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BUILDING A EUROPEAN GEOSPATIAL INTELLIGENCE CAPABILITY: MAPPING INITIATIVES, IDENTIFYING GAPS, AND OUTLINING STRATEGIC OPTIONS

Sandra Mezzadri / ARES's Scientific Advisor and Senior Defence Industry Expert

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AUTHOR'S PRESENTATION

Sandra Mezzadri / ARES's Scientific Advisor and Senior Defence Industry Expert

Scientific advisor to ARES, Sandra Mezzadri contributes to research and public debate on defence related issues. She is a senior defence industry expert with over 25 years of experience across EU institutions, industry, and advisory roles. Formerly at the European Commission and the European Defence Agency, she has contributed to European defence policy, procurement, and industrial strategy development, and currently advises defence, security and space actors on EU, NATO, and national defence and security frameworks.

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CONTACT [PILOTS]

Jean-Pierre Maulny, Federico Santopinto, Louise Souverbie and Julia Tomasso
ares@iris-france.org
+33 (0)1 53 27 60 60

iris-france.org/ares
#ARESGroup

@AresGroup_EU

ARES Group - EU

ABSTRACT

Space-based intelligence, surveillance and reconnaissance (ISR) have become a decisive enabler of military power, a trend reinforced by high-intensity conflict and hybrid threats, notably since Russia's war against Ukraine. Armed forces and political authorities increasingly depend on timely and reliable geospatial intelligence derived from Earth observation satellites to support situational awareness, crisis response and military operations. This reliance has grown faster than the governance frameworks needed to manage tasking, prioritisation, security and dissemination under crisis conditions.

European capabilities in this sector span national assets, EU and NATO programmes, and rapidly expanding commercial constellations, but remain loosely coordinated rather than organised within a coherent architecture. This paper examines Europe's geospatial intelligence (GEOINT) challenge through two scenarios: one in which an EU Earth Observation Governmental Service is established by 2028, improving coherence, responsiveness and strategic autonomy, while still facing significant governance and sovereignty challenges; and another in which Europe remains reliant on fragmented national systems with limited collective effectiveness. The paper argues that Europe's core challenge lies in governance: without clear decisions, ongoing efforts risk reinforcing fragmentation; with them, an EU-centred but federative approach could provide the most credible pathway toward operational effectiveness and strategic autonomy.

Keywords : European Union | Defence | GEOINT | European Geospatial Intelligence

INTRODUCTION

Earth observation satellites have long been essential for early warning, force monitoring and arms control. In today's security environment, marked by high-intensity conflict, hybrid threats and persistent grey-zone activity, their role has become central. Geospatial intelligence, surveillance and reconnaissance (ISR) is now a core component of modern military power. Optical and radar imagery, combined with navigation data, signals intelligence and rapidly expanding commercial space services, enable near-real-time tracking of movements, assessment of intentions and support to military operations. Rapid access to satellite data and the ability to fuse civilian and military sources have become decisive for military effectiveness, deterrence and political decision-making.

Yet Europe enters this era with significant strategic weaknesses. Despite substantial national assets and a strong industrial base, the European Union remains dependent on US governmental and commercial ISR providers. While manageable in peacetime, this dependence becomes a strategic liability in crisis, as access to critical capabilities may be constrained by shifting UE political priorities under and increasingly "America First" approach. At the same time, the United States and China are rapidly deploying large, AI-enabled satellite constellations and fully integrating space-based ISR into their military strategies.

Europe faces a fragmented landscape in which EU programmes, national systems, NATO frameworks and commercial constellations evolve largely in parallel in an uncoordinated mode. The EU is seeking Member State approval to deploy an Earth Observation Governmental Service (EOGS) under the next Multiannual Financial Framework[1], while an increasing number of Member States continue to invest in national and dual-use constellations and NATO advances the Alliance Persistent Surveillance from Space (APSS) initiative[2].

These dynamics point to two politically plausible scenarios for Europe's GEOINT future: either an EU-level solution enabling structured federation of national and European commercial capabilities alongside NATO integration, or continued reliance mainly on nationally driven systems with coordination remaining voluntary and case-specific. These scenarios carry sharply different implications in term of autonomy, resilience, responsiveness performance,

[1] The Earth Observation Governmental Service (EOGS) was announced in the 2023 EU Space Strategy for Security and Defence https://defence-industry-space.ec.europa.eu/eu-space/eu-space-strategy-security-and-defence_en

[2] NATO Communications and Information Agency, *"The Alliance Persistent Surveillance from Space (APSS) Programme Reaches Initial Operational Capability,"* NATO NCIA Newsroom, 9 December 2025, https://www.ncia.nato.int/newsroom/news/the-alliance-persistent-surveillance-from-space-apss-programme-reaches-initial-operational-capability.

industrial development and, above all, governance. This paper assesses both paths, highlighting the political choices shaping Europe's GEOINT posture in the coming decade.

