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The evolution of Italian space policy

In the 20th century, the Italian space sector appeared as a niche of excellence, a remarkable reservoir of know-how and technology that was expressed almost exclusively in international collaborations. The historical heritage of the Italian space sector has its roots in the 1960s, with the National Research Council's San Marco project and the activity of the Aerospace Engineering Department of the University of Rome La Sapienza, created and directed for a long time by Luigi Broglio. The importance of astrophysics research within the remarkable Italian School of Physics must also be emphasized. We are therefore dealing with a high-level sector that has long remained rather discreet, because it is linked to a community of researchers and industrialists operating in a relatively closed circle at the national level.

To examine the Italian space sector, we must start with the numbers. The budget of the Italian Space Agency is about 1 billion euros while the Italian part of the European recovery plan, the PNRR, dedicates more than 2 billion euros to space¹. An overall envelope of 5 billion will likely be devoted to space in Italy in the coming years². In the context of the ESA ministerial conference held in Paris in November 2022, Italy has committed to a contribution of 3.1 billion euros for the period 2023-2025, a budget that is a significant increase (+ 35 %) compared to that of the ministerial conference in 2019³. This considering that the 2019 budget had already experienced a significant jump compared to the previous conference in 2016. In the space of a decade, the Italian budget for ESA has almost tripled. These figures confirm the strength of the programs of

¹ Laura Magna, « Non solo astropreneurs: quale destino dell'aerospazio italiano, manifattura da 50 miliardi di euro? », *Industria Italiana*, December 1, 2022.

² « Spazio, dal Governo 5 miliardi in 5 anni », *Giornale di Sicilia*, December 1, 2022.

³ « Finanza; Avio, esito conferenza ESA: attesi contratti per 700 milioni dal 2023 », *Il Messaggero*, November 29, 2022.

an Italy that is in third place in Europe, not far from France (3.2 billion euros) and Germany (3.5 billion) while the overall ESA budget is 16.9 billion euros. This range of figures illustrates the extent to which Italy has become a permanent fixture in the European space scene. This progression is quite recent and can also be illustrated by the technological advances and institutional reforms that have taken place over the last twenty years.

The rise of the Italian space sector in the 21st century

During the 21st century the Italian space sector has reached technological and symbolic milestones that appear as crucial passages in the rise of the sector. The launch of the Vega rocket on February 13, 2012 certainly represents a topical moment⁴. The adventure of access to space in Italy, however, goes back to the origins of space, when already within the San Marco project the Italians were experimenting with off-shore launches from a platform anchored off the coast of Malindi in Kenya using American vectors. Since these pioneering times, we have seen the perseverance of an Italy that was pushing to acquire a launcher capability. The Vega project has had its ups and downs, but has never been abandoned, and is a clear indication of Italy's ambition in this area, a way of moving away from the ancillary position that corresponded to the exclusive production of satellites and services.

The participation of Italian astronauts in the various manned missions will also contribute to embodying space to public opinion. In this regard, it is worth mentioning astronaut Samantha Cristoforetti, the first Italian woman to fly in November 2014: this event is generating widespread interest and reinforcing the perception of space in Italy.

Finally, one should note that in 2018 a law was passed to organize the space sector, which centralizes decisions under the authority of the head of government (president of the Council of Ministers) by establishing a steering committee for space policy. Historically, the Italian space sector was characterized by an institutional logic of research and development with a space agency, the ASI, placed under the authority of the Ministry of Higher Education and Research⁵. The 2018 law makes space a priority government policy that must be articulated in a strategic interministerial vision that encompasses the various components: not only scientific research, but also industrial policy, defense, transportation and diplomacy. It is worth mentioning that in December 2022 the Leonardo Foundation organized a conference in Parliament to promote new legislation for space activities, which illustrates the consensus around a growing structuring of the sector and the strategic role of the Italian industrial group⁶.

There is also another element related to industry. In 2007, a Franco-Italian joint venture was set up based on the merger between the space activities of Alcatel and those of the Italian holding company Finmeccanica. This operation produced the current structure of the space alliance between the French group Thales and the Italian group Leonardo, heirs to these holdings, around the two joint ventures ThalesAleniaSpace and Telespazio. This move is far from insignificant, as it forced Italy's main satellite producer, Alenia, to enter into a close cooperative relationship with the French partner, though it would take almost a decade for an integrated bilateral dynamic to be established. In this respect, it is important to note the structuring aspect of Franco-Italian cooperation in security telecommunications: the agreements between

⁴ Giovanni Caprara, « Spazio Dopo il lancio i nostri scienziati hanno cantato in coro l'inno di Mameli; In orbita Vega, il razzo made in Italy », *Corriere della Sera*, February 14, 2012.

