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AIRBUS OF... LESSONS FOR EUROPEAN INDUSTRIAL COLLABORATION

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Executive Summary

Calls for an "Airbus of…" have become a recurrent feature of European industrial-policy debates. Proposals for an Airbus of chips, cloud computing, artificial intelligence, batteries, rail or satellites express a shared concern: Europe's fragmented industrial and financial capacities may be insufficient to develop competitive technologies and infrastructures in sectors dominated by US or Asian companies. Airbus appears to offer an attractive precedent. It enabled European governments and firms to close a major technological gap, establish a commercially viable producer and eventually compete with Boeing on global markets.

This paper argues, however, that **Airbus should be approached as a point of reference for assessment rather than a blueprint to be replicated directly**. Its success resulted from a historically specific alignment of geopolitical pressure, technological complementarities, sustained public risk-taking, government-influenced demand and economic diplomacy. European cooperation became viable only after national, bilateral and transatlantic alternatives failed to provide participating governments and firms with an acceptable competitive position. Even then, Airbus required approximately two decades to record its first profit and underwent institutional adjustments before becoming a unified company.

To assess the wider relevance of the Airbus experience, the paper compares it with three other landmark European industrial projects: UNIDATA in computing, Gaia-X in cloud and data infrastructure, and the Galileo satellite-navigation programme. IRIS² is also examined as a contemporary extension of the European space case. These projects combine commercial objectives with concerns about technological dependence, security and strategic autonomy, while differing substantially in market structure, governance and technological context.

The comparison identifies four recurrent dynamics. First, **European cooperation dynamics are influenced by the availability and attractiveness of national, transatlantic or other extra-European alternatives**. Second, **collaboration is easier when partners contribute complementary capabilities** and more difficult when they compete for the same technologies, contracts or customers. Third, **market structure determines the leverage available to public authorities**: procurement-based sectors allow governments to create demand and support early scale, whereas projects in consumer and business markets immediately face incumbent products and commercial competition. Fourth, **governments and firms evaluate cooperation through a 'fair-return' lens**, comparing their contributions with the financial, industrial and technological benefits expected at home.

These dynamics explain the divergent trajectories of the cases. UNIDATA was undermined by conflicting national strategies and competing transatlantic opportunities. Gaia-X has struggled to establish a compelling market position against highly capitalised US hyperscalers. Galileo eventually delivered an autonomous European navigation infrastructure, but disputes over industrial work shares, private risk and fair return contributed to delays, cost increases and institutional reconfiguration. **Strategic autonomy and commercial competitiveness therefore cannot be assumed to reinforce one another automatically**.

The findings have direct implications for contemporary EU industrial policy. Greater budget and financial centralisation, market-creating procurement and coordination may be required, but European industrial projects must also address the uneven distribution of costs, capabilities and benefits among Member States, which emerges as a strong determining factor in this comparative analysis. This issue affects the EU budget, IPCEIs, European procurement preferences, proposals for a European DARPA and debates over competition policy and European champions.

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1. Introduction

Calls for an 'Airbus of ...' have become a recurrent feature of European industrial-policy debates. The expression signals both the strategic importance of a sector and the presumed need for sustained cross-border cooperation on a scale that no single European country can easily provide. In 2013, European Commission Vice-President Neelie Kroes invoked the idea of an 'Airbus of chips' while setting the objective of restoring Europe's share of global semiconductor production to 20 per cent (Kroes, 2012). In 2019, German Economy Minister Peter Altmaier used the language of an 'Airbus of cloud' when launching Gaia-X, an initiative subsequently joined by France and supported by the European Commission (Adler-Nissen, 2024). More recent proposals have included an 'Airbus of satellites' and an 'Airbus of artificial intelligence'. Beyond the digital economy, calls for a 'Railbus' or 'Airbus of rail' emerged in 2017 in response to Chinese competition, while the Commission promoted an 'Airbus of batteries' to support a European electric-vehicle value chain. The recurrence of the analogy led The Economist to ask, with deliberate irony, whether Europe's fantasy of an 'Airbus of everything' could actually fly (The Economist, 2025).

The appeal of the analogy is understandable. **Airbus is widely regarded as the most consequential industrial collaboration in the history of European economic integration**. It brought together national governments and firms that had previously competed with one another, helped Europe close a post-war technological gap in a strategic and dual-use sector, and ultimately established the only global commercial-aircraft producer capable of competing with Boeing on broadly comparable terms. Airbus therefore appears to demonstrate that European states can pool resources, organise technological specialisation and sustain an industrial project over the long term until it reaches global scale. This has led some scholars and pundits to consider Airbus a model, while others regard it as an exception or even a myth to be debunked.

Yet, **Airbus was not created by applying a general European template, and its eventual success was neither rapid nor assured**. The consortium emerged only after national, bilateral and transatlantic alternatives had failed to secure a satisfactory competitive position for the participating countries and firms. It benefited from a particular conjunction of geopolitical pressure, technological complementarities, public risk-bearing, national procurement and economic diplomacy. Its governance combined industrial compartmentalisation, corporate autonomy and an explicit concern for a fair distribution of work and returns. Even under these favourable conditions, it took approximately two decades to record its first profit and a further period of consolidation to become a unified company. Airbus may therefore be both a model and an exception, a source of lessons, but not a blueprint that can simply be transferred to semiconductors, cloud computing, artificial intelligence, batteries or space infrastructure.

This paper revisits the Airbus case in order to identify the conditions that enabled European cooperation to become commercially and strategically viable and then compares those conditions with those of three other landmark European industrial projects: the UNIDATA initiative in computing, Gaia-X in cloud and data infrastructure, and the Galileo satellite-navigation programme, with IRIS² considered as a contemporary extension of the space case. The purpose is not to determine mechanically whether Airbus can be replicated. It is to ask a more useful question: what do the successes, failures and institutional adaptations of these projects reveal about the political economy of European industrial cooperation?

Comparative approach and case selection

The analysis deliberately focuses on a small number of major projects. A narrow sample cannot capture the full diversity of European industrial policy, but it allows closer comparison of project formation, partner incentives, governance and market conditions. The selected cases share two characteristics. First, they concern **technologies with significant commercial potential and broad spillovers across the economy**. Second, they carry a **strategic or sovereignty dimension**: dependence on foreign suppliers may affect not only competitiveness, but also security, public infrastructure and the capacity to act autonomously. These criteria direct attention towards computing, digital infrastructure and space, sectors in which Europe has repeatedly sought to reduce technological dependence while building globally competitive capabilities.

The cases also provide meaningful variation. Airbus and UNIDATA developed in broadly comparable historical circumstances, when concerns about the transatlantic technological gap were intensifying but European industrial policy remained primarily national and intergovernmental. Gaia-X belongs to a digital market already dominated by highly capitalised US hyperscalers and characterised by fast technological change, strong network effects and largely private demand. Galileo, by contrast, concerns strategic infrastructure in a procurement-dependent space market and evolved from an unprecedented public-private partnership into a publicly financed EU programme. IRIS² helps assess whether the institutional lessons of Galileo have been absorbed in a new generation of secure-connectivity infrastructure.

Argument and analytical framework

In this paper, the study of Airbus' road to success reveals that:

- **Airbus did not coalesce as a European strategic partnership until other national, transnational and, in particular, transatlantic options had proven incapable** of providing Member States and their national firms with an acceptable competitive position in aeronautics.
- **A combination of geoeconomic circumstances greatly helped to overcome impeding national rivalries**, particularly between French and British operators and governments.
- **Airbus partners' capacity to collaborate originally rested on clearly compartmentalised technological complementarities**, preventing unwanted industrial and value leakages to partners.
- Airbus's governance system defined **fair returns[1] and corporate autonomy** as core principles.
- **The ability of Airbus to build and consolidate a competitive position over time was greatly aided by state intervention**, particularly given the specific nature of the aeronautics market, which relied heavily on state procurement and government-to-government economic diplomacy.

[1] Fair return is used here in a broad political-economy sense, encompassing not only formal juste retour mechanisms but also the wider expectation among participating governments that their financial or political contributions should generate commensurate domestic industrial, technological or economic benefits.

The comparison with the above-mentioned selection of projects suggests that **the formal location of a project's authority - intergovernmental, supranational or business-led - does not by itself determine success**. Each model has produced both achievements and failures. Outcomes instead depend on the interaction of four political-economic dynamics:

- **The availability and attractiveness of alternatives at European level**. European cooperation tends to become viable when national or transatlantic options no longer offer governments and firms an acceptable strategic or competitive position.
- **Complementarity versus substitutability**. Collaboration at European level is easier when partners contribute clearly differentiated technological assets; it becomes more conflictual when firms compete for the same segment, contracts or customers.
- **Market structure and public leverage**. Procurement-heavy markets allow states to create demand, absorb risk and support learning-by-doing, whereas projects in consumer or business markets must confront incumbent products, competition and technological speed from the outset.
- **The distribution of costs and benefits**. European governments and firms evaluate cooperation through a fair-return lens, comparing their financial and technological contribution with expected domestic gains. This concern affects financing, work shares, procurement, competition and the political durability of the partnership.

These dynamics enable us to connect the historical cases to current European policy dilemmas, as the same dynamics are visible in current negotiations over the EU budget and the European Competitiveness Fund, in the uneven national capacity to finance Important Projects of Common European Interest, in proposals for a European preference in strategic procurement, in recurring calls for a European DARPA and in debates over merger control and European champions. In each domain, the challenge is to mobilise resources and create scale without ignoring how gains, risks and industrial capabilities are distributed among Member States.

Structure of the paper

The paper proceeds in four parts. Part 1 reconstructs the emergence and consolidation of Airbus, emphasising the exhaustion of alternative partnerships, the geopolitical context, the role of technological complementarities, the governance of work sharing and fair return, and the contribution of public procurement and economic diplomacy. Parts 2 and 3 compare Airbus with UNIDATA, Gaia-X and Galileo, and consider the implications of Galileo's trajectory for IRIS². These cases show how rival capabilities, uncertain markets and contested risk allocation can impede cooperation, while also demonstrating the capacity of European institutions to rescue and reconfigure strategically important projects. Part 4 draws the comparative lessons together and applies them to present-day debates on financing, procurement, a European DARPA and competition policy.

2. Airbus - A Success Driven by Specific Conditions and Some Luck

In 1965, a Memorandum of Understanding was signed between the French, West German and British governments to assess the potential of developing through a transnational strategic partnership a large wide-body commercial aircraft, later named the A300. The British government withdrew from the project before its official launch in 1969 but the British private contractor Hawker Siddeley Aviation (HAS), involved at the time in the discussions, remained committed to pursuing the project on its own. In 1970, the French and West German governments established Airbus Industrie, respectively designating as national contractors Sud Aviation (later known as Aerospace) and Deutsche Airbus, a consortium of German companies. The Spanish government joined the project in 1971 with Construcciones Aeronauticas S.A. (CASA). The sale of 23 A300s to an American airline called Eastern Airlines in 1976 was a turning point in the historical development of Airbus Industrie, although it did not reach viability at the time. In 1979, the British government decided to rejoin the consortium at the same time as joining the European Economic Community. Although Airbus Industrie was originally an ad hoc partnership to develop a single aircraft tailored to the needs of the European market, it evolved into the development of a 'family' of aircraft, with the launch of the A310 model in 1978 and the A320 model in 1984 (Hayward, 1987). It took Airbus Industrie 20 years to record its first profits in 1991 (Warlouzet, 2021). By the end of the 1990s, the consortium had secured a 30 per cent share of the global market, establishing Airbus as the only credible competitor to Boeing. Buoyed by its successes, the Airbus consortium decided at the beginning of the 2000s to transition towards forming a single merged company. Initially called EADS (European Aeronautic Defence and Space Company), it was later renamed Airbus SE after further consolidation.

Studying Airbus' road to success reveals that:

- Airbus did not coalesce as a European strategic partnership until other national, transnational and, in particular, transatlantic options had proven incapable of providing Member States and their national firms with an acceptable competitive position in aeronautics.
- A combination of geoeconomic circumstances greatly helped to overcome impeding national rivalries, particularly between French and British operators and governments.
- Airbus partners' capacity to collaborate originally rested on clearly delimited technological complementarities, legally preserved fair returns, and individual corporate autonomy as core principles.