THE STRATEGIC IMPORTANCE OF AUTONOMOUS GEOSPATIAL INTELLIGENCE FOR EUROPEAN DEFENCE

The EU and its Member States increasingly rely on space-based data and services for situational awareness and operational decision-making, while geopolitical competition has made space more contested and vulnerable. Counterspace capabilities (physical, electronic and cyber) are now integral to major powers' arsenals, exposing European space assets to disruption and underscoring the need for autonomous, resilient and secure intelligence sources.

In this environment, space systems have become a central pillar of modern ISR. Earth observation satellites provide persistent, wide-area intelligence on military deployments, force movements and critical infrastructure, including in contested or politically sensitive environments. They support early warning, situational awareness, targeting and damage assessment across the full spectrum of conflict. For defence users, however, GEOINT is operationally relevant only if it delivers frequent updates (high revisit for persistent surveillance), the ability to command satellites quickly (rapid tasking), fast delivery of imagery (low latency), excellent geospatial resolution in various wavelengths and secure access and distribution. Recent conflicts, notably in Ukraine, have demonstrated how such capabilities, enabled by diverse sensors and advanced data processing, are essential for time-sensitive decision-making and operations.

Yet Europe's current capabilities fall short of the needed capacities and capabilities to fulfil these requirements. Despite substantial EU, national and commercial investment, systems remain fragmented and unevenly interoperable, lacking the persistence, spectral diversity, responsiveness and secure dissemination needed for modern operations. These gaps are compounded by Europe's dependence on non-European actors.

The United States operates the world's most integrated geo-intelligence architecture, while China is rapidly expanding multi-sensor constellations. Europe continues to rely heavily on US governmental and commercial systems for persistent coverage and near-real-time imagery analysis in time-critical operational contexts. The war in Ukraine clearly exposed this dependence: Ukraine's operational picture has frequently depended on US intelligence sharing and commercial constellations whose availability can fluctuate according to political

decisions or corporate policies beyond European control. In future EU-only or NATO crises, similar uncertainty over access could emerge, reinforcing the strategic case for more autonomous and resilient European GEOINT capabilities.

EUROPE'S FRAGMENTED GEOSPATIAL INTELLIGENCE LANDSCAPE: CAPABILITIES AND GAPS

As mentioned above, despite persistent fragmentation, geospatial intelligence capabilities, spanning military, civil, and dual-use optical and radar satellites, as well as emerging commercial constellations operating in low Earth orbit (LEO), are expanding rapidly across Europe.

EU level

At EU level, the Copernicus Earth observation programme, operational since 2014, forms the backbone of the EU's geospatial information capability and underpins its security and emergency services. Governed by the European Commission and implemented by the EEAS and the European Union Satellite Centre (Satcen), Copernicus service in support to external and security actions[3] delivers products based on satellite imagery to improve situational awareness for institutional stakeholders working in security related domains, such as crisis response, border surveillance and EU external action. Copernicus data are available under a free, full, and open data policy to public and private users alike, including military actors. However, Copernicus is built around a civilian, open-data model with predefined acquisition plans, limited tasking flexibility and delivery timelines as well as lower geospatial resolutions compared to the commercial and national systems, making it unsuited to operational urgency. As illustrated during the war in Ukraine, these features largely constrain its use for time-critical or classified military applications. While Copernicus remains a major strategic asset, it does not fully meet military requirements coming from more dynamic and muti domain threats requiring increased spatial and time resolutions, responsiveness, secure handling of sensitive data and resilience in high-intensity crises.

[3] Copernicus SESA relies on Sentinel satellites providing optical, radar (SAR) and atmospheric data, complemented by contributing missions (CCMS) from Member States and partners, sometimes not European. CCMs combine national and ESA-operated satellites with commercial systems supplying complementary data, notably Very High Resolution (VHR) optical and radar imagery and emerging thermal, hyperspectral, and atmospheric products, RF sensing. Recent framework contracts have expanded the role of European New Space and commercial providers (e.g. Planet Labs Germany GmbH, Aerospacelab, Constellr, Unseenlabs), improving resolution and revisit rates beyond Sentinel capabilities.

