



Presidency of the Council of Ministers

National security strategy for space

1. Introduction

The international political debate has always focused on the political-strategic dimension. However, we are seeing a strengthening of the political-economic field with new connotations that no longer concern just the markets, but also the ownership of companies in strategic sectors. Among these, the global space sector is undergoing profound changes, partly because of the growing commitment by private investors and the presence of new emerging countries, with direct consequences on the sustainability of the space environment itself. Security from space and of space, therefore, is no longer a purely military and national notion, but rather a multi-sector and global issue. In the space sector, in fact, national and international security are interdependent.

Space operations are increasingly risky also because of the absence of internationally agreed standards, establishing principles and practices to avoid irresponsible actions to the detriment of the space environment. The international regulatory framework, which dates back to the 1967-1972 UN conventions, is no longer able to regulate the activities of more than 50 countries with space capabilities. It is therefore increasingly necessary to analyze and understand, in a regular and continuous manner, the complex developments (technological, legal and commercial) of the space environment in order to benefit from them in the awareness of its strategic nature and relevance for the future national, European and global balance.

In the last fifty years, Italy has developed proprietary space capabilities in the field of Telecommunications and Earth Observation (the national legislative framework of reference is Law 124/2007 and DPCM 3/2010, both for aspects related to the National Authority for the Security of Satellite Remote Sensing and to the responsibilities of the Defense Department). Moreover, at European level, it actively contributes, like other major countries, to the development and implementation of the Galileo, Copernicus, GovSatCom and scientific missions, as well as to the implementation of the VEGA Program for Access to Space. It is also

looking at other developing sectors such as suborbital flight, in-orbit service operations, robotic exploration of the Moon, human space exploration and the development of a Space Surveillance and Tracking (SST) and Space Situational Awareness (SSA) capability.

The "National Security Strategy for Space" is part of the National Strategy for Space. It analyzes and explores the issue of security related to space and aerospace activities. It is a reference for institutional, industrial, scientific and commercial organizations in developing their future plans, schedules, acquisitions and operations. Given the lack of a specific national and European regulatory reference on the subject, it derives directly from the "*Government Guidelines on Space and Aerospace*". These latter reflect the principles and international approach (by leading countries in the sector, EU and NATO), aimed at preserving a responsible, peaceful, safe and sustainable use of space, in the light of rapid political, environmental, diplomatic, military and commercial developments.

The Security Strategy document identifies high level strategic objectives to pursue for the growth and strengthening of the national space sector, and the resulting strategic lines of action that will be developed in the Strategic Document of the National Space Policy (DSPSN) and the Strategic Vision Document for Space (DVSS). Other detailed documents, under the auspices of the Presidency of the Council of Ministers, shall further elaborate intervention strategies to implement the overall objectives of the National Security Strategy, according to the Government's policy and in line with the sustainability (financial, operational and technological) of the activities related to the development, use and security of space infrastructures.

2. Reference scenario

Space represents a crossroads between scientific research, technology, foreign policy and national and international security. In recent years, in fact, Italy has taken advantage from the development and use of space systems with direct repercussions on the social, commercial, Defense and national security sectors.

The applications and services provided by space infrastructures are unique and valuable resources that influence the development dynamics of future generations horizontally. This awareness has encouraged the growth of numerous initiatives by non-State and commercial players who are developing their capacity to access and operate in Space, making the strategic framework changeable and complex.

Both now and in the foreseeable future, the space environment appears as a highly **congested, contentious and competitive** area, whose equilibrium is gradually affected by asymmetric

threats and by the effects of the commercialization of Space, which calls for constant attention. The growing number of objects in orbit, in fact, makes space an operating environment increasingly at risk of natural and accidental events, in addition to intentional threats. This perspective implies that the development of SST/SSA capabilities is strategically important, even in a context of multinational cooperation, supporting international initiatives relating to Space Traffic Management (STM) and the emergence of in-orbit service technologies.

Moreover, in view of the advantages deriving from the commercial dimension of space, a new interpretation of the concept of **competition** is needed. The short- and medium-term profit objectives and the growing use of commercial technologies, which are instrumental in lowering costs, to the detriment of the reliability of space products/systems, raise issues about their safety requirements and the proper application of industrial property rights. All this may penalize the most virtuous companies trying to develop qualified technologies as STM becomes more complex.

Broadly speaking, the evolution of the space scenario offers new opportunities and new challenges for space powers like Italy, which have to respond to these changes, in terms of both market supply and protection of national interests like Defense and Security, including the management and protection of classified information. The proliferation of dual-use systems has also blurred the borderline between military and civil use. Because of this ambiguity, dual-use systems are generally perceived and regarded as elements used by a country to deploy its security strategy.

Clearly, the best approach should be a systemic one at "national" level, in order to safeguard the national interest. In this respect, the space security strategy must necessarily have a medium-long term horizon.

3. Purpose and strategic objectives

Recent policy guidelines promote a "systemic" strategy for national security. This strategy is to be developed through collaborative efforts among the various ministries/bodies and with the support of the industry, academia, research and the private sector, to strengthen the country's collective security and resilience. In this context, the "National Security Strategy for Space" is a sectoral strategy within the framework of the broader National Security Strategy. It is also part of the European Space Strategy aimed at preserving the European Union's leading position in this sector.