2.1. The Aeronautics Market After the Second World War (WWII)

2.1.1. History Matters in Present-Day Perspectives of the European Technological Gap

Europe's current technological problem is not new (Nouveau, 2025). Numerous reports have on successive occasions since the end of the WWII underlined the technological gap emerging and growing between the European Economic Community/European Union and the United States but also other parts of the world, such as Japan in the 1980s and 1990s and China since the 2010s. The Airbus project is first and foremost a reaction to the publication of Draghi-like reports at the end of the 1960s. Originating from the OECD (1968), the UK government (Committee of Inquiry into the Aircraft Industry, 1965), the West German government (Strauß, 1968), the French political editorialist Jacques Servan Schreiber (1968), or again from the European Commission with the famous Colonna report (European Commission, 1970), all these various analyses argued that the European economy was increasingly lagging behind the United States, in particular with regard to strategic sectors such as space technologies, aeronautics and computer industries.

2.1.2. United States' Rising Dominance in Aeronautics: A Matter of Both Scale and Industrial Policy

When Airbus Industrie was established in 1970, American companies held a 94 per cent share of the non-Soviet commercial aircraft market. Boeing dominated half of this market, while McDonnell Douglas (MDD) and Lockheed controlled the rest (Hickie, 1991). This situation was primarily the result of a shift in aircraft manufacturing capabilities from Europe to the United States. The Allied powers prohibited West Germany from aircraft manufacturing from 1945 to 1955, which led to the dismantling of relevant facilities and the loss of German expertise abroad. Britain was the only European country with significant experience in passenger air transport before the war but suffered a serious setback with their post-war Jetliner Comet, which was involved in a series of air disasters. This created a vacuum that mainly benefited US firms. French and British manufacturers recorded a significant drop in sales during this period. Between 1960 and 1967, sales decreased by 50 per cent, while American manufacturers experienced a 50 per cent increase, mainly due to placing long-haul airliners on the market (Francis & Pevzner, 2006).

Several critical factors contributed to the United States' growing dominance of the global aeronautics market beyond the specific post-WWII geopolitical situation. Firstly, the United States enjoyed a structural scale advantage. In the 1960s, for example, US domestic air traffic accounted for 60 per cent of the global total, compared to 18 per cent for Europe (Hickie, 1991). Not only was the US market comparatively large, but it also offered security to US air carrier producers. The 1933 Buy American Act required that US-made products be given preference in procurement, from which Boeing, MDD and Lockheed, as military aircraft producers, largely benefited. US government military expenditure significantly impacted the development of commercial aircraft, characterised by lengthy and therefore risky cycles. At the time, the aviation industry had one of the highest R&D intensities, reaching 25 per cent of output (Sandholtz, 1992). From 1945 to 1982, the US government provided $104 billion in federal support to aviation, 75 per cent of which came from military agencies. Over the same period, private firms contributed 15 per cent of the total research and development expenditure, amounting to around $9 billion (Golich & Pinelli, 1997, Francis & Pevzner, 2006). The US domestic civil market was also relatively protected from foreign competition with a 5 per cent tariff in place until 1980 (Europe did not apply any tariffs) (Burigana, 2007). A report by the Plowden Committee in Great Britain emphasised that the size of the US market, coupled with its exclusivity to US firms, enabled US aircraft manufacturers to benefit from learning by doing and economies of scale.

This made manufacturing costs 10–20 per cent lower than in the UK (Committee of Inquiry into the Aircraft Industry, 1965). To gain market share abroad, US firms could eventually rely on the US Export-Import Bank (EXIM) — dubbed the 'Boeing Bank' at the time — to support the sale of their aircraft in countries where financing was weak or unavailable (Francis & Pevzner, 2006). Charles de Gaulle emphasised what he considered to be an 'American colonisation of the skies' (as cited in Peyrefitte, 1994). For Member States with aeronautical operations — the UK, France and West Germany — the resilience of their aircraft manufacturing activities was called into question, as was the maintenance and upgrading of their national air forces, the development of related military applications, and ultimately their strategic autonomy. As a high-tech upstream sector, the aeronautical industry was also considered to have ripple effects throughout the overall economy.

2.1.3. The Prospect of an Aviation Market in Expansion

The impact of the US's increasingly dominant and entrenched position in aeronautics on national competitiveness and strategic autonomy in Europe was not the sole concern. There was also the **opportunity to capitalise on the expected steady growth in demand for air travel at the time**, particularly in the Middle East and Asia, where new airlines such as Korean Airlines, Singapore Airlines, Japan Airlines, Thai Airways and Qantas were being established (Burigana, 2007). The progressive normalisation of US relations with China in the early 1970s was also considered promising, as the Chinese market was expected to open up further to foreign imports (Muller, 1989). At the end of the 1980s, Richard Baldwin and Paul Krugman would argue that the commercial aircraft industry market exhibited all the characteristics of a natural monopoly, where learning by doing and minimal size requirements meant that only one company could survive under market conditions (Baldwin & Krugman, 1988). However, the prospects for world demand in the 1960s appeared to create a 'window' for challengers, providing a unique opportunity for European aircraft operators to get back in the game.

2.2. Airbus Was Just One of Many Options, Not the Only or Favoured One

In Europe, Member States' motivations to regain competitiveness in aeronautics were initially strongly nationally oriented and corporate motivations were also individual-oriented. Efforts to develop to the same scale as the Americans made transnational collaborations compelling. However, there was more than one possible path towards transnational projects: they were not limited to intra-European options. Transatlantic partnerships were envisaged and attempted as much as intra-European ones, and sometimes in parallel. Ultimately, the latter option proved to be the only viable one. The European Community-driven option was quite clearly rejected by all private counterparts and national governments. The Airbus option, as a European industrial project, did not coalesce until after the standalone approaches and transatlantic attempts failed to demonstrate commercial viability (Hayward, 1986, 1987; Muller, 1989; Sharp & Shearman, 1987; Warlouzet 2026).

2.2.1. National Initiatives Based on Concentration and Rationalisation of The National Industries

The process of regaining competitiveness in the aeronautical industry began with state-driven policies aimed at creating national champions through the rationalisation of aircraft manufacturing capacities. In the UK, France and West Germany, the respective governments orchestrated a process of industrial consolidation involving mergers and acquisitions. In the UK, for instance, the number of aircraft design companies decreased from 20 in 1959 to just one, British Aerospace, by 1978. In France, the same process resulted in only two companies remaining: Dassault and Aerospatiale. In West Germany, two companies survived the process: Messerschmitt-Bölkow-Blohm (MBB) and VFW-Fokker, a transnational joint venture between the Dutch aircraft company Fokker and the German firm Vereinigte Flugtechnische Werke (VFW) (Hickie, 1991; Burgana, 2007). All three countries also had one major aero-engine manufacturer: Rolls-Royce in Britain, SNECMA (now Safran) in France, and MTU (now Daimler-Benz) in Germany. However, national rationalisation still did not provide the minimum scale necessary to compete with US firms. Design emerged as a critical bottleneck. While Boeing's economies of scale enabled the company to independently assume the costs and risks of conceptualising a new wide-body aircraft model, retaining individual control over large aircraft design was not sustainable for smaller European national champions (Hickie, 1991).

2.2.2. The Rise of Multiple Strategic Partnerships at Both Transatlantic and European Levels

The purpose of this paper is not to list all the industrial projects attempted during this period, although **some of them influenced the conception, implementation and governance of the Airbus project**. However, a few are worth noting. The Concorde became the iconic symbol of French-British collaboration in the application of supersonic engine technology to commercial flights, resulting in technological prowess and commercial failure (Archibugi & Mariella, 2021).[2] The Dassault Mercure was another failed collaboration, albeit lesser known. The French government entrusted its national champion, Dassault, with developing an aircraft model to compete with Boeing. The decision was made to focus on the short-haul segment of air travel and develop a narrow 150-seat jetliner called the Mercure. To differentiate the model on the market, it would be equipped with a series of computer-based tools and other technological innovations. Although the project was under clear French leadership, with Dassault and the French state providing two-thirds of the funding and thus overseeing the design and production, it included a large number of European and international partners and suppliers: Fiat (Italy), Casa (Spain), Adap (Belgium), Canadair (Canada), FW Emmen (Switzerland), and Pratt & Whitney (USA). Dassault sought to further develop transatlantic partnerships as a way to penetrate the large but protected American market, but without success. The limited passenger capacity and short-haul range of the Mercure failed to convince US airlines, who were searching for much larger models, or the rest of the European and global air transport operators, who needed to respond to growth in air travel and long-distance journeys (Warlouzet, 2021; Burigana 2013).

Dassault was not the only French company to engage in transatlantic collaboration. During the same period, the national engine manufacturer SNECMA was both working with Rolls-Royce on the Concorde propulsion system and partnering with US General Electric to develop a new engine. Similarly, the British government was engaged in various projects at different levels of cooperation, ranging from national to European (e.g., the Concorde and Airbus MoU) and transatlantic (e.g., Rolls-

[2] Only 20 airplanes were manufactured. British Airways and Air France respectively bought seven of them.

Royce's 1968 agreement with Lockheed to become the exclusive supplier of engines for the US company's new commercial airliner, the L-1011 TriStar). It was for this reason that, having signed the Airbus MoU, the UK eventually decided not to participate in the next step, the establishment of Airbus Industrie, first because it considered its industrial relationship with the United States more risk-averse and second because it feared a French stranglehold on the Airbus partnership (see below) (Hayward, 1986; Warlouzet, 2021; Burigana, 2007).

More generally, **the various approaches adopted by European states and their industrial leaders to regain competitiveness in aeronautics highlight the dilemma of choosing between intra-European and transatlantic collaborations** once national options have been exhausted. During the development of the Airbus project, transatlantic options offered several advantages. If successful, they would provide secure access to the most important national air traffic market at the time, as well as the opportunity to benefit from global market shares — including those in Europe — conquered by Boeing, Lockheed and MDD. Compared to the more uncertain and riskier intra-European options, the transatlantic ones offered a more promising way of regaining competitiveness in Europe and worldwide. This paper argues that this dilemma recurs in many Europe-driven industrial projects and is a key factor in determining their future.

2.2.3. A Community Option Proposed by the European Commission and Rejected by Member States

In the early phases of Airbus Industrie, **the European Commission attempted to propose an integration framework for the aeronautics market**. In 1975, Commissioner Altiero Spinelli proposed a “Schuman Plan for Aviation”, including the establishment of a “European airspace” and a “common market for aeronautics”. A primary and crucial stage of the plan was to bring all relevant companies together around a supranational 10-year development programme, which would shift rationalisation efforts from the national to the European level. Also quite central to the proposal was the establishment of a procurement agency that would be a one-stop shop for European and third countries’ air transport companies and that would also be in charge of the economic diplomacy part outside the EEC borders. The European Council rejected the European Commission common policy proposal and offered the European Commission a simple consultation role instead (Burigana, 2007, Warlouzet, 2021). As far as Member States were concerned, the European Commission’s vision for the European aircraft industry infringed on the national sovereignty prerogative: “One thing on which the French and German governments agree is that collaboration on aerospace is essentially a matter for governments and the role of the European Commission should be limited”[3] (Burigana, 2013). The sovereignty concern suggests that member-states were concerned their national industries might become the junior partners of other Member States’ industries: “No one wants to play the role of “tail-end Charlie” to other national industries (from an interview made by Burigana, 2007). As shown later, the geoeconomic context of the Airbus project enabled Member States to overcome that pitfall. But the exclusion of the European Commission’s proposal and intermediary role is revealing of prevailing national interests in the Airbus development process.

[3] This comment is attributed to Sydney William Treadgold, who was serving as an Under Secretary in the UK's Department of Trade and Industry (DTI) at the time. He was heavily involved in the tripartite working groups (UK, France and West Germany), which were negotiating the Airbus initiative.

2.3. Airbus' Industrial Strategy: Good Fortune and Geoeconomic Conducive Forces

2.3.1. Servicing The European Market: Both A Strategic Decision and a Matter of Good Fortune

As mentioned earlier, the initial Memorandum of Understanding set out a specific objective: the development of wide-body aircraft to meet the needs of the European air passenger market. A comprehensive consultation process was conducted, involving not only Air France, British European Airways and Lufthansa (as the national companies of the three governments that signed the agreement), but also other European airlines, including Aer Lingus, Alitalia, Finnair, KLM, Sabena, SAS, Swissair and TAP Air Portugal. It was generally agreed that the European market primarily needed a medium-range aircraft with around 250 seats that could fly routes of between 1,000 and 4,000 km. Due to its focus on its large domestic market, the US industry had specialised in larger models adapted for transcontinental flights (McGuire, 1997; Dierikx, 2020).

