

## A new lease of life for military space in France and Europe

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**The appearance of new threats calls for greater knowledge and anticipation capabilities. The use of space can clearly help in this, in particular by supplying autonomous evaluation and by contributing in a more decisive way to the planning and execution of operations. So we should look again at space as an environment, and gain a sound knowledge of the industrial scene and services that will condition the military ability to gain access to applications under the best operational conditions.**

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ON 12 February this year, an *Ariane 5* rocket took off with two SPIRALE [1] experimental space-based optical early warning micro-satellites on board. With the SPIRALE system, which will collect infrared imagery against a land background, France has just made a major step forward in the development of an operational early warning space-based facility.

Two days earlier, a Russian and a US satellite collided above Siberia creating a potentially hazardous cloud of debris, on an orbit which had already witnessed the destruction of a Chinese satellite in January 2007. Is space, formerly tuned by celestial mechanics, turning into a potentially hostile environment ?

Addressing the question is all the more urgent since space is set to play a prominent role in France's and Europe's defence and security strategies. Our nation has decided to step up its effort in space-based defence and security with a view to better meeting the challenges it faces.

The White Paper on defence and national security reflects the importance of space assets as key enablers in today's defence and security missions. In addition, in its EU presidency during the second half of 2008, France further advocated the need to its partners through a string of most welcome initiatives.

## **Why is space a major issue in defence ?**

Although the needs are still strategic in nature, they are increasingly shifting to the operational and even tactical levels. The bipolar context based on strategic balance is no longer seen as the single foundation for military strategies. New threats have emerged : proliferation of increasingly sophisticated military equipment, crisis and potential conflict factors, terrorism, organized crime and so on, with major consequences. Until recently, deployed assets were mainly dedicated to the strategic conduct of crises. Nowadays, military objectives are not so clear, and they require more accurate and diversified information-gathering assets. Space technology comes as a supplement to other assets that contribute to knowledge and anticipation. Therefore, satellites have a major synergetic role to play alongside all other military assets. Besides, they are and will be increasingly instrumental in developing every weapon system on issue in our forces down to field level. The goal is also to bring space closer to users.

## How can we achieve these objectives ?

Confronted with such multiple risks and threats, users are calling for increased knowledge and anticipation capabilities. These needs will require processed information and the means to exchange them before, during and after crises. Space can undoubtedly contribute to strengthening such capabilities. A set of programmes aimed at developing information assets is in hand. Therefore, the new generation of observation satellites planned to start in 2015 (MUSIS [2]), the CERES [3] ELINT satellite project or the space contribution to proliferation surveillance and early warning will help modernize intelligence and improve territory and force protection for our troops engaged overseas.

In addition to affording independent situation assessment, space will more decisively contribute to planning and operating. It will make it possible to :

- . have the upper hand in knowledge and warning with a view to retaining a level of *anticipation* in the decision-making process at the national and multinational levels ;
- . have a *common and shared vision* of the situation in support of optimal military efficiency but also in terms of crisis management ;
- . *communicate securely and independently at all times*, in order to secure the links between command centres and overseas theatres.

Information-gathering, data-merging and dissemination to every level of the chain of command will rest on ad hoc telecommunication capabilities.

Dedicated *Syracuse*-type military satellites will form the core of our capabilities. Complementary resources will be made available through technical cooperation and resorting to non-specifically military assets. For instance, access to broadband Internet on the battlefield will be provided thanks to the French-Italian dual ATHENA-FIDUS satellite, which, as part of a cooperation initiative under Italian leadership, will be coupled with the joint development of the SICRAL-II military satellite. This initiative will help cut development costs while having a more robust global system.

## Space must be protected

These new orientations must help us renew our vision of space as an environment. Indeed, increased investment in military assets of immediate significance implies the development of strategies of protection and security.

Space is a scarce resource subject to fierce competition and a battle of wills. Subjects of interest for many nations include the advantages afforded by some orbit positions with civilian or military ends or the management of the electromagnetic spectrum which, if properly conducted, can enable any country to control frequency bands of interest. More recently, the detailed knowledge of the position of objects and orbits (satellites or debris) is now considered a key competence for any country wishing to safeguard the viability of its space activities.

This overall picture illustrates the need for France to prepare for better control of the

environment of its space activities. It not only consists in safeguarding the proper functioning of one's military assets but also, more broadly, ensuring the permanence of economic activity in the field of space applications in general. Strengthening our space surveillance activities has now emerged as an obligation.

This is why France supported the initiative introduced by the European Space Agency aimed at developing a space surveillance facility (SSA [4]). This initiative will supplement current national assets (in particular, the GRAVES [5] radar which the Air Force began operating in December 2005), whose capabilities will contribute to the European system. In addition, our country has expressed the wish to strengthen the transatlantic link, by developing a more operational cooperation with the United States in support of reinforced collective security.

Finally, we must welcome the clear-sighted European Union initiative on the adoption of a Code of Conduct for the security of space activities. France actively supported this initiative during its presidency. The text is subject to a wide international consultation that will end in the definition of an international regime which, hopefully, will be endorsed by as many nations as possible.

## **Plan long-term use**

Beyond a better management of the orbital environment, we will also need a better assessment of the space activity environment.

Space control requires a sound knowledge of the industrial environment and services that will condition the military ability to gain access to applications under the best operational conditions. The environment in which space systems will operate will be considered to guarantee their reliability and endurance. In other words, will these systems be adequate and will they be as efficient in providing superiority tomorrow as they were yesterday ?

A number of issues arise :

- . What should be the relevant criteria, in particular in a context of tight budgets, when deciding if an equipment must be held in inventory or outsourced, with the inherent risks of such an option (service allocation to different customers, risks versus service guaranty, trade-off between cost and performance, new vulnerabilities) ?
- . Up to what point should we depend on complex networks (what are the risks for data integrity, availability and secrecy) ? What share will be claimed by strictly military systems in information systems that are actually used by the military, with the risk that they are deprived of their position as principal ?
- . How do we secure sufficient technological autonomy and diversified cooperation methods with a view to space capability interoperability ? How do we build a concerted architecture of capabilities at European level ?
- . Defence actors must question the guaranty and permanence of the services provided. What dependence effects are produced by a changing economic, industrial and financial balance in the long term ? Expected provision of services will directly rely on less easily influenced

strategies by the sole defence actor (internationalization and diversification of industrial firms, etc.). Resorting to services is likely to make industrial and financial strategies more commonplace.

These major trends have in common a different approach to the issue of vulnerability. This will lead us to take account of this parameter alongside more technical changes and risks of confrontation in space, to help us better control the space environment in the medium and long term.

## How do we proceed ?

The White Paper on defence and national security mentions the need to rethink the organization of military space in France, for which a joint command structure is under consideration. Whatever it is, this future instrument will have to make the coherence of all these constraints a priority. Its role should be to consolidate the doctrine, programme, employment and conduct of operations. That will require the preparation of future assets, coordination of their employment, and their protection. These objectives must, naturally, be considered taking into account the progressive emergence of a space capability at the European level. France will then be in a position to hold its traditional role as a driving force in implementing security and defence space capabilities in Europe over the next decade.

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### **P.-S.**

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### **Notes**

[1] Système Préparatoire Infra-Rouge pour l'ALerte (preliminary infrared warning system).

[2] Multinational Space-based Imaging System.

[3] Capacité de renseignement électromagnétique spatiale (space-based electromagnetic intelligence capability).

[4] Space Situational Awareness.

[5] GRAnd réseau adapté à la VEille Spatiale (large space surveillance network).