To address these gaps, the EU plans a dedicated Earth Observation Governmental Service (EOGS) under the 2028-2034 Multiannual Financial Framework Unlike Copernicus, EOGS is intended for governmental and security users, as a multi-orbit, multi-sensor constellation (including optical, radar, hyperspectral and signals intelligence) within a federated, secure architecture enabling rapid tasking, frequent revisit and low-latency delivery. Its deployment timeline is therefore critical to Europe's access to essential autonomous GEOINT.

To bridge the gap ahead of 2028, the European Space Agency (ESA) has taken an unprecedented step as a civilian agency engaging in the development of Earth observation capabilities with direct relevance for defence and security. Following the November 2025 Ministerial Council, Member States approved a €1 billion European Resilience from Space (ERS) programme as a precursor to EOGS development[4]. ERS aims to mature the technologies and architectures that could serve as the backbone of a future European governmental Earth Observation constellation (EOGS). However, most of these efforts remain at an early stage and are unlikely to reach operational maturity before the end of the decade. Their effectiveness is further constrained by the absence of a shared agreement among Member States on the operational requirements of ERS, particularly for defence users. Their success still depends on resolving governance and sovereignty challenges to ensure a fully European-controlled constellation. As a result, the current EU framework continues to lag behind operational needs for large-scale, rapid-response EO capabilities.

National capabilities

In parallel with EU-level initiatives, several Member States are accelerating investment in national dual-use EO systems, driven by distinct strategic, industrial and geopolitical priorities. These efforts respond to growing demand for sovereign ISR capabilities tailored to regional security needs along the Eastern flank, in the Mediterranean and across the Atlantic.

On the Eastern flank, Poland is expanding sovereign EO capacity through CAMILA[5] (three small satellites combining optical and radar sensors) and MikroSAR[6] (three X-band synthetic aperture radar (SAR) satellites[7]). Germany contributes through a radar-centric posture

[4] European Space Agency, *"N° 33–2025: ESA Council Decisions Emphasise Importance of International Cooperation,"* press release, 12 June 2025, European Space Agency, https://www.esa.int/Newsroom/Press_Releases/ESA_Council_decisions_emphasise_importance_of_international_cooperation.

[5] Marchese and the CAMILAV Team (European Space Agency), *"The Polish National Earth Observation Project CAMILAV,"* presentation, March 2007, https://lps25.esa.int/lps25-presentations/presentations/2007/_2007.pdf

[6] Pour le communiqué d'ICEYE sur les satellites SAR pour la Pologne
ICEYE, *"ICEYE to Provide SAR Satellites for the Armed Forces of Poland,"* press release, 14 May 2025, ICEYE, https://www.iceye.com/newsroom/press-releases/iceye-to-provide-sar-satellites-for-the-armed-forces-of-poland.

[7] Synthetic Aperture Radar (SAR) satellites actively use microwave radar to produce high-resolution images of the Earth, enabling continuous, all-weather, day-and-night surveillance critical for defence and security operations.

anchored in SAR-Lupe[8] and SARah[9], complemented by TerraSAR-X and TanDEM-X[10], while a dedicated military optical system (GEORG[11]) remains under development. France plays a central role through high-resolution optical systems Pléiades[12] and the CSO programme[13] (three military satellites), supporting national and allied situational awareness.

In the Mediterranean, Italy operates COSMO-SkyMed Second Generation[14] (radar) as the backbone of its defence-relevant EO posture, while IRIDE[15] is deploying a broader architecture structured around six satellite constellations (SAR, optical, multispectral and hyperspectral). Greece is developing sovereign capacity through its National Satellite Space Project[16], deploying radar, optical and thermal infrared satellites for dual-use applications.

In the Atlantic, Spain, Portugal and the United Kingdom are jointly developing the Atlantic Constellation[17] (optical), complemented by Spain's PAZ[18] and PAZ-2[19] (two additional SAR satellites) and the UK's NovaSAR[20] and ISTARI[21] (optical, infrared and electronic intelligence).