In this regard, **the Airbus project enjoyed a certain degree of good fortune**. This was a period during which international airlines began to review their business models, attempting to adapt to the global expansion of the commercial air transport market. This led to a transition from point-to-point routing to the hub-and-spoke system that is now commonplace. Coincidentally, the size of the aircraft designed by Airbus responded to the reconfiguration of the organisation of international air traffic and later supported the growth of Airbus Industrie (Burigana, 2007; Sharp & Shearman; 1987, McGuire, 1997).

2.3.2. Intra-European Geoeconomic (Dis)Equilibrium Factors as Enablers

Research shows that the distribution of economic power and industrial gains between the UK, France and West Germany ultimately formed the backbone of the Airbus project. There were strong industrial rivalries between France and the UK. Although West Germany was diminished politically and economically as a loser of the war, it was nevertheless considered an industrial contender capable of regaining full competitiveness thanks to the country's strong economic emergence and technological progress since the end of the 19th century. In this regard, Airbus presented the German government with a unique opportunity to re-enter the aviation market and recover some, if not all, of the expertise and aircraft capabilities lost in the aftermath of the war (Ahrens, 2020; Archibugi & Mariella, 2021; Jopp & Spoerer, 2021).

The UK withdrawal: the search for indispensable complementarity against rival substitutability

This triangulation of diverging interests may have posed a significant challenge to completing the programme. Ultimately, the UK's withdrawal proved beneficial to the process. France aimed for design leadership, a concession that the British government was willing to make if British firms, particularly Rolls-Royce, obtained engine leadership. This was part of the MoU signed in 1965. However, the British government grew doubtful of this equilibrium when it became clear that the model being developed would be a medium-range aircraft requiring engine technology that Rolls-

Royce would not be indispensable for, and that could be easily substituted by other partners inside or outside the alliance (Hayward, 1986; Rookes, 2021). Ultimately, the British government concluded that its primary interest lay in supporting Rolls-Royce's competitive advantage, either by designing and manufacturing a purely British airliner with Rolls-Royce inside or by developing transatlantic cooperation schemes with US firms whose aircraft were in much greater need of Rolls-Royce engines. What the British-French rivalries and British hesitations reveal is the crucial stumbling block of technological indispensability/complementarity versus replaceability/substitutability in industrial projects. It also suggests that prioritising each participant’s individual preferences may come at the expense of the project’s overall coherence and sustainability, particularly when the resulting division of responsibilities is not underpinned by genuine technological complementarity and mutual dependence.

The German and British relative geoeconomic vulnerabilities as a feasibility factor

The British departure handed the French government de facto control over the project due to the specific geopolitical situation of West Germany after WWII. However, it also presented West Germany with an opportunity to strengthen its legal position within the partnership and achieve parity with the French, which had not previously been the case. Technologically, however, the country was lagging behind. This is why the German government made the unusual decision to subsidise the British firm Hawker Siddeley, after the British government withdrew, thereby helping the company maintain its industrial participation in the project (Warlouzet, 2021). Technologically, Germany was in a junior position and in need of British expertise. Geopolitically, it was important to retain HS's participation in order to counterbalance French industrial dominance (Ahrens, 2020).

The British government rejoined the consortium in 1978. During the previous decade, its standalone attempts and transatlantic projects had made it clear that Airbus was the only way for Britain to maintain its civil airliner business (Hayward, 1986, 1987). However, the British returned in a weaker position than when they left. Airbus Industrie had already signed a deal with US Eastern Airlines. Meanwhile, the UK was caught up in a severe financial crisis requiring IMF intervention. Upon their return, their position was the opposite of West Germany's. Although they could claim technological leadership, or at least parity, with French operators, they were politically and legally constrained by their withdrawal and economic downgrading over the previous ten years.

From a political and industrial standpoint, **the triangular alliance was consolidated on a fragile and circumstantial equilibrium**. The search for strategic autonomy and competitiveness required the French government and its national champion, Sud Aviation (subsequently Aérospace) to engage in a necessary industrial collaboration. Their leading position essentially relied at the time on West Germany's technologically secondary position (although legally on a par), and Britain's legally secondary position (although technologically on a par). This peculiar configuration enabled the concretisation and consolidation of the partnership.

Airbus Governance Pillars: Fair Return and National Industrial Control

The governance system put in place at the launch of Airbus Industrie was driven by the aim of guaranteeing fair industrial returns and complete autonomy of the different national industrial players both inside and outside the Airbus partnership.

2.3.3. A Fair-Return-Driven Legal Framework

The legal entity chosen to define Airbus Industrie originated from French law and was called a 'Groupement d'Intérêt Économique' (GIE), which offered a legal structure without share capital. **This framework allowed Airbus Industrie to set a limited number of agreed commercial objectives, while all other activities of the founding partners - Aérospace, Daimler-Benz, British Aerospace and Casa — remained fully autonomous from Airbus Industrie**. Voting rights within Airbus Industrie were distributed as follows: Aérospatiale: 37.9 per cent; Daimler-Benz for which the German government obtained a legal parity: 37.9 per cent (see above); British Aerospace: 20 per cent, due to the returning status of the British government (see above); and CASA: 4.2 per cent. According to the agreement, a decision required an 81 per cent majority, which gave all partners a veto except CASA (Francis & Pevzner, 2006; Hickie, 1991).

Beyond the definition of new models in close collaboration with the partners' national design offices, **the GIE was a kind of one-stop-shop, managing the various downstream marketing stages**: sales, after-sales, contractual arrangements and litigation. This meant that each company in the consortium would act as a subcontractor to Airbus Industrie GIE, which had no manufacturing responsibilities (Muller, 1989; Hayward, 1986, 1987).

This governance system ensured that national governments and their national champions retained full control over decisions made on behalf of Airbus Industrie. It also ensured that each partner retained full control over their industrial processes and that national governments retained full control over their national champions (at the time, the four partners were either wholly or partly state-owned). It was an industrial alliance relying on compartmentalised technological complementarities.

Voting rights strictly determined the distribution of development costs, manufacturing workshares, and industrial returns among partners. The original Airbus supply chain is well known: British Hawker Siddeley (later BAE Systems) was responsible for the wings; Deutsche Airbus supplied the fuselage and vertical tail fin; Aérospatiale constructed the cockpit, control systems and centre wingbox; and Spanish CASA was responsible for the horizontal tailplanes. Engines were provided by US subcontractors to increase access to the US market. Rolls-Royce went on to contribute to parts of the engine system for subsequent models. Final assembly was entrusted to Aérospatiale in Toulouse, but again voluntarily reduced to a minimum of steps, amounting to only 4 per cent of the aircraft's value (Hickie, 1991). This division of labour was based on clearly defined specialisation and complementary boundaries, with no overlap, which would have necessitated further interlocking of production. This specialisation model was never questioned or reconfigured throughout Airbus's history.

It is also important to note that the project initially involved **no collaborative innovation beyond the design of the new aircraft prototype**. The development of the A300 therefore had to rely on existing technology (Warlouzet, 2021). The argument was that the development and operational phases had to be swift in order to quickly produce a prototype. It was also decided that the Airbus project would remain purely civil and that the military programmes run by national partners would remain fully separate from the consortium.[4]

Although the project was significant in scope and ambition, it was made as narrow as possible in terms

[4] It was not until 1999 that a military division was established.

of post-conceptualisation collaboration and synchronisation, as the contractual arrangements and production ecosystem minimised unwanted interference, industrial leakage, free-rider benefits, and lock-in effects.

2.3.4. National Governments as Risk-Takers, Procurement and Sales Guarantors

The three European national governments played a crucial role in the development of their respective aerospace industries and Airbus Industrie. It was a clear vertical industrial policy based on financial support, public procurement and government ownership (OECD 1990).

State funding was first quite substantial. According to estimates, 95 per cent of Aérospatiale development work for Airbus industrie was subsidised by the French government. (Hickie, 1995). The Spanish government's contribution reached the same percentage for CASA (Pearce, 1985). In West Germany, public financial intervention covered 80 per cent of Deutsche Airbus's participation, including loan risk capital guarantees from federal and Länder governments (Hayward, 1986).

Although representatives of Airbus partners were involved in promoting the A300, particularly in the US, **market sales were primarily guaranteed by European government procurement and strong government-to-government economic diplomacy**. As expected, the national airline companies of the French, German and British governments were the primary clients of Airbus Industrie. However, political sales also played a significant role in Airbus's market entry and expansion, beyond the competitiveness and suitability of its models for the changing aeronautical market. Airbus sold significantly more to state-owned airlines than to privately owned ones, and the larger the weight of Airbus consortium member countries as trading partners of a country, the more likely an airline in that country was to buy an Airbus aircraft. Similarly, the more development aid that flowed from Airbus consortium member countries to a receiving country, the more likely it was that an airline in that country would buy Airbus aircraft. A concrete example is the former French and British colonies, which acted as large export markets for Airbus. Finally, the European Commission facilitated sales during trade agreement negotiations (Jopp & Spoerer, 2021; Sandholtz & Love, 2001).

While governments' desire to regain competitiveness and strategic autonomy in aeronautics may explain the level of public involvement in the Airbus project, it also reflects the specificity of the aeronautics market, which is, in many ways, an institutional market where procurement and economic diplomacy play a structural role, and where the reduced number of potential buyers (oligopsony) gives further scope for high-level networking and lobbying.

Of course, the nature of the aviation consumer market has changed over time. Firstly, the global fleet of large commercial passenger aircraft has grown significantly since the early 1980s. An analysis of data from Boeing and Airbus suggests that around 1980, approximately 4,000–4,500 passenger jets with at least 100 seats were in service (Boeing Commercial Airplane Company, 1979; Boeing company, 1981). By comparison, Airbus reported that there were nearly 22,500 passenger aircraft with at least 100 seats in the worldwide fleet in 2024 (Airbus, 2025). These figures suggest that the global fleet of large passenger aircraft has increased by around fivefold over this period. Secondly, at the time the Airbus project was developed, the market was dominated by state-owned monopolies, with the exception of US passenger carriers, which have always been private corporations. Today, the market is less institutionalised: while airline companies in Asia and the Middle East remain strongly state-controlled, ownership structures globally have become much more hybrid, ranging from full privatisation to various types of state minority shareholding. However, it is worth noting that the evolution of the aviation market does not diminish the importance of economic diplomacy in this sector. During his last visit to China in May 2026, the Trump administration struck a deal with Xi Jinping for China to purchase 200 Boeing aircraft.

3. Comparing Airbus to Other Relevant Industrial Projects

3.1. Catching Up with US Advance in the Digital Industry: The IT & Cloud Airbus Cases

As mentioned earlier, **the computer industry was one of the strategic sectors identified in the 1960s** alongside aeronautics, where the European Economic Community was considered to be falling behind strong US competition. In this regard, attempts to regain competitiveness in telematics, as it was then called, were similar in objective to those implemented for the commercial aircraft industry: to foster the emergence of large European transnational companies capable of competing with dominant US firms. The key difference is that, whereas Airbus ultimately succeeded, IT Airbus-like attempts all failed.

Failure can be explained by two intertwined characteristics: the nature and structure of the computer market compared to aeronautics and its impact on the strategic choices made by national governments and industrial players. Although European institutions played a significant role in mitigating some of these obstacles, they were unable to counter the structural dilemma between intra-European collaborations and transatlantic alliances, which in this case tilted European firms towards the second option. This remains a key driving force on the European market today, strongly influencing the shaping of industrial policy today.

3.1.1. A Fast-Failing Inter-Firm and Inter-Governmental Attempt: UNIDATA

In the 1960s, the American duopoly formed by IBM and Honeywell controlled 70 per cent of the European computer market, with respective market shares of 60 per cent and 10 per cent. Their main European competitors — the British firm ICT (later ICL), the French firm Bull, and the Italian firm Olivetti — held only 18 per cent of the market, with respective shares of 9 per cent, 7 per cent, and 2 per cent. The total turnover of all European companies operating in these sectors (excluding European subsidiaries of American firms) was 67 times lower than that of American companies (Nouveau, 2024).

This situation was primarily explained by the **innovative leadership of US firms in these technologies, and secondly by the size of the US market**, which accounted for 35 per cent of global demand (compared to 22.4 per cent for the European Community and 11 per cent for Japan). However, the gap was less significant than in aeronautics (Ungerer & Costello, 1990). Ultimately, as in aeronautics, the US supported the growth of these companies through military procurement programmes.

