of-the-economic-impacts-of-the-danish-esa-membership/Evaluation%20of%20Danish%20Industrial%20Activities%20in%20ESA-pdf.pdf>

are their ability to operate worldwide, in full compliance with international laws - i.e. observing the planet through a wide field of view and revisiting **any selected area** on a regular basis - the allocation of space resources can easily be optimized and rationalized. Building upon existing national architectures, an interoperable architecture promoting a synergistic approach to security (civil and military) is now mandatory at European level. Cost-saving effects are of paramount importance and they need to be better investigated in order to optimize every investment.

Lessons learned from some recent crises have shown the efficiency of space in support of European security missions, from the assessment and planning stages to the actual operational conduct phase⁴:

- **Foreshadowing of a crisis: space assets can detect** changes in a risk-prone area. Every time the political decision makers can react quickly to the situation and decide the allocation of proper resources, the evolution of the crisis into a huge disaster can be avoided.
- **Illegal behaviour:** Space assets can detect **movements on the high seas** well in advance of present coastal means of detection, thus giving early warning notice to relevant customs and/or police officials. Considering the illegal activities that are proliferating in the open sea, signal intelligence systems for maritime security could provide an effective support detecting abnormal behaviour of non-cooperative ships.
- **Climate change monitoring:** in terms of security threats posed by climate change, space-based sensors are the most efficient way to observe and record on a regular basis all the necessary parameters which allow accurate predictions and provide early warning. **Huge savings can be obtained by anticipating on obvious consequences** like flooding, lower productivity of agriculture, desertification, delocalization of people, forest degradation or deforestation.
- **Emergency Response:** in the case of a crisis in which humanitarians field teams or soldiers are deployed, space can **detect the most appropriate geographical localization for them**. Space based solutions are thus a unique tool for assessing the situation and optimising the deployment of rescue or military staff.
- **Remote training & information, medical assistance:** thanks to existing space solutions, it is now possible **to provide effective solutions to people**, even if they are living far away from any city or village. The investments are very limited compared to the potential huge impact in terms of security.
- **Protection of territory and populations:** considering the increased potential risk for Europe to be threatened with **ballistic missiles**, we should realize that the budget burden in order to develop appropriate solutions like early warning from space sensors is very limited compared to the cost of the consequences of not being prepared to face such a situation.
- **Security in Space** is also a European concern: space systems contribute significantly to the life of European population but also become invaluable for many areas of the European economy. So the security of these systems becomes a true challenge taking into account the increasing security issue of the **space debris proliferation**.

Conclusion

Space is a key instrument for a fully fledged approach to security management and, through some examples, it has been shown that improving the security of human beings is one of the most important contributions which space technologies and services can offer.

Strengthening space investments for security is fully justified and needed in order to optimize the efficiency of traditional capacities and multiply their effectiveness for the benefit of European citizens. European Space Industry recognizes the importance of the existing coordination between EU, ESA and EDA on space matters to reach these two goals.

⁴ European Parliament, Committee on Foreign Affairs, Draft report on “Civilian-military cooperation and the development of civilian-military capabilities”, <http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//NONSGML+COMPARL+PE-448.660+01+DOC+PDF+V0/EN&language=EN>, 8.9.2010.