Overall, current efforts reflect a strong push by several Member States[22] to rapidly acquire[23] and operate sovereign small SAR satellites, which offer limited sensor diversity, remain nationally bounded and limited in scale. Advanced capabilities (e.g. VLEO platforms[24], operational onboard AI processing, autonomous operations) remain rare, while ground segments and analytics capabilities are duplicated. The absence of a common tasking and

[8] German Aerospace Center (DLR). *"SAR-Lupe."* eoPortal Directory. https://www.eoportal.org/satellite-missions/sar-lupe.
[9] German Aerospace Center (DLR). *"SARah."* eoPortal Directory. https://www.eoportal.org/satellite-missions/sarah.
[10] European Space Agency. *"TerraSAR-X and TanDEM-X."* ESA Earth Online. https://earth.esa.int/eogateway/missions/terrasar-x-and-tandem-x.
[11] Deutsche Welle. *"German Intelligence Agency Gets Spy Satellite System Funds."* 5 November 2017. https://www.dw.com/en/german-intelligence-agency-gets-spy-satellite-system-funds/a-41244180.
[12] CNES. *"Pléiades."* https://cnes.fr/projects/pleiades.
[13] CNES. *"CSO-3 complète la souveraineté spatiale française."* https://cnes.fr/actualites/cso-3-complete-souverainete-spatiale-francaise.
[14] European Space Agency. *"COSMO-SkyMed."* ESA Earth Online. https://earth.esa.int/eogateway/missions/cosmo-skymed.
[15] European Space Agency. *"Italy's IRIDE Programme Marks Major Step with First Satellite Constellation."* https://www.esa.int/Applications/Observing_the_Earth/IRIDE/Italy_s_IRIDE_programme_marks_major_step_with_first_satellite_constellation.
[16] European Space Agency. *"ESA-Managed Greek National Satellite Space Project Meets Key Milestones."* https://connectivity.esa.int/archives/news/esa-managed-greek-national-satellite-space-project-meets-key-milestones.
[17] CEiiA. *"Atlantic Constellation."* https://www.ceiia.com/news/atlantic-constellation.
[18] European Space Agency. *"PAZ Reveals How Lithium Extraction Causes Sinking Land."* https://earth.esa.int/eogateway/success-story/paz-reveals-how-lithium-extraction-causes-sinking-land/paz-over-spain.
[19] Airbus. *"Airbus Awarded Hisdesat Contract to Build PAZ-2 Satellites."* 15 July 2025. https://www.airbus.com/en/newsroom/press-releases/2025-07-airbus-awarded-hisdesat-contract-to-build-paz-2-satellites.
[20] Surrey Satellite Technology Ltd. (SSTL). *"NovaSAR-1."* eoPortal Directory. https://www.eoportal.org/satellite-missions/novasar-1.
[21] UK Government. *"Designing Defence's Next-Generation Multi-Satellite System."* GOV.UK case study. https://www.gov.uk/government/case-studies/designing-defences-next-generation-multi-satellite-system.
[22] Case of Netherlands, Finland, Poland, Germany, Sweden, Portugal, Greece, mainly through IceEye provider.
[23] Mainly from commercial providers such as IceEye.
[24] Very Low Earth Orbit (VLEO) platforms typically operate at altitudes below approximately 350 km, enabling higher spatial resolution, reduced signal latency, and improved revisit rates compared to conventional low Earth orbits.

service layer constrains Europe's ability to pool coverage, sustain persistent monitoring and guarantee priority access for collective operations.

NATO assets

NATO, for its part, does not operate its own Earth Observation satellites constellation but relies on national and commercial assets provided by Allies. The Alliance Persistent Surveillance from Space (APSS) initiative, launched in 2024, is intended to federate these capabilities into a virtual constellation (Aquila) to provide continuous, multi-domain ISR in support of defence planning and operations. If fully implemented, APSS could significantly improve how often areas of interest can be re-observed (revisit rates), how quickly satellites can be commanded (tasking flexibility), and how different types of imagery and data are combined (data fusion) at Alliance level. However, the programme is still under development, with implementation timelines extending into the second half of the decade, and its ability to provide assured, fast delivery of imagery (low latency) and frequent monitoring of areas of interest (high revisit) at scale remains contingent on sustained national contributions and effective governance. In addition, the current direction of US policy as reflected in the US National Security Strategy, which emphasises prioritisation of national interests and strategic competition, could have indirect implications for NATO mechanisms as well, including APSS, by reinforcing the conditionality of access to critical enabling capabilities.

Commercial assets

Over the past decade, the commercial sector has expanded rapidly through agile small satellites operating in Low Earth Orbit (LEO) constellations and sustained private investment. European and allied companies now deliver advanced capabilities, including very-high-resolution optical imagery, synthetic aperture radar (SAR), hyperspectral and thermal data, as well as commercial signal intelligence. Defence-relevant GEOINT data and services are provided by operators such as ICEYE (commercial SAR), Vantor, Airbus S&D (for VHR optical[25] respectively WorldView, Pléiades Neo), and emerging European New Space actors embedded in EU programmes, including Copernicus Contributing Missions and ESA's Civil Security from Space initiative (e.g. Kuva Space, OroraTech).