As with the aeronautics industry, **some Member States with national industrial capabilities in telematics — namely the UK, France and West Germany — proceeded with national industrial restructuring and rationalisation**. The West German government pursued a “dual championship”: Siemens as a semiconductor producer and Nixdorf as a minicomputer producer (Van Walsum-

Stachowicz, 1995; Flamm, 1988, p.165). France, which had no significant industry champions at the time, established the "Compagnie Internationale pour l'Informatique" through its renowned Plan Calcul in 1967. In 1968, the British government merged two of its leading computer manufacturers to create ICL (International Computers Limited).

Once again, **scale proved to be a major obstacle**, and national market concentration was clearly inefficient in this regard. At the time, it was estimated that a company needed a minimum share of 8 per cent of the global digital market to break even. The largest national market within the Community at the time was the West German market, accounting for only 6 per cent of global consumption (Malerba, 1985). Moreover, the European market was significantly fragmented: technical barriers and strong national procurement strategies prevented companies from scaling up at a European level.

Taking an approach similar to that of Airbus, the French and West German governments encouraged the establishment of an industrial alliance in 1972 between CII and Siemens. One year later, the Dutch manufacturer Philips partnered with them to form the joint venture UNIDATA. This transnational industrial project aimed to challenge IBM's dominant position in the European market by developing and manufacturing a comprehensive range of mainframe, mini, and microcomputers. However, the joint venture was short-lived, ending in 1975 after just two years (Griset, 1998, 2006; Van Laer, 2007).

One crucial aspect of the failure was the lack of indispensable complementarities and the significance of rival substitutability among the partners. Unlike the Airbus case, the three partners and some of their respective shareholders were operating, or had ambitions to operate, in similar segments of the supply chain. It was clear that, at least from the French government's viewpoint, Siemens retained a clear technological advantage. Not only was there a fear that CII would become the "tail-end Charlie" of Siemens, but there was also the threat that Siemens might absorb the French champion in the process. This threatened both French competitiveness ambitions and national sovereignty, given that CII was responsible for the IT systems of French nuclear power stations. Compagnie Générale d'Electricité (CGE), which oversaw French power plants, was also a key CII shareholder and a direct competitor of Siemens and Philips in other electronics market segments (Griset, 1998; Nouveau, 2024).

Another determining factor was that the development of computer technology required greater synergies and closer collaboration across the entire value chain, from design to production, than did the Airbus project. The imperative to pool research and development capabilities meant that Airbus-style compartmentalisation was not an option. Consequently, the partners compartmentalised their collaboration differently, agreeing to divide the market between themselves and each produce a different segment of the computer range. However, this cartel-like strategy allowed the partners neither to scale up nor to develop the capabilities needed to counter IBM's dominance. The alliance ended in 1975 (Nouveau, 2024).

3.1.2. The European Commission Comes to the Rescue but In Vain: The Big 12 IT Roundtable

A few years later, the European economy's persistent reliance on imported technologies,[5] the

[5] Between 1964 and 1980, the European share of the semiconductor market declined from 17 to 10 per cent, and of the computer market from 24 to 10 per cent. By 1980, the ECC was importing 50 per cent of its semiconductors and 30 per cent of its computers.

accelerating pace of technological change, intensifying competition following the successful entry of Japanese industry leaders into Europe, and the introduction of strong state-funded research and development (R&D) programmes in the US and Japan, combined with a period of economic recession that reduced governments' financial capacity to support their national champions, presented a window of opportunity for the European institutions and some of their active members, such as the highly influential Étienne Davignon, Commissioner for Industrial Affairs, to champion a 'Community response' and discuss the possibility of organising joint production activities with the leading European companies in the IT sector to enable the emergence of European industry leaders (van Walsum-Stachowicz, 1994). The European Information Technology Industry Roundtable was established in 1979. It is also known as the Big 12 IT Round Table because it brought together the twelve leading European companies in the IT sector: these were Siemens, AEG and Nixdorf from West Germany; Philips from the Netherlands; Thomson, Bull and CGE from France; Olivetti and Stet from Italy; and ICL and Plessey from the UK (Nouveau, 2024).

Not an AIRBUS but an ESPRIT

During the discussions, it quickly became clear that **none of the companies were willing to enter into an Airbus-like collaboration**. However, the roundtable participants convincingly argued that they would be willing to participate in joint pre-competitive R&D programmes. This led to the creation of the first European Framework Programme for Research and Development in the early 1980s, as well as the initial European strategic research and development programme in the field of information technology, known as ESPRIT. These initiatives are the forerunners of today's Horizon Europe programme. Research has shown that input from the roundtable was instrumental in designing the programme. The twelve companies also played a pivotal role in advocating for the programme to their respective governments and ensuring its adoption alongside national telematics programmes. Although ESPRIT was open to all, 70 per cent of funding went to the twelve companies in the pilot phase. They participated in 70 per cent of the selected projects and received 50 per cent of the funding in the programme's first round (Peterson & Sharp, 1998; Lawton, 1995).

The dilemma between intra-European and transatlantic partnership

Paradoxically, while they were participating in ESPRIT, **the twelve companies were also forming strategic partnerships with American and Japanese IT companies**. For example, an agreement was signed between ICL (UK) and Fujitsu in 1981, whereby the British firm sought access to Japanese semiconductor technology in exchange for providing its computers. Similarly, alliances were formed between Philips and AT&T in 1983; Olivetti and AT&T in 1984; Stet and IBM in 1984; and British Telecom and IBM in the same year. European companies remained minor partners in all these agreements. In 1984, Étienne Davignon drew attention to the contradiction between the twelve companies' decision to form alliances with American partners and their previous defence of an independent European IT industry at the Big 12 Roundtable a couple of years earlier (Van Laer, 2007). Once again, these developments can be analysed from the perspective of Airbus. In the context of Airbus, the key dilemma was whether to collaborate with European or American companies. As we have seen, the former prevailed. In the context of the 1980s computer revolution, however, the balance definitely tipped in favour of transatlantic partnerships. What are the differences?

As previously mentioned, European companies in the sector were unable to recognise potential synergies between themselves. Instead, they viewed their counterparts as direct rivals, which limited their ability to cooperate beyond inconsequential pre-competitive R&D steps. Two other factors are also important. First, the computer market lacked the institutional characteristics of the aeronautical industry. **While digital markets certainly have a business-to-government dimension, they primarily have a strong business-to-business and business-to-consumer dimension**. Secondly, **computer-related technological change was rapid and radical in a Schumpeterian sense**, impacting not only the information technology sector, but also having strong disruptive spillover effects on other industries, from manufacturing to services.

Against this backdrop, the computer revolution meant that **traditional European industries had to adopt these new innovations quickly if they were to remain competitive at European and global levels**. This necessitated forming strategic partnerships with the computer industry. In this regard, European IT companies were not offering the best technology on the market. Furthermore, unlike in the aeronautics sector, European governments could not directly influence the choice of computer suppliers in B2B markets unless they implemented strong protectionist trade measures. Therefore, transatlantic collaborations offered the big twelve some advantages. By joining forces with American partners, they could maintain their European operations, serve traditional European industries, gain market share, and continue to compete with their European rivals. This would also allow them to catch up more quickly with American advances than if they had partnered with other, more 'backward' and 'unattractive' European companies.

This did not happen. By 1990, the European trade balance in IT had continued to deteriorate. In 1980, the EEC was importing 50 per cent of its semiconductors and 30 per cent of its computers. In 1990, semiconductor imports accounted for 67 per cent of European consumption, while computer imports accounted for 37 per cent. European indigenous computer capabilities progressively disappeared either because companies ceased to exist or because they stopped producing computers to focus on other core businesses (Malerba, 1985; van Walsum-Stachowicz, 1995).

From an industrial policy perspective, addressing this type of corporate dilemma is not without precedent, even for the United States. In the 1980s, for example, the US was spearheading the computer revolution, but it also felt threatened by Japanese firms such as NEC, Toshiba, Hitachi and Fujitsu, which were quickly penetrating US supply chains, including defence-related sectors, with their memory chips. The US's usual approach to such situations is to increase the significance of business-to-government contributions to the market through DARPA and military procurement guarantees, and, if necessary, protectionist measures (Flamm, 1996). However, compared to the capacity of the US federal budget at the time, **community-driven budgets such as those for ESPRIT and national procurement policies were too small individually to divert European companies away from transatlantic collaborations**. Although the European budget for transnational R&D and manufacturing projects (including defence projects) has increased substantially over time, public allocations remain comparatively small and fragmented compared to those in the United States. The question of the procurement leverage in a market characterised by the primacy of B2B and B2C transactions is central.

3.1.3. Gaia-X: the "Airbus of cloud" in perspective

Understanding the IT Airbus case can provide further insight into the more recent Gaia-X project and the underlying **disenchantment experienced by some of the companies and EU Member States involved in it**.

The search for national cloud champions

As with previous projects described in this paper, Gaia-X succeeded failed national champion strategies. At the beginning of the 2010s, France, Germany and the UK started to support the development of national cloud providers that could compete with US cloud hyperscalers and provide a sovereign alternative. This was in a context marked by the Wikileaks and Snowden scandals, which had raised concerns about the security of European data hosted by US firms. France undertook two successive attempts: the Andromède project in 2009, involving Dassault, Thales and Orange, and the formation of two consortia in 2012: Cloudwatt, comprising Orange, Thales and the French government through the Caisse des Dépots, and Numergy, comprising SFR, BULL and the Caisse des Dépots. Germany supported the development of the Bundescloud, which is primarily used by the German federal government and Deutsche Telekom T-Systems. The latter committed to storing data on German soil in partnership with Microsoft. The UK implemented the G-Cloud project, a catalogue of national cloud services from which public organisations at national and local levels could procure directly. However, none of these initiatives offered convincing technological alternatives to US cloud solutions (Calcara, 2026; Adler-Nissen, 2024; Autolitano & Pawlowska, 2021).

Gaia-X, a French-German initiative endorsed by the European Commission

In response to the US Cloud Act enacted by the White House in 2018, whose extraterritorial rules were considered to directly infringe European digital sovereignty, **the French and German governments partnered in 2019 to launch the Gaia-X project, also known as the 'Airbus of the cloud'**. The project aimed to provide a decentralised network of cloud services that would adhere to European standards of data protection, transparency, and interoperability. The governance process was clearly business-driven as twenty-two French and German companies and research centres were initially invited to participate, including Atos, EDF, Institut Mines-Telecom, OVH Cloud, Orange, 3DS Outscale, Safran, Amadeus, Docaposte, Scaleway, BMW, Deutsche Telekom, Fraunhofer Gesellschaft, Siemens, SAP, PlusServer, Beckhoff Automation, Bosch, DE-CIX, German Edge Cloud, and the International Data Spaces Association (IDSA). They were joined by CISPE, the trade association representing European cloud infrastructure providers. The initiative was endorsed by the European Commission, which extended possible participation to other EU states and agreed to co-finance the project with Member States and private partners (Calcara, 2026).

Initially, observers and some of the project's early partners thought that its purpose was to create structural partnerships between European cloud providers in order to help them achieve a level of service quality and scope equivalent to that of US providers. As most European cloud providers offer specialised or limited services compared to the comprehensive solutions of US hyperscalers, the aim was to enable European industrial consumers to build their own customised cloud stack (a mix and match approach) based on the complementary, decentralised building blocks of European cloud suppliers. In a sense, this could be likened to the Airbus project, whereby each European company contributes to the assembly of a complete, all-encompassing cloud service through the use of interoperable, open-source systems depending on their area of specialisation.

Opinion is divided as to whether this was a misunderstanding from the outset or a change of course, but **the project turned out to be different**. The Gaia-X collaborative process eventually targeted the development of a certification system through which cloud providers, regardless of their national origin (European, American or Chinese), would adhere to a set of compliance principles and standards with regard to cloud users and consumers. The most important of these rules would be the preservation of data sovereignty, privacy and cybersecurity, interoperability between cloud suppliers to avoid user lock-in effects, and data-sharing architectures. Some experts even argue that Gaia-X has ended up setting standards for future standards. 'Not a cloud, not a standard for a cloud, but a way to exchange authenticated data about standard compliance' (Hubert, 2024).

The (re)positioning of the project has been linked to the opening of the association to US and Chinese companies, such as Google, IBM, Intel, Oracle, Microsoft, Palantir, Cisco, Salesforce, Huawei, Alibaba but also to lobby groups such as Brussels-based Digital Europe or Berlin-based Bitkom, the German digital industry association, both including US tech giants among their members. Actually, the partnership greatly extended to reach around 300 members – mainly European - made up of cloud providers but also cloud consumers, telecoms infrastructure operators, traditional manufacturing companies such as car makers, etc. From the viewpoint of critics, the participation of US and Chinese companies diverted the project from its original goal of offering European cloud alternatives, an objective that might go against their vested interests (Calcara, 2026; Adler-Nissen, 2024).