⁵ « Spazio, a settembre prima riunione del Comitato interministeriale », *Askanews*, July 20, 2018.

⁶ « Camera: domani convegno sullo spazio con Fontana », *ANSA*, December 15, 2022.

Athena-Fidus and Sicral will solidify industrial cooperation within ThalesAleniaSpace, with the possibility of synergies and access to a dedicated public market⁷.

In addition, it is worth mentioning how space activities have been repositioned within the Leonardo holding company. While the agreement with France left only 33 % of the satellite production joint venture in Italian hands, one might have feared a certain “denationalization” of TAS-I, in other words that the minority nature of the company would call into question the perception of the existence of a national champion in satellite construction by the various Italian players, to the benefit of other companies. There was certainly a moment of hesitation, but TAS-I has managed to return to the forefront. This benefits and contributes to the strengthening of space in Italy in general, but it also repositioned itself as a positive brand within Leonardo. It is important to remember that the Leonardo group is the result of a complicated history. The former Finmeccanica appeared as a public holding of medium-sized technology companies each with its specificities and with relative autonomy for its different units like Selex, Datamat, Oto Melara or Alenia Aeronautica. The plan to transform this mix into Leonardo in 2016 coincided with a plan, carried by former CEO Mauro Moretti, to further integrate the different parts. This resulted in the disappearance of the various company identities and a more generic and global approach under the Leonardo brand. This operation was mostly negative for the traditional brands of a group that appeared to be reduced to its role as a helicopter manufacturer (Agusta Westland), thus diminishing the autonomy of the former holding companies. But it has had a paradoxical effect on Telespazio and ThalesAleniaSpace. Due to the international control sharing agreement with the French group Thales, the autonomy of these companies survived the centralizing will of the Moretti era. After the appointment of Alessandro Profumo to the group’s management in 2017, the space part of Leonardo was able to benefit greatly from the sector’s national and international growth. While in terms of financial results, the group’s space activity weighs relatively little compared to defense electronics, helicopters or aeronautics, in terms of perception, space has become since the end of the 2010 decade a strong identity of the company, which thus projects itself as an advanced producer of technology while also benefiting from a growth dynamic. The main space leaders of the group, Massimo Comparini and Luigi Pasquali, have played a key role in this dynamic of strategic revival of space within Leonardo, an element that is far from insignificant given the importance of the industrial player in an Italian ecosystem that has always been characterized by the ability of public groups to instill a global strategy to all players⁸.

It should also be noted that a large part of Italian space is located in the region of Rome⁹. With the electronics and space district of the Tiburtina area, on the outskirts of Rome, the Avio factories in Colleferro, which produce launchers, the university engineering centers of La Sapienza and Tor Vergata, the ESA ESRIN center in Frascati, and the steering institutions such as ASI, a complete and efficient ecosystem has been set up in Rome. Of course, we must not forget the existence of other centers of excellence in Italy, from Turin to Naples, but the Roman district effect is important and also explains the resonance on the institutions (government and ministries) as well as on the media sphere.

If the companies controlled by Leonardo appear to be the industrial leaders of the sector (Telespazio, TAS, but also Avio, in which Leonardo has a 29.6 % stake), we also note the growth

⁷ Giovanni Caprara, « La sicurezza arriva anche dallo spazio », *Il Corriere della Sera*, July 18, 2008.

⁸ Jean-Pierre Darnis, « The role of Italy’s strategic industries in its foreign policy », in Giampiero Giacomello, Bertjan Verbeek (eds.), *Italy’s Foreign Policy in the Twenty-First Century. The New Assertiveness of an Aspiring Middle Power*, Lanham, Lexington Books, December 2011.

⁹ Giusy Lorlano, « Il Lazio va in orbita », *Milano Finanza*, December 10, 2022.

of other players. For example, in the case of contracts for the new Iride constellation, OHB Italia and Argotec are the prime contractors for the first tranches. The emergence of these smaller players in an important public contract such as the Iride program is an indication of the growth of all the players in the sector, while various institutions are mobilizing to ensure that the fabric of Italian SMEs, characterized by its dynamism, can be inserted into the “space economy”, as observed during the recent “New Space Economy European Expoforum” organized in Rome in November 2022.