The **purpose** of the document is to address the growth and strengthening of the Italian space sector in order to protect national security. As an Act deriving from the "*Government Policy on Space and Aerospace*", the strategy aims at strengthening and protecting national public and

private space infrastructures, ensuring their resilience against unintentional threats (collisions in orbit between satellites and between satellites and artificial/natural debris, *Space Weather*) or intentional threats (asymmetric, physical/kinetic, computer and electromagnetic) to orbiting and terrestrial structures. It embraces all national interests (institutional, industrial and scientific) and is designed to guide the development of the Italian space sector in order to extend its benefits to other strategic sectors. The protection of national interests stems from the implementation of a comprehensive approach.

The **strategic objectives** that the document pursues, through the involvement of all the institutions responsible for state security and defense, are essentially five:

- a) to ensure the security of space infrastructures (according to the two Anglo-Saxon terms, safety¹ and security²), regarded as enablers of the national infrastructure as a whole;
- b) to safeguard national security, including through space, by ensuring access to and use of national security capabilities in any given situation;
- c) to strengthen and protect the institutional, industrial and scientific sectors, also with a view to protecting national classified information;
- d) to promote a space governance capable of ensuring sustainable, safe and secure space operations at international level;
- (e) to ensure that the development of private initiatives in the space sector (upstream and downstream) is consistent with the country's overriding interests.

Within this framework, international cooperation becomes an enabling and indispensable tool to achieve the five strategic objectives. In the light of the unique nature of the space environment - which prevents any enforcement of geography-based rules, as it happens with land, sea and air environments - an adequate diplomatic support should be guaranteed in order to allow the country playing an active role in international fora to define a shared framework of international governance for Space. In addition, it is necessary to identify the needs of the national institutional and scientific community, also with reference to Security and Defense. Therefore, it is necessary to strengthen and develop space activities, including systems, processes, industry, technological innovation and human resources and skills. To this end, national competitiveness must increase, not only with respect to security aspects but, more generally, to the entire space industry.

4. Strategic lines of action

¹ A set of measures put in place to ensure protection against unintentional events.

² A set of measures to guarantee security against malicious activities or actions carried out by opposing parties.

Italy will implement its "National Security Strategy for Space" through the following **strategic lines of action** of an operational, procedural and legal nature. These can be summarized as follows:

- strengthening and protecting national space capabilities. Robustness against intentional and unintentional threats, interoperability and compatibility between space systems and the existing national security architecture should be strengthened; this requirement should also be taken into account in the development of next generation systems;
- prevention, deterrence and defense from attacks against space infrastructures. This is achieved by acquiring new tracking and identification capabilities and increasing the resilience of space infrastructures in order to reduce the effects of potential attacks and develop self-defense measures;
- protection and supervision of the development of industrial and scientific activities and protection of classified information. This is achieved also thanks to the development of ad hoc national regulations and the consolidation/strengthening of the industrial sector with a view to developing technologies, applications and services of civil and military interest, providing for adequate and sustainable investments and assessing the possible need for targeted government interventions;
- international cooperation and promotion of a responsible, peaceful, safe and sustainable use of space. In this regard, it is essential to ensure that cooperation is both bilateral (certainly with the other G7 countries, USA, Japan, Canada, France, United Kingdom and Germany) and multilateral (within the ESA, European Union and NATO framework). The aim is to aggregate political support in the international debate aimed at strengthening the governance of space and expanding financial coverage, which can be hardly borne by just one country;
- management and development, also through the definition of a specific regulatory instrument, of commercial initiatives in compliance with the commitments undertaken by Italy in foreign policy and with the national security requirements, with particular emphasis on the security aspects of satellite remote sensing.

Strengthening and protecting national capabilities will remain vital to increase the national security and resilience in response to crisis and emergency events. This is the expression of an upstream component with a wide range of capabilities in all areas, with particular reference to Telecommunications, Earth Observation (ISR³ RADAR, Optical, Hyperspectral) and a downstream component (infrastructure of operational services of national interest), access to

³ Intelligence, Surveillance, Reconnaissance.

space and Navigation (Galileo PRS service), while developing an appropriate downstream segment to the benefit of the user community.

In light of the strategic nature of space infrastructures for Italy and their intrinsic link with the national security and protection architecture, it is essential to adopt a stratified and all-inclusive approach to **prevent, deter** and, if necessary, **defend** against hostile attitudes. This can be realized through the synergy of several elements. As to cross-cutting aspects, diplomatic support will be fundamental in promoting international standards for the responsible use of space; the same applies to the link with the Atlantic Alliance and the ensuing collective security framework in the space sector and a strengthened strategic cooperation (governmental, industrial, scientific) with the so-called spacefaring nations and with international organizations.

Protection and supervision measures on the **development of industrial, scientific and commercial activities** should contribute to safeguarding Italy's responsibilities arising from international obligations and strengthening and reinforcing the focus of an important part of the industrial sector towards the development of technologies, applications and services of civil and military interest. This will entail an ongoing protection of classified information and national assets, while also assessing the possible need for a targeted government intervention, including the use of "Special Powers" pursuant to Decree-Law No. 21 of 15 March 2012.

A stable space environment, in which all nations operate in accordance with their responsibilities and in compliance with international law and the principles of the United Nations Charter, would lead to a low risk of intentional threats, and the possibility of conducting activities without having to resort to the development of self-defense capabilities. This is viewed as a driver for **international cooperation**. It is therefore essential to ensure that bilateral and multilateral cooperation with the main partner countries, within the ESA, European Union and NATO framework, is duly considered. This would aggregate political support in the international debate aimed at strengthening the governance of space, as well as extending the financial coverage, hardly sustainable by individual States, for the launch of shared standards and new infrastructures. In essence, this would guarantee the sustainability, safety and security of space activities (e.g. SST/SSA capabilities in the European context) and define an adequate security framework for classified information exchanged in the space sector, also through specific Security Agreements.

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