The perceived dilution of ambitions pushed some members to withdraw, as the French Scaleway did in 2021. Founding Member States seem also to have lost confidence in the project, with Germany, for example, having withdrawn its funding from five of the sixteen projects previously selected. And the project was criticised by the European Commission for its lack of ambition in terms of industrial policy (Autolitano & Pawlowska, 2021; Goujard & Cerulus, 2021).

Nevertheless, Gaia-X developments **can also be read as arising from an intra-European/transatlantic partnership dilemma in the context of disruptive technological change**. The digital transformation of the overall economy, with cloud computing at its core alongside other technologies such as artificial intelligence, requires traditional manufacturing and services industries to adapt rapidly in order to embrace the Internet of Things, connected and self-driving cars, connected automation systems, and so on. As these industries are well represented in Gaia-X, one key option for them may have been to accept US cloud suppliers as members and collaborate with them on a certification scheme to help preserve their bargaining power when partnering with them (Nouveau, in press; Baur, 2025; Adler-Nissen & Eggeling, 2024; Biancato, 2024; Lechowski & Krzywdzinski, 2022). From the perspective of a pan-European industrial project, such developments might have been avoided had the project been embedded in a more robust governance framework, with national governments and the European Commission playing a more active role in its oversight and strategic direction. In this regard, research shows that the positions of the French and German governments differed. Although the German government became increasingly disappointed with the quality of some Gaia-X projects over time, it clearly upheld the opening of Gaia-X to US firms. This was in line with its position of open strategic autonomy and departed from the French stance, which took a more restrictive view of digital sovereignty (Goujard & Cerulus, 2021).

Moreover, even if Gaia-X had followed its original trajectory, **there was no guarantee that European cloud consumers, particularly industrial users, would have adopted the resulting pan-European cloud alternatives, unless some policies had incentivised this**.

3.2. Catching Up in Space-Based Radio Navigation: The Galileo Program's Rocky Road

Galileo is an ambitious industrial project which was proposed in 1998 with the aim of **providing the EU with its own Global Navigation Satellite System (GNSS) and ending its reliance on the US Global Positioning System (GPS)**, which has been operating at full capacity since 1995. The final decision was made by the European Council in 2002 as part of the Lisbon Strategy, which aimed to make the European economy "the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth, more and better jobs, and greater social cohesion" by 2010 (European Council, 2000).

3.2.1. Galileo's Dual Objective: Sovereignty and Competitiveness

The initial objective was twofold: on the one hand, to **enhance the European Union's strategic autonomy** from US GPS infrastructure dependency (Lungu, 2004; Klimburg-Witjes, 2024), and on the other, to **improve competitiveness**, as highlighted in the Lisbon Strategy.

By the end of the 1990s, two global positioning systems were available: the US GPS system and the ageing Russian GLONASS system (Villafranca Izquierdo, 2021). As the GPS system was originally intended for use by the US military, the US intentionally degraded the open access signal for civilian use to reserve the most accurate positioning capabilities for national defence needs (Zervos & Siegel, 2005). However, this would change in the following years, with the US pledging to maintain full capability and free, open service signals and providing six years' notice of any changes (Venet & Nardon, 2010). From a European perspective, this meant that the signal could still be degraded or interrupted if the US deemed it necessary. In 1998, Neil Kinnock, the Commissioner responsible for Transport and Trans-European Networks at the time, stated that "there are security and sovereignty arguments that must be impressed upon decision and policy makers by inviting them to consider the reality that, if active commitment is not made, within 10 years all of Europe's safety critical transport activities could well be reliant on a system that is not within European control. No one has to be a devotee of "fortress Europe" or a Euro nationalist to recognise the disadvantages and hazards of that and, apart from the functional, industrial and employment arguments, that basic consideration should be enough by itself to impel the necessary policies" (Kinnock, 1998). However, Member States differed on how far sovereignty-driven GNSS functions should go. Some wanted Galileo to focus on industrial and economic applications, while others pushed for security and military use. At that time, the NATO organisation exclusively used the US GPS system and in 2001, Paul Wolfowitz, the US Deputy Secretary of Defence, explicitly requested that the Europeans abandon the Galileo project in a letter to the European Union. In the absence of a consensus, it was decided that Galileo would continue but would remain non-military infrastructure (Beidleman, 2006; Reillon, 2017).

From a competitiveness perspective, when operational, **Galileo was expected to offer state-of-the-art technology providing more accurate positioning than GPS** (1.8 m compared to 4.9 m for US GPS), making the European alternative more attractive from a commercial viewpoint (Sitruk, 2017; Caudron, 2010). In this respect, timing was important: the Galileo system had to be operational by 2008, which was about five to eight years before the launch of the next generation of the US GPS (GPS III). To this end, the project was divided into three phases. The first phase, from 2002 to 2005, involved developing the satellites and the system's ground components, and carrying out in-orbit validation. The second phase, from 2006 to 2007, involved building and launching 30 satellites, as well as establishing various ground sites. The commercial operating phase was scheduled to start in 2008 (Zervos & Siegel, 2005).

Although Galileo is now considered an achievement in terms of strategic autonomy, offering a European alternative to the US GPS system, **significant industrial rivalries and disputes over fair returns undermined the project's competitiveness ambition** (Caudron, 2010; European Court of Auditors, 2009; European Commission, 2007; Hansen & Wouters, 2012). These issues resulted in schedule postponements, budget overruns and institutional reconfigurations aimed at ensuring the project's survival. Consequently, Galileo Initial Services were only declared in December 2016, while the system continued to be progressively deployed and enhanced, including through the launch of its High Accuracy Service in January 2023. By then, the US was already deploying GPS III satellites, whose signal-in-space performance was broadly comparable to that of Galileo (Wu et al., 2020). Meanwhile, the People's Republic of China had developed and completed its own global navigation satellite system, BeiDou-3, which became fully operational and opened for global services in July 2020 and has demonstrated high levels of positioning accuracy (Lu et al., 2020).

Although it is difficult to evaluate Galileo's share of the GNSS market, given that civil signals are provided free of charge and smartphones and navigation devices operate multiple systems to achieve the greatest possible accuracy, **Galileo currently accounts for between 20 and 24 per cent of global GNSS revenues, while GPS commands a roughly 35 per cent share**. It is also worth noting that, despite being primarily used for civil purposes, Galileo has now integrated a dedicated military and government framework known as the Public Regulated Service (PRS). This provides a secure, encrypted navigation service reserved exclusively for EU member states, government agencies and authorised security forces (Venet and Nardon, 2010).

3.2.2. An Unprecedented Public-Private Partnership Governance Model

The governance model of Galileo was an unprecedented approach for the EU, as it was structured around a public-private partnership. The European Commission formed a joint undertaking with the European Space Agency (ESA) to finance and oversee the project's development phase, contributing one third of the total budget. Based on the principle of European preference, a competitive bidding process was organised to award private contracts for the next two stages: assembling and launching a constellation of 30 satellites and exploiting the infrastructure. It was planned that private financing would cover two-thirds of the project's overall cost. The private bidders were expected to generate returns on these investments by monetising derived services.

Galileo's original governance model differed significantly from that of the US GPS, which is owned

and controlled by the US Department of Defense (DOD), as Galileo was to be managed by a commercial entity (Oikonomou, 2016; Zervos & Siegel, 2005). Some Member States, such as the Netherlands and the UK, opposed the project being fully publicly financed, resulting in the decision to use a PPP model. This also meant that only the basic navigation signal would be provided free of charge.

Another novel feature of the chosen governance framework is that the European Commission would not only pilot such a project for the first time but also become the owner of European infrastructure.

3.2.3. Fair-Return Dynamics as an Obstacle to the Project

A 2009 report by the European Court of Auditors highlights the **many difficulties encountered during the project's initial phase**, which resulted in numerous postponements and radical institutional configurations. The report emphasises that the project stalemate was directly linked to industrial rivalries and issues of fair returns. The institutional nature of space markets also had a major impact.

By the end of 2004, **only two of the four private consortia that had applied in 2003 remained in the competition** (Zervos & Siegel, 2008; Oikonomou, 2016). From that point until 2007, obstacles arose regarding the awarding of contracts. One key issue was related to the joint undertaking formed by the European Commission and the ESA. The ESA was established as the result of an agreement between France, the UK and Germany, which set out the principle of fair return in the allocation of public procurement contracts based on the contribution of ESA Member States to the ESA budget (Suzuki, 2003; Caudron, 2010). Although the Galileo PPP implied a competitive bidding process, EU Member States constantly interfered to ensure their national champions received a proportionate share (Sitruk, 2017; Villafranca-Izquierdo, 2021).

This issue was exacerbated by the **lack of complementarity between the bidding companies**. Most of them were competing for the same stages in the Galileo supply chain. Furthermore, space technology providers in Europe and elsewhere were highly dependent on procurement contracts. Consequently, excluding one of the bidding firms from the Galileo industrial project would have distorted future market competition, with non-participation having a structural impact on learning by doing, scale economies, and the future investment capacity of excluded companies (Caudron, 2010). This was unacceptable to the concerned Member States. Ultimately, under their pressure, the European Commission accepted the reunification of the two consortia into one large consortium, though this did not fully resolve the impasse (Oikonomou, 2016).

Another crucial issue was the choice of a PPP model. All the bidding contractors agreed that the commercial exploitation of Galileo would not enable them to make their private investments viable and profitable in the long term. They joined forces to demand a higher public financial contribution in exchange for their participation (Villafranca-Izquierdo, 2021; Venet & Nardon, 2010). In March 2007, the European institutions (the European Commission, the European Parliament and the Council) agreed to save the programme by ending the PPP governance framework and transferring the overall management and costs originally planned for investment by the private sector to the EU. The European Commission would use surplus funds from some EU budget lines to complete the project (Sitruk, 2017; Villafranca-Izquierdo, 2021; Hansen & Wouters, 2012). However, given the scope of Galileo, budget constraints were tight, exacerbated by the economic downturn of 2008. In order to mitigate public spending, the European Commission reduced the number of satellites initially ordered from 30 to 22 (Venet & Nardon, 2010). Although the European Commission was now in charge, Member States requested that the fair return mechanism be maintained in the allocation of contracts (Caudron, 2010). This was particularly important for France and Germany, the two major funders contributing 17.6 per cent and 22.8 per cent respectively to Galileo's budget. Astrium and Thales Alenia Space (FR) had already won the contract to build four satellites in the first phase. In the second phase, Thales was asked to withdraw from some tenders to ensure that German companies received contracts (Perragin & Renouard, 2019). OHB, a German firm tendering with the British SSTL, was chosen to build 14 satellites.

Once again, **the Galileo project has highlighted the recurring issues associated with industrial projects at European level**. Throughout its development, the expectation of Member States to receive an equal return on their investment has dictated the project's governance. The institutional, procurement-based nature of the space market, coupled with a lack of complementarities between potential partners, has served to strengthen the project's focus on achieving a fair return, including in the distribution of tasks within Galileo's supply chain. The implementation of Galileo confirmed that industrial projects based on uncertain private demand can deter industrial partners, as discussed in relation to the computer cases analysed in this paper. The project was saved when European institutions agreed to transition the role of industrial partners from financial backers and consortium partners to pure equipment suppliers, thereby aligning with the Airbus model to some extent.

3.2.4. A European Alternative to Elon Musk's Starlink: IRIS² In Perspective

The challenges faced by the Galileo project during its development phase provide valuable insights into the current IRIS² project, which appears to be following a similar trajectory. Launched in 2022, the IRIS² project aims to create a European alternative to Elon Musk's Starlink.

Starlink is a constellation of low-Earth-orbit (LEO) satellites operated by SpaceX, a private aerospace company founded by Elon Musk. Unlike traditional geostationary satellites, which orbit at altitudes of more than 35,000 km, many Starlink satellites operate at altitudes of around 550 km. LEO satellite constellations for internet connectivity are becoming increasingly widespread, offering lower latency and faster speeds than traditional geostationary systems[6]. LEO satellite systems can also provide reliable connectivity in remote or underserved areas where terrestrial infrastructure is inadequate or unavailable. These advantages make LEO satellite technology particularly well suited to the deployment of Internet of Things (IoT) applications, as well as to military uses such as drone operations, as demonstrated by the war in Ukraine. Starlink has become vital to Ukraine's military communications, to the extent that the Ukrainian leadership has reportedly asked Musk to authorise the use of Starlink-equipped drones over Russian territory in response to intensifying Russian missile and drone attacks. At the time of publication, however, SpaceX had not authorised such use, while the Trump administration had not committed to supporting Ukraine's request (Miller, 2026; Deprez, 2026).