These technological, human, industrial and institutional elements illustrate the progression of the Italian space industry over the last two decades, a rise that also intersects with a global trend, that of the revaluation of space through the “new space” and the revival of exploration that has been observed generally since the 2010s¹⁰.

The evolution of programs

The Italian space sector is therefore at the confluence of internal and external trends that explain the growth dynamics that we have already observed concerning the budgets.

If we examine the programs, we notice that within the ministry, Italy defends already active threads, in particular the realization of the Vega E launcher (with a liquid propellant) as well as that of the space service shuttle Space Rider, without forgetting the development of a reusable upper stage¹¹. The Italian space sector has succeeded¹¹ in establishing itself as a complete sector, now covering a wide range of technologies¹².

An important aspect is the long-term nature of Italian public orders, a factor that appears to be a real lever. From this point of view, one of the most remarkable aspects is certainly the growth in Earth observation capabilities, with the new Iride constellation in particular, financed by Italy under the European recovery plan¹³. The first phase involves the construction of 22 satellites by two consortia coordinated by Argotec and OHB Italia, with a series of subcontractors. A second optional tranche is planned, which would bring the investment to a budget of 128 million euros¹⁴. The overall budget of this program should be 1 billion euros, with the particular character of an Italian program but whose management has been entrusted to the ESA, in collaboration with the ASI, while within the recovery plan, 2.1 billion are dedicated to space¹⁵. These sums must be spent quickly and the programs completed by 2026, which is very short. It therefore remains to be seen to what extent all these budgets will be used. But the trend is clear, to push on the space gas pedal, allowing Italy to generate services and revenues.

From this point of view, Iride intends to increase the availability of geo-observation information of the Italian national territory, with the objective of feeding the various Italian administrations in a dual perspective, but also to allow the development of services to deal with critical aspects of environmental management, for example with regard to the fine knowledge of land movements. It is a vision of a potential public and private market that underlies a project that will also increase the information production capacities for security users. Here again, this aspect

¹⁰ « New Space Economy European Expoforum: in presenza l'edizione 2022 », *Askaneews*, November 11, 2022.

¹¹ Carmine Fotina, « Spazio, maxi contratti per Avio: 950 milioni da Esa e Commissione Ue », *Il Sole 24 Ore*, November 30, 2022.

¹² Emilio Cozzi, « L'eccellenza italiana tra tecnologie spaziali e applicazioni terrestri », *Il Sole 24 ore*, December 6, 2022.

¹³ Enrica Battifoglia, « Al via costruzione satelliti Iride, per tutela Terra », *ANSA*, December 3, 2022.

¹⁴ Davie Madeddu, « Iride, in Italia 22 satelliti e investimenti per 68 milioni », *Il Sole 24 Ore*, December 3, 2022.

¹⁵ Giovanni Caprara, « Sette miliardi per mandare l'Italia in orbita », *Corriere della Sera*, July 4, 2022.

is characteristic of an Italy that, since the production of the Cosmo-Skyimed satellites, has always put forward a dual logic, that of civilian and military users, which allows it to mobilize resources that the Ministry of Defense alone would not be able to gather. It is also important to note the vision of an Italian ecosystem that wants to increase its capacity to produce space-based information in order to be upstream in the global data value chain. This priority given to Earth observation is also reflected in Italy's constant support for the European Copernicus program, a strategic vision that is expressed in the appointment, in October 2021, of Simonetta Cheli as director of ESA's Earth observation programs, which strengthens the proximity between ESRIN in Frascati and Italian institutions, as can be seen in the management of the Iride program.

Among the programs under development, it is important to highlight the investment in exploration. The Space Rider automated vehicle program is significant in this respect, especially since it includes a component on atmospheric re-entry. Finally, it is important to note how Italy contributes, through the specific capabilities of TAS-I's Turin facilities, not only to the European part of the Artemis lunar program (within the MSE, the European service module for the Orion spacecraft) but also to the development of NASA lunar habitation modules for Northrop Grumman, not to mention the work on lunar orbit habitation structures. TAS-I is an important supplier in the context of the re-launch of lunar exploration, either through the ESA contribution or directly for NASA.

This duality appears to reveal underlying trends. The Italian space sector is characterized by national dynamics that must be constantly analyzed through their international correspondences. It has historically been built in a double dimension, transatlantic and European, and this matrix is found today in the main axes of cooperation (NASA, ESA and EU/Commission).