The next phase of commercial GEOINT developments points towards increased digitalisation of space assets through edge computing, cloud-based processing and AI-enabled analytics on board satellite, but also intersatellite links potentially accelerating data exploitation and responsiveness, though these capabilities are not yet operational at scale. NATO's Commercial

[25] Very High Resolution products support frequent revisit, detailed mapping, and fine-scale analysis, capabilities that are widely used for defence, intelligence, and high-precision civilian applications.

Space Strategy (approved in 2025), alongside similar EU intentions in the context of EOGS, acknowledges the role of commercial providers in closing revisit and latency gaps. However, most constellations remain limited in scale, priority access for European governmental users is not guaranteed, and integration into defence architectures remains complex. Persistent challenges include system security, governance arrangements, certification of mission-specific algorithms, and the risk that commercial availability in crisis could constrain Europe's strategic autonomy.

Europe's GEOINT ecosystem is dynamic but too fragmented. EU programmes, national constellations, NATO frameworks and commercial satellites all contribute valuable capabilities, yet none currently provides a coherent system able to meet defence and security requirements at scale. Progress toward 2030 is constrained by available budgets, national industrial policies, governance and coordination challenges, while rising investment is diluted by duplication and parallel developments.

TWO SCENARIOS FOR EUROPE'S FUTURE GEOSPATIAL INTELLIGENCE CAPABILITY

In the next two years, under rising operational pressure in the GEOINT domain, Europe faces two strategic options. In one, Member States converge toward a European solution that would progressively anchor a common GEOINT backbone at EU level, building on the momentum and commitments signaled at the November 2025 ESA Ministerial with the approval of the European Resilience from Space (ERS-EO) programme, indicating increasing readiness for a European-level approach. In the other, Member States maintain a predominantly national approach, with Europe's GEOINT continuing to evolve primarily through nationally driven capabilities. This political decision will shape the entire architecture of European GEOINT for the next decade.

Scenario 1: A European solution for geospatial intelligence integrating national, EU, and commercial assets

A European solution through the implementation of a dedicated EO for security and defence constellation would formalise a hybrid model in which the EU aggregates, complements and orchestrates national and commercial capabilities, while national systems continue to develop in parallel and can also be leveraged through NATO structures such as the Alliance Persistent Surveillance from Space (APSS). Without a shared European framework for governmental

security and defence GEOINT, Europe would continue along a Member-State-led trajectory, with coordination limited to voluntary and ad hoc arrangements, especially in crisis.

Endorsement of a European solution through the implementation of EOGS would mark the first attempt to give the EU an autonomous governmental GEOINT capability designed for security and defence users. Conceived to complement Copernicus, EOGS is intended to provide more responsive, secure and federated Earth observation services, addressing the limitations of Sentinel systems[26] in terms of resolutions, agility and classification. Initial studies and pilot activities are under way[27], but the full architecture remains subject to Member State approval and is unlikely to reach full operational capability before 2030, creating a critical interim gap.

Politically, a European solution would not replace national capabilities but seek to federate them. National military and dual-use constellations would continue to evolve according to Member State priorities, while a European framework would pool selected assets on a volontary basis, address critical capability gaps through EU-owned sensors, and establish a common tasking, data processing and service dissemination across the EU institutions and participating Member States. Such an approach would have major institutional implications, as it would reshape the balance among Europe's space actors, notably between the EU, the European Commission and ESA. Having supported the development of the space segment and data sharing architecture as a precursor of EOGS through its ERS-EO by 2028, ESA would likely seek to retain an operational role, further consolidating its unprecedented positioning as a civilian agency contributing directly to defence-relevant capabilities, in close coordination with the EU SatCen and under EU political coordination. In parallel, national assets could continue to independently support NATO's APSS, enabling a degree of cross-use between EU and NATO frameworks without formal duplication.

Governance would remain the central challenge in this scenario. Approving EOGS would force Europe, for the first time, to formalise rules for tasking, prioritisation, classification and sharing of GEOINT at EU level. This is both the main opportunity and the main risk. On the one hand, EOGS could establish predictable, rules-based access to GEOINT that does not depend on bilateral goodwill or improvised political bargains, something Europe currently lacks. On the other, EOGS sits at the intersection of two legal and political logics that have long been

[26] The Copernicus Sentinels are the EU's dedicated fleet of Earth-observation satellites, developed by ESA, that provide free and continuous radar, optical, oceanic, and atmospheric data underpinning the Copernicus services for environmental monitoring, security, and emergency management.

[27] European Commission, *"