[6] Latency can fall from around 600 milliseconds with geostationary systems to approximately 25–60 milliseconds with Starlink.

With over 11,000 satellites, SpaceX's Starlink constellation represents approximately two-thirds of all active satellites in orbit worldwide, as well as around 60 per cent of the company's total revenue. It currently has around 10.3 million subscribers across 164 countries, territories and markets (CelesTrak, 2026; SpaceX, 2026). LEO constellations may represent a technological shift away from geostationary satellites (Dugo & Pandya, 2025).

The IRIS² project therefore is a matter of both strategic autonomy and competitiveness for the EU. However, its scope is much more modest than that of Starlink to date. IRIS² plans to deploy 290 satellites in low Earth orbit (1,200 km) and medium Earth orbit (8,000 km).

IRIS²'s institutional framework copies Galileo's original governance model, establishing a public–private partnership between the European Commission, the ESA, and the selected SpaceRISE consortium, which was awarded a 12-year-concession. However, the investment burden is allocated differently, with the public undertaking responsible for 60 per cent of the estimated costs compared to 40 per cent for the consortium. Nevertheless, as with Galileo, IRIS² has struggled to secure private investment. Originally made up of Airbus Group, Thales Alenia Space (FR), SES (LUX), Eutelsat (FR/UK), and Hispasat (ES), the consortium has seen Airbus Group and Thales Alenia Space withdraw to avoid financial liabilities; they would rather act as suppliers to the consortium. The remaining three SpaceRISE partners have acknowledged that they are under financial pressure. Hispasat was recently acquired by the Spanish firm Indra Group, in which the Spanish government holds a 30 per cent stake (Abels, 2026).

Some of the same symptoms that Galileo experienced have emerged. The PPP framework is now being called into question. The in-service date has been postponed from 2027 to 2031. Similarly, the budget has increased from €6 billion to an estimated €10 billion. While the European Commission has secured one-third of the public spending from the current budget, it still has to negotiate the remaining two-thirds from the next budget (Hartmann, 2025).

It could be argued that the main issue with the IRIS² industrial project is not its Galileo-type governance, but rather the evolution of the space market since Galileo was developed.

Over the past two decades, the space sector has undergone a profound process of commercialisation, with private companies assuming an increasingly important role in activities that were once largely the prerogative of states. This shift is particularly visible in satellite communications and launch services, where privately owned companies such as SpaceX, Blue Origin and Rocket Lab now operate infrastructure of considerable economic and strategic importance (Vecchi & Brennan, 2026). Commercial activity expanded from approximately $125 billion in 2005 to around $478 billion in 2024, increasing from 71 per cent to 78 per cent of the global space economy (Space Foundation, 2016, 2025). This expansion has been accompanied by substantial private investment: start-up space companies attracted $73.8 billion between 2016 and 2025, with venture capital accounting for 81 per cent of the total (BryceTech, 2026).

Some analysts argue that, unlike NASA, which introduced competition-based commercial partnership programmes in the mid-2000s, the European Union and ESA have not been able to transition from the traditional "Old Space" model to the emerging "New Space" economy (Dugo & Pandya, 2026). However, our analysis of the initial development of Galileo shows that, although the European Commission sought to introduce competition, the fair-return dynamics and national-champion strategies of member states ultimately undermined this approach. Notably, the Draghi report recommended abandoning ESA's geographical return principle — a suggestion opposed by Germany (Dugo & Pandya, 2026).

The evolution of the space market should not, however, be equated with a withdrawal of the state. Governments remain major funders, regulators and customers of commercial space companies, while institutional demand continues to account for a substantial share of upstream markets such as spacecraft manufacturing and launch services (OECD, 2023). The result is a hybrid public-private ecosystem in which the growth of private actors has itself been facilitated by public funding, procurement and other forms of state support (Aliberti, 2026). SpaceX illustrates this interdependence particularly clearly: its emergence as a major commercial space company was supported by substantial US government contracts, notably through NASA programmes. As reported by Dugo and Pandya (2025), a recent Washington Post report revealed that SpaceX has received over USD 22 billion in funding from federal, state, and local agencies since 2003, including contributions from NASA and the Pentagon in the form of contracts, loans, subsidies, and tax credits. This figure exceeds SpaceX's total venture capital funding by more than twofold (Butler et al., 2025).

4. Lessons From the Past and Challenges for the Future of European Industrial Projects

The comparison developed in the previous sections suggests that the recurrent invocation of an “Airbus of” may be misleading if it implies that Airbus provides a readily replicable institutional template for European industrial policy. Airbus, UNIDATA and ESPRIT, Gaia-X, and Galileo were developed in different technological, market and geopolitical environments. Their trajectories nevertheless reveal a recurrent set of political-economic dynamics that shape the feasibility and effectiveness of European cross-border industrial projects.

The first conclusion is that **no particular governance arrangement is sufficient to explain success or failure**. Airbus was predominantly intergovernmental; ESPRIT was driven by the European Commission in close interaction with large firms; Gaia-X has largely been business-driven; and Galileo moved from an ambitious PPP to a predominantly publicly financed EU programme. Successful and unsuccessful initiatives can therefore be found under different institutional configurations. **Rather than searching for an optimal institutional formula, the comparative analysis points to four interrelated variables**: the distribution of returns among participating Member States and firms; the degree of complementarity or substitutability between industrial partners; the structure of the relevant market and the leverage provided by public procurement; and the attractiveness of intra-European cooperation relative to partnerships with non-European technological leaders.

These variables also provide a framework for analysing several current debates in European industrial policy. The negotiations over the 2028–2034 Multiannual Financial Framework (MFF), the growing use of Important Projects of Common European Interest (IPCEIs), proposals for European preference in public procurement, the reconsideration of EU merger policy, and recurrent calls for a “European DARPA” are often discussed as distinct policy issues. The historical comparison developed in this paper suggests that they are closely connected. They all confront the same fundamental problem: how can Europe concentrate sufficient financial, technological and market resources behind common industrial objectives when the costs and benefits of doing so remain unevenly distributed across Member States and firms?

4.1. What the Case Studies Tell Us: Four Driving Forces Shaping European Industrial Cooperation

4.1.1. The Centrality of Fair Return Dynamics

One of the clearest findings of the comparative analysis concerns fair return dynamics. In Airbus, fair return contributed to the political sustainability of the partnership. Development expenditure, production workshares and industrial returns were closely connected to the respective positions of the participating national industries. This distributional arrangement reassured governments that participation in the project would preserve domestic technological capabilities and profits rather than transfer them to a European partner. Crucially, however, redistribution was facilitated by a relatively clear division of labour. Fair return therefore operated alongside technological complementarity.

Galileo demonstrates the opposite configuration. The principle of geographical return inherited from ESA interacted with a European space industry in which several major contractors competed for similar segments of the programme. Excluding one firm from a major procurement package could have significant long-term consequences for its technological capabilities, economies of scale and future competitiveness. Under such conditions, fair return ceased merely to stabilise political cooperation and increasingly constrained the organisation of procurement itself. Industrial workshares became an object of intergovernmental bargaining, contributing to delays and governance difficulties.

The comparison therefore suggests that at European level, **fair return is easiest to accommodate when industrial partners possess identifiable and relatively indispensable complementarities**; it becomes more disruptive as partners become technologically substitutable and compete for the same activities, contracts and future markets.

This distinction matters for contemporary European industrial policy. The relevant question is therefore how European policy can prevent distributional bargaining from undermining the technological and commercial logic of a project.

4.1.2. Complementarity, Substitutability and the Distribution of Industrial Capabilities

The comparison between Airbus and UNIDATA reinforces this point. **Airbus benefited from a division of labour in which partners could contribute technologically valuable but relatively compartmentalised capabilities**. UNIDATA faced a fundamentally different problem. CII, Siemens and Philips were not simply complementary contributors to a common product. They were actual or potential competitors, operating in overlapping technological and product markets. Cooperation potentially implied not only sharing costs and markets but also redistributing technological capabilities and future competitive positions.

Digital technologies further complicated this problem because **innovation required deeper integration of research and technological capabilities than the original Airbus production model**. The partners could not simply allocate physically separable components of a product to national firms. Their attempt to preserve autonomy by dividing product markets instead prevented the scale and technological integration required to challenge IBM.

This distinction remains relevant to contemporary European industrial projects, since appropriate governance and incentive structures will depend on the technological and competitive configuration of each project.

4.1.3. Market Structure, Procurement and the Capacity to Create Demand

A third distinction concerns the nature of the market in which industrial cooperation takes place. **Airbus operated in a highly institutionalised market**. Governments could simultaneously act as financiers, shareholders, purchasers and diplomatic supporters. National airlines provided important initial demand, while government-to-government diplomacy helped Airbus penetrate foreign markets. The computer industry presented a different environment. Although public procurement remained significant, particularly for defence and public administrations, **demand increasingly came from private firms and consumers**. European governments therefore had considerably less capacity to direct demand towards European suppliers. This contributed to the attraction of partnerships with technologically advanced US and Japanese companies during the computer revolution. European firms had to respond rapidly to technological change and to the requirements of their private customers; cooperation with non-European leaders could therefore appear commercially safer than cooperation with weaker European counterparts. Gaia-X reproduces this tension in contemporary form.

The implication is important. **The effectiveness of European industrial policy depends not only on its capacity to finance supply but also on its capacity to organise demand**. Where public authorities constitute major purchasers, procurement can provide firms with the market required to learn, scale and attract private capital. Where B2B and B2C transactions dominate, subsidies to producers may be insufficient unless European policy can also influence market formation through procurement or other demand-side instruments.

4.1.4. The European Versus Extra-European Partnership Dilemma

Finally, all the cases examined reveal that **European cooperation is rarely the only strategic option available to participating firms or governments**.

Before Airbus consolidated, **European firms and governments repeatedly explored transatlantic partnerships**. For Britain in particular, cooperation with US aircraft manufacturers initially appeared less risky and potentially more commercially attractive than an uncertain European project. Airbus became the viable European option only after national and alternative international strategies had failed to secure the desired competitive position.

The same dilemma produced a different outcome in information technology. During the 1980s, European firms participating in Community R&D initiatives simultaneously entered alliances with US and Japanese companies. These partnerships offered access to superior technologies, larger markets and commercially attractive ecosystems. In this case, the balance between European cooperation and extra-European collaboration tilted towards the latter.

Gaia-X demonstrates that this dilemma has not disappeared. For a European manufacturing company, collaborating with a US hyperscaler may strengthen its own global competitiveness even if doing so reinforces Europe's aggregate technological dependence.

European industrial policy therefore confronts a fundamental problem. **What may be rational for an individual European firm may not produce the technological capabilities that Europe collectively seeks to develop.** If strategic autonomy requires firms to choose a European partnership that is initially more costly, technologically uncertain or commercially less attractive, policymakers must alter the incentive structure that determines this choice. Financing and procurement consequently become crucial industrial policy instruments.

4.2. From past lessons to present-day policy choices: scaling up European industrial cooperation

4.2.1. Financing Industrial Policy Projects: The MFF And the European Competitiveness Fund

Our comparative analysis of a few European large-scale industrial projects has demonstrated that **the financing architecture and, within it, public contribution could be one key determining factor**. Airbus benefited from substantial public support during a long period in which commercial viability remained uncertain. Galileo ultimately survived because European institutions accepted that the public sector would have to assume financial responsibilities that the original PPP model had expected private investors to bear.

Of course, **substantial public funding does not, in itself, guarantee the success of an industrial project**. In the US, those opposing the use of taxpayer money for industrial policy objectives recurrently quote the case of Solyndra, considered a leading innovator in solar energy at the beginning of the 2000s, which received substantial support from the Obama administration before filing for bankruptcy at the beginning of the 2010, swept away by Chinese competition (Galston, 2011). In Europe, the Concorde is often cited as an example of ineffective state intervention.