The relationship with France: collaboration and competition

The Italian space sector is also characterized by a very close relationship with France, which is articulated in several circles, from bilateral programs to European programs (ESA or European Commission). We have already mentioned the evolution of the industrial alliance between TAS and Telespazio, the "Space Alliance", which appears to be a structuring factor. With regard to programs, we must emphasize the long-standing collaboration in military Earth observation, initiated by the Turin agreement signed in 2001 and which today takes the form of an agreement signed in 2019 between the French CSO program and the Italian Cosmo Skyimed New Generation program. These agreements are based on exchanges of capabilities, which in some respects may appear to be a real limitation. For military telecommunications, the agreements between Athena Fidus and Sicral also structure a continuity of cooperation.

In 2015, a global cooperation protocol was signed between CNES and ASI, which allowed the programming of various initiatives. Bilateral relations have experienced ups and downs in recent periods, with a particularly negative phase in 2018-2019. The intergovernmental summit in Naples in February 2020 marked a return to normal, and the appointment of Mario Draghi as head of the Italian government in 2021 ushered in a period of remarkable cooperation with the Macron presidency. In November 2021, this resulted in a bilateral revival, with not only the signing of the Quirinal Treaty, whose Article 7 specifically describes the framework for space cooperation, but also, at the same time, the signing of a bilateral cooperation agreement on launchers, which lays the foundations for joint and reciprocal support for Ariane, a French priority, as well as Vega, an Italian priority, and settles issues of industrial load sharing between

the two countries¹⁶. However, the question of launchers remains problematic between Paris and Rome. A few weeks after the signature of these agreements, the Italians discovered on the CNES website the announcement of the Maia micro-launchers project, which they perceived as competition for Vega¹⁷. Despite denials, this negative perception persists: between France and Italy, on launchers, there is a perpetual search for a compromise and a satisfactory balance, as indicated by the statements of the CEO of Arianespace, Stéphane Israël, who, in November 2022, insisted on the potential complementarity between Vega C and Maia¹⁸. The failure of the second flight of the Vega C launcher the following month was also regrettable from a technological and capacity point of view. This forced pause could, however, highlight the mechanisms of European solidarity, but also a certain prudence in reading the delays of the programs, whether for Ariane 6 or Vega-C.

It should also be noted on this point that the affirmation of Italian space sometimes feeds a thread of nationalist thought that claims a state of space “power” for Italy¹⁹. This geopolitical reading of space is flourishing in Italy, and sees France as a rival rather than a partner, putting in the background the multiplicity of scenarios of cooperation for common benefit in the European context. In this respect, space is used in Italy as a support on which historical readings are projected that tend to consider the relationship with France as problematic, an intellectual construction that is found among the supporters of a certain Italian nationalism²⁰. It is therefore a recurring problem which must be linked to the succession of bilateral clashes that we have observed since the early 2000s, a trend exacerbated during the bilateral crisis of 2018-2019.

The rise of the Italian space sector is certainly good news, as it illustrates the will of a country that relies on technology as part of its growth strategy, an operation that can only be beneficial because it is likely to have a ripple effect at the European level. But this affirmation of space is also sometimes interpreted in a nationalistic way in Italy, particularly with regard to the relationship with France, which is often entwined with rivalry.

The perception of this reality, which is often ambivalent, should push Europe to strengthen its cooperative game, with aspects of competition that can prove virtuous if they remain within the framework of a common vision of progress and solidarity.

¹⁶ « La France et l'Italie adoptent un accord de coopération dans le spatial », Agence France Presse, November 26, 2021.

¹⁷ Gianni Dragoni, « Spazio, la Francia crea (da sola) una nuova società di lanciatori Maia », *Il Sole 24 Ore*, March 25, 2022.

¹⁸ Carmine Fotina, « L'intervista. Stéphane Israël. L'amministratore delegato di Arianespace interviene sulla contesa tra i progetti Vega e Maia e sottolinea: Nei lanciatori c'è complementarietà di mercato; Sullo spazio tra Italia e Francia c'è la possibilità di cooperare », *Il Sole 24 Ore*, November 29, 2022.

¹⁹ Agnese Rossi, « L'Italia è una potenza europea dello Spazio ma non può abbassare la guardia », *Limes*, December 12, 2022.

²⁰ Jean-Pierre Darnis, *Les relations entre la France et l'Italie et le renouvellement du jeu européen*, L'Harmattan, coll. Perspectives stratégiques, Paris, 2021.

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