However, prominent studies have also shown that, beyond the liberal narrative, the **US federal budget has historically supported the successful development of innovation and emergence of large-scale companies**, from research to market, particularly through the Department of Defense and the DARPA (Rodrik, 2004; Mazzuccato, 2013; Block and Keller, 2016; Juhász et al. 2024). Recent studies have furthermore confirmed that, in addition to private financing, public intervention is structurally instrumental in driving innovation (Dyèvre, 2024; Archibugi & Filippetti, 2018). The Draghi report, among others, has also highlighted the extent to which the EU lags behind the US and China in terms of its financial capacity, both public and private, to develop industrial projects and infrastructure.

A key difference between the US and China, on the one hand, and the EU, on the other, is that public financing remains highly decentralised. It is a well-known fact that the overall EU budget has historically been capped at around 1 per cent of EU GDP under pressure from some key Member States. Individual budget lines within the European budget are negotiated between Member States within the framework of the European Council and based on Commission proposals. Industrial policy is a shared competence, with most public R&D expenditure taking place at the level of the Member States. While the EU budget can coordinate, incentivise and supplement these expenditures, it does not possess fiscal resources comparable to those of a federal state. Consequently, European industrial projects are primarily subsidised by Member States, supported by the European budget (Nouveau, 2022). **This makes the geographical distribution of the resulting industrial gains more politically salient, which explains why fair return dynamics might be a significant obstacle to financing industrial projects**.

The decentralised financial framework of European industrial policy instruments, combined with fair-return dynamics, significantly affects the capacity of public funding to steer European industrial projects towards their stated objectives. Decentralisation has both a downsizing and a dilutive effect, as individual EU Member States operate at a smaller economic and fiscal scale than the US or China. It also entails an allocative cost: the dispersion of funding across national priorities may prevent funding from being systematically concentrated on the most technologically promising projects, allowing less competitive projects to continue receiving support. Smaller public commitments at the national level may, in turn, induce more limited private capital commitments, as private investors assess risks partly in relation to the scale of public investment and guarantees. These constraints are further exacerbated by differences in levels of economic and technological development across Member States, as well as by their uneven public and private capacities to participate in European industrial projects.

As outlined in a large body of policy reports, **this situation would certainly be alleviated by deeper integration of capital markets, given the frequently noted legal, regulatory, tax and supervisory differences and obstacles among Member States** (Sapir et al., 2018; Raposo & Lehmann, 2019; Draghi, 2024; European Commission, 2025b; IMF, 2025; OECD, 2025). However, the issue is not merely the fragmentation of EU capital markets. Beyond these barriers, there is strong cohesion between national public and private funding, with national government budgets rather than the EU playing the central role in leveraging private investment towards innovative and industrial projects (AFME, 2017; Ständer, 2017; Nouveau, 2022). Secondly, fair-return dynamics demonstrate that national governments naturally support domestic companies and innovators, thereby attracting domestic venture capitalists and reducing cross-border agglomerations. To some extent, the agglomeration of venture capital around public funding also stems from the anticipated alignment of national public and private interests. Domestic private investors can expect their own state to act as collateral if things go wrong. As a result, venture capital becomes home-biased (Ständer, 2017; Nouveau, 2022).

A large body of literature shows that **the early and riskiest stages of an innovation process or industrial project require substantial financing, since the high level of uncertainty surrounding market potential and investment returns acts as a strong deterrent for private investors**. Today, strong capitalisation enables US hyperscalers to conduct basic research and risky industrial projects independently, at their own cost and with their own personnel (Heitor, 2024). However, as previously mentioned, many leading innovative US companies, including most incumbent digital giants, previously relied on US federal funding to support their innovation and scaling efforts (Mazzucato, 2013; Block & Keller, 2016; Rodrik, 2004).

These issues are clearly visible in the current negotiation of the 2028–2034 Multiannual Financial Framework (MFF). The proposed long-term budget amounts to approximately EUR 2 trillion, or 1.26 per cent of EU gross national income. Excluding NextGenerationEU debt repayments, it represents around EUR 1.76 trillion, or 1.15 per cent of GNI, only modestly above the 2021-2027 framework (ECA, 2026). Additionally, the European Commission has decided to restructure the MFF, consolidating numerous historical budget lines into three main sections: agriculture and cohesion (which will account for more than half of the overall budget); competitiveness and innovation (which will account for around one third of the total); and debt repayment (which will account for less than 10 percent of the EU's proposed budget) (European Commission, 2025a; Maurice, 2025).

European industrial policy will mostly take place under the banner 'Competitiveness', with the novel establishment of a European Competitiveness Fund (ECF). This fund will consolidate fourteen former programmes and will also include the successor to Horizon Europe, albeit separately. The ECF will support four strategic industrial objectives: clean and digital transitions, health, agriculture and the bioeconomy, and finally defence and space (Lausberg, 2026).

According to the European Commission, **such a restructuring of the European budget is intended to provide greater flexibility and responsiveness in the allocation of financial resources**, clarify funding opportunities, and simplify access for relevant economic and public organisations. It is also intended to ensure greater consistency in funding and follow-up of the European Union's objectives. The flexibility targeted by the European Commission may imply the further EU capacity to pour more substantial financial resources into selected industrial projects considered as a priority.

In terms of industrial policy, **key European institutions have raised concerns about the inadequacy of the proposed budget size in light of the technological and geopolitical challenges highlighted in the Draghi report**. Similarly, some of these critics question whether the budget reconfiguration is adequate for the expected efficiency gains of a reformed European budget structure. The European Parliament has called for a 10% increase in the overall budget to increase the share dedicated to the 'competitiveness' pillar without encroaching on the cohesion pillar. They are also considering the possibility of postponing European debt repayments in order to respond to what they consider to be more urgent and imperative industrial policy objectives (European Parliament, 2026). Focusing specifically on the ECF, the European Central Bank argues that the European Commission's allocation of just over 400 billion euros for seven years is insufficient and should be increased to €510 billion annually in order to match the financial capacity of industrial policy in the United States and China, and to enable economic and technological rebalancing (Bouabdallah et al., 2025).

When considering the European Commission's attempt to rationalise budget distribution around reduced, more global programme objectives, it has been argued that, in terms of industrial policy, **the four objectives cover a wide range of technologies and will therefore lead to the same 'sprinkling effect' as previous budget configurations** (Lausberg, 2026). Consequently, reconfiguring the EU industrial policy budget will not prevent the dilution of resources per industrial project and will impede the necessary leverage. According to this type of analysis, the ECF needs to prioritise a smaller number of objectives.

However, when it comes to the Member States, the debate is different. The European Commission's proposal has divided the Member States into two groups: the so-called 'Friends of Cohesion' and the 'frugal' group. The former comprises 16 countries: Italy, Spain, Poland, Romania, Bulgaria, Croatia, the Czech Republic, Estonia, Greece, Hungary, Latvia, Lithuania, Malta, Portugal, Slovakia and Slovenia. The second group comprises the net contributors to the EU budget: Denmark, Sweden, Finland, Austria, the Netherlands, Germany, France, Ireland and Belgium. The latter consider any budget extension to be inappropriate and even advocate a downward revision, arguing that budget efficiency does not depend on a larger allocation, but rather on better allocation (Gavin & Sorgi, 2026; Becker & Stritzel, 2026). This position has strongly influenced the negotiations on how to properly cut the proposed budget. While the group of frugal countries defend the necessity of cutting the budget lines dedicated to the Common Agricultural Policy, the Common Fisheries Policy, and the Cohesion Policy, in order to preserve competitiveness and defence and maintain momentum vis-à-vis the US and China, their opponents defend the exact opposite, a position reflected in the 2 percent cut to competitiveness and external action proposed by the Cyprus Presidency in June 2026 (Friends of cohesion, 2026).

As with many previous ones, **these current budget negotiations highlight how fair return dynamics are rooted in the determination of the European agenda and the share that European industrial policy and underlying industrial projects will hold within it**. The divide that has emerged during these negotiations reflects the disparity in economic specialisation and development levels between the two groups. It can be considered rational for the Friends of Cohesion to defend a budget distribution that will best position them to secure the best possible allocation of financial resources to support their economies at European and global levels. Similarly, it is rational for the group of frugal countries to protect their share of the European budget, which fits their existing innovation and technological capabilities, and from which they can expect to benefit through various relevant funded programmes, while minimising their contribution to programmes that are less relevant to their own economic specialisation. Joakim Strand, the Finnish EU minister, summarised this rationale by stating that, in the previous MFF, 'one euro spent on cohesion returned 0.23 euros for Finland, while every euro spent on the research programme Horizon returned 1.70 euros', and adding that innovation creates new value for Europe (Becker & Ionta, 2026). However, the Friends of Cohesion may argue that European innovation programmes will primarily create value and opportunities for countries with well-established, superior innovation ecosystems and a high level of technological specialisation — primarily the frugal group of countries.

In order to implement a robust industrial policy at EU level that can compete with the financial capabilities of the United States and China, as recommended by the Draghi report and the ECB**, a larger European budget is required, as well as increased funding for the competitiveness pillar of the current budget**. However, this will not happen without first addressing the dynamics of fair returns in budget formulation and redistribution mechanisms. These mechanisms must be considered in order to shift the budget towards programmes that support industrial policy. This is particularly important given that some frugal economies have the strongest national financial capacity to support industrial policy projects at European level as discussed below.

4.2.2. Ipceis: European Projects Financed Through National Capacities

Since the end of the Second World War, the process of integrating the European market has been based on the recognition that **national subsidies distort fair competition between national firms and create obstacles to the necessary gains in economies of scale and market restructuring**. This would enable European companies to match the size of US firms. US firms have grown and consolidated their position in the global market, including in Europe, by relying on their large, integrated domestic market (Defraigne, 2004; Defraigne & Nouveau, 2022).

Consequently, Articles 90, 92 and 93 of the Treaty of Rome imposed strict limitations on national subsidies. However, during this period, the European Commission had limited institutional capacity to control state aid across Europe. As previously mentioned, the Airbus project emerged during a period when national champion strategies and substantial state subsidies were becoming widespread across Europe, while the European Commission lacked the authority to enforce existing regulations

(Defraigne & Nouveau, 2022). The reinforced commitment to completing market integration following a period of Eurosclerosis, and the subsequent establishment of the Single Market at the end of the 1980s, strengthened the European Commission's authority in this regard, leading to more robust governance of national state aid use and abuse.

Yet, as early as the beginning of the 2000s, **European state aid rules were progressively relaxed through the General Block Exemption Regulation (GBER), giving Member States greater latitude to subsidise not national champions but cross-border industrial projects aligned with the European agenda**. This was in acknowledgement of the fact that the EU was steadily losing momentum in disruptive innovation and advanced technologies compared to the United States, and later China, requiring increased R&D&I financing and enhanced market consolidation (European Council, 2000). This process was further institutionalised with the introduction of Important Projects of Common European Interest (IPCEIs) in 2014. These projects now constitute a prominent institutional framework at EU level for developing Airbus-type industrial projects. The IPCEI mechanism enables a minimum of four Member States and relevant domestic firms to pursue strategic industrial priorities while being exempt from the EU state aid regime (European Commission, 2014 and 2021). Financing comes from the budgets of participating national governments and companies but does not involve any EU budgetary transfers. The first IPCEI, launched in 2018, was dedicated to microelectronics technology. Since then, eleven more have been implemented or are in the process of being implemented, focusing on the battery ecosystem, hydrogen for energy generation and transport, communications technologies, cloud systems, advanced medical devices, and artificial intelligence. As many of these projects are relatively recent, concrete results are yet to be seen.

The European Commission insists that **approved IPCEIs must be of strategic relevance to the EU as a whole and generate benefits that extend beyond the participating countries**. However, as the number of IPCEIs has increased, the market distortion and distributional implications of allowing alliances of national governments to grant exceptional subsidies to select national firms for industrial policy purposes have attracted criticism from some Member States and the attention of analysts. In 2021, eleven Member States — Denmark, Finland, Sweden, the Netherlands, Ireland, Spain, the Czech Republic, Poland, Slovakia, Lithuania and Latvia — signed a joint non-paper highlighting the 'uneven playing field' caused by the 'proliferation' of IPCEIs and the unequal fiscal and technological position of Member States with regard to their ability to participate in and benefit from an IPCEI (Czech Republic et al., 2021). The signatories probably had different motivations and interests when contributing to this statement, as both Friends of Cohesion and frugal countries are represented among them. Traditionally liberal Member States, such as the Scandinavian countries, believe that IPCEIs should strictly address uncontested market failures and should not be used as an excuse for Member States to unduly subsidise their national champions. For others, the issue is one of fairness and the unequal financial capacity of Member States to participate, although cohesion funds and NextGenerationEU provisional grants can be used for this purpose.

IPCEI development reveals geographical concentration features, reinforcing what some authors refer to as 'core-periphery hierarchies'. They observe that IPCEI participation is concentrated among technologically advanced countries and firms, as well as long-standing core economies with superior fiscal and human resource capacities. For the period 2018–2025, Germany, France and Italy accounted for 70 per cent of all approved IPCEI state aid, which is well above their combined 54 per cent of EU GDP. In contrast, eastern and southern Europe account for a negligible share (Gräf, 2024; Schmitz et al., 2025; Lavery & Lopes-Valença, 2025; Manica et al., 2026).

IPCEIs therefore facilitate cross-border cooperation but do not fully Europeanise the gains and risks associated with it. Member States finance domestic participants while the projects are expected to generate European spillovers. This creates incentives for participating governments to maximise domestic industrial returns while non-participating countries may question why they should support Single Market arrangements that potentially reinforce existing industrial concentrations.

4.2.3. Creating European Demand: "Buy European" and Public Procurement

The same can be said when analysing the European Commission's proposals to implement a European preference, or 'buy European', mechanism in procurement in sectors deemed indispensable to strategic autonomy, as set out in the Industrial Accelerator Act (IAA), published in March 2026, and the 'tech sovereignty package', published in June 2026. **Airbus illustrates the importance of combining supply-side support with demand**. Public financing reduced technological and commercial risk, while national procurement and economic diplomacy helped establish a market for the resulting aircraft. Galileo similarly demonstrates that strategic infrastructure may require the public sector to become not merely a regulator or co-financier but ultimately the principal purchaser and risk-bearer. However, in the case of Airbus, these markets were national or based on diplomatic ties. The British, West German and French governments either used their national airline companies as Airbus clients or employed economic diplomacy to promote Airbus internationally. Economic diplomacy involves negotiating mutual benefits through trade, aid, or other kinds of agreements. It therefore included some return mechanisms, although not necessarily fair ones.

A European preference could aggregate demand across Member States and, in some sectors, potentially offer economies of scale comparable to those of continental national procurement markets. This would be particularly significant in sectors such as defence, space, secure connectivity and cloud services, where public purchasers are major customers. The prospect of larger procurement markets could also help to overcome intra-European industrial rivalries, thereby having a positive impact on the formation of pan-European industrial partnerships. However, a 'Buy European' policy would not eliminate fair-return politics. While the beneficiaries of a European preference may be firms concentrated in a few Member States, the purchasers and taxpayers are distributed across the Union. In the case of Airbus, national procurement and economic diplomacy contained an implicit return mechanism, as governments could link orders to domestic industrial participation. At EU level, however, the buyer and the principal producer may be located in different countries. Can a European preference in procurement be disconnected from the Europeanisation of procurement markets? And can the Europeanisation of procurement markets be separated from further centralisation of the EU budget and fiscal redistribution?

4.2.4. European Champions and Competition Policy: Scale for Whom?

The preceding analysis has shown that **scale has been a recurrent constraint on European industrial projects since the post-war period**. Airbus emerged partly because national consolidation had reached its limits: even after extensive rationalisation of the French, British and West German aeronautical industries, national champions remained too small to bear independently the costs and risks associated with the development of a new generation of commercial aircraft. Similar constraints were visible in the computer industry, where even the largest national European market was insufficient to provide domestic producers with the minimum scale required to compete with IBM. Scale, in other words, has historically been one of the strongest arguments in favour of cross-border industrial consolidation in Europe.

This historical perspective helps to contextualise the current debate on European competition policy. The growing technological and financial capabilities of US and Chinese firms have revived the argument that a competition policy primarily concerned with preserving rivalry within the European market may inadvertently constrain the capacity of European firms to compete globally. In sectors characterised by high fixed costs, substantial R&D expenditure, network effects, learning-by-doing economies or large-scale capital requirements, consolidation may increase firms' capacity to invest, innovate and compete internationally.

This reasoning has gained greater prominence in the ongoing revision of the European Commission's merger guidelines. **The draft guidelines published in April 2026 place greater emphasis on dynamic efficiencies, including the effects of mergers on future investment and innovation, and recognise that economies of scale and the rationalisation of industrial capabilities may generate efficiencies and ultimately benefit consumers** (European Commission, 2026). This approach could therefore facilitate the emergence of large-scale "European champions" capable of competing effectively in international markets. If adopted, it could allow greater weight to be given to anticipated longer-term efficiencies when these can be shown to offset potential adverse effects on competition and ultimately benefit consumers. In this respect, the proposed approach could also bring EU merger policy somewhat closer to elements traditionally associated with the US competition-policy ecosystem, notably greater consideration of scale, dynamic efficiencies and firms' longer-term capacity to invest and innovate (Defraigne & Nouveau, 2022: pp. 316-317)

Nevertheless, in a union of national economies, **market concentration also redistributes rents and strategic capacity across borders**. The proposed Siemens-Alstom merger, announced in 2017 and prohibited by the European Commission in 2019, illustrates the point. France and Germany presented consolidation as necessary to create a rail champion capable of competing with China's CRRC (China Railway Rolling Stock Corporation), the world's largest train maker by revenue. Several countries that purchase railway equipment, however, saw a different distributional outcome: higher prices and/or reduced choice for their operators and the transfer of rents towards French and German economies (Defraigne & Nouveau, 2022: pp. 325-328). The absence of a sizeable EU fiscal capacity makes such losses harder to compensate. The US has a federal fiscal authority capable of raising and redistributing resources on a scale for which there is no direct EU equivalent.

The European Commission blocked the merger, a decision that both companies and their respective Member States criticised as reflecting a lack of strategic vision on the part of the European Commission. If adopted, **the new merger guidelines might lead to a different assessment of a comparable transaction**. However, this would in turn raise questions about how the resulting gains would be distributed between producers and consumers, and, more broadly, which European economies would benefit most from such a reform of competition policy.

4.2.5. A European DARPA: Can Europe Combine Financing, Innovation and Demand?

In terms of industrial projects, **the US has always prioritised a sector-specific and vertical approach based on dual-use technology with applications in both the civilian and military sectors**. This allows substantial public R&D subsidies to be channelled through the Department of Defense (DoD) towards high-potential innovation projects involving a limited number of companies and universities. A special agency called DARPA (Defence Advanced Research Projects Agency), founded in 1958 and attached to the DoD, is in charge of running this dual-use research to develop military innovations and research opportunities for civilian and commercial use. The great advantage of financing civil research with military funding is that it bypasses WTO rules, which restrict state aid for the purpose of fair competition (Bailly, 2005; Mazzucato, 2013; Mowery, 2010). US federal authorities do not stop at the pre-competitive level. They support product development and, furthermore, ensure first-mover advantage and economies of scale through military procurement contracts. This scheme effectively makes the state the first risk-taker and creator of industrial scale-up, generating a substantial leveraging effect on subsequent business R&D spending levels. Federal subsidies and procurement contracts are often accompanied by weak intellectual property rights and compulsory interfirm diffusion to disseminate the generated innovations throughout US industry, thus enabling competition to resume (Mowery, 2010; Block & Keller, 2016; Azoulay et al.; 2019 Bonvillian et al. 2020; Nouveau, 2022).

In this regard, the European Innovation Council (EIC) is the closest existing EU instrument to some aspects of the DARPA approach. It supports high-risk breakthrough technologies from early-stage research through commercialisation and scale-up, and its increasing use of challenge-oriented programmes moves it closer to the DARPA model. The opening of EIC instruments to defence and dual-use technologies in 2026 represents a further step in this direction. Nevertheless, the comparison should not obscure the institutional and fiscal differences between the EIC and DARPA. First, the EIC operates within a European innovation budget that remains small relative to the combined resources available at national level and to the scale of the technological ambitions assigned to EU industrial policy. It is therefore expected to address a very broad range of technological sectors with limited capacity to concentrate resources at a level comparable to major US federal programmes. Second, and more fundamentally, the EIC is not embedded in a procurement system equivalent to that surrounding DARPA. It can finance research, support technological maturation and provide equity to innovative firms, but it cannot by itself guarantee the large and predictable downstream demand required to transform successful technologies into industrial-scale production. For the 2028–2034 MFF, the European Commission has proposed a total of €175 billion for the successor to Horizon Europe, FP10, which includes an innovation pillar designed to support the EIC. However, the EIC Board has warned that the current financial envelope is too restrictive to enable the EU to compete with global rivals such as China and the US as a "strategic investment power" (European Innovation Council Board, 2024).

Finally, the development of a DARPA-like model at EU level is occurring alongside parallel national initiatives, most notably Germany’s Federal Agency for Disruptive Innovation (SPRIND), which was itself established with reference to the US DARPA model (OECD, 2022). While such initiatives may strengthen national innovation ecosystems, their proliferation to France, the Netherlands or Sweden also risks fragmenting European efforts and dispersing scarce financial, technological and human resources that could otherwise be pooled at EU level (European Commission, 2024). The coexistence of potentially competing national and European initiatives can thus also be seen as reflecting the resilience of national industrial and technological rivalries within Europe, which continue to constrain the pooling of resources around common strategic priorities. From this perspective, national DARPA-like initiatives could potentially weaken, rather than reinforce, the emergence of the EIC as a genuinely pan-European instrument for disruptive innovation (European Commission, 2020).

The limitations of the EIC have led Mario Draghi, in his Competitiveness Roadmap report, and economists such as Nobel Prize-winning economist Philippe Aghion, as well as Members of the European Parliament, to **advocate the establishment of a genuine DARPA-like agency in Europe** (Dietrich et al., 2024; Draghi, 2024; Aghion, 2026).

5. Conclusion: Beyond the Airbus Analogy

Calls for an "Airbus of…" reflect a persistent European ambition: to overcome fragmented national capabilities, achieve sufficient industrial scale and reduce technological dependence in sectors considered strategic for Europe's competitiveness and autonomy. Yet the comparative analysis developed in this paper suggests that **Airbus should not be treated as a blueprint that can simply be reproduced in cloud computing, artificial intelligence, semiconductors, space or other strategic industries**. Its success depended on a historically specific combination of circumstances: the exhaustion of national and transatlantic alternatives, complementary industrial capabilities, sustained public risk-taking, government-supported demand and economic diplomacy, together with governance arrangements that provided participating countries and firms with an acceptable distribution of industrial returns.

The comparison with UNIDATA, Gaia-X and Galileo demonstrates that **these conditions cannot be assumed to exist in other sectors**. European cooperation becomes considerably more difficult when firms possess competing rather than complementary capabilities, when technologically attractive extra-European partnerships remain available, or when demand is predominantly generated by private businesses and consumers rather than public procurement. Galileo further demonstrates that even where strategic objectives are sufficiently strong to sustain a European project, disagreements over risk allocation and industrial returns can substantially delay implementation and increase its costs. European cooperation is therefore not determined by whether governance is intergovernmental, supranational, public-private or business-led. **What matters is whether the incentives of governments and firms can be aligned around a viable technological, commercial and distributive arrangement.**

This finding has important implications for the current revival of European industrial policy. Increasing public funding, relaxing state-aid and merger rules, establishing European procurement preferences or creating a DARPA-like institution may all contribute to Europe's capacity to develop strategic technologies and firms. But none of these instruments independently resolves the underlying political economy of European industrial cooperation. The central challenge remains one of scale and distribution: Europe needs to concentrate resources, capabilities and demand sufficiently to compete with US and Chinese industrial ecosystems, while the costs and benefits of doing so continue to be distributed unevenly among Member States, firms and consumers.

This tension is particularly significant because the EU does not possess the fiscal and political structure of a federal state. European industrial projects may generate aggregate gains while concentrating industrial capabilities, employment, technological knowledge and corporate rents in a limited number of Member States. Conversely, policies designed to preserve geographical or industrial balance may dilute resources or constrain the technological organisation required for projects to become globally competitive. The recurring concern with fair return is therefore not simply an obstacle inherited from national industrial policies; it is a structural feature of industrial cooperation within a union of heterogeneous economies.

The principal lesson of Airbus is consequently not that Europe needs to reproduce Airbus in every strategic sector. It is that **successful European industrial cooperation requires more than political ambition or the identification of a technological gap. It requires institutions capable of reconciling**

scale with distribution, strategic autonomy with commercial incentives, and European collective objectives with the interests of participating governments and firms. The relevant question for European industrial policy is thus less whether Europe can create the next “Airbus of…” than whether it can create the political, financial and market conditions under which European cooperation becomes the most attractive and sustainable option for the actors expected to deliver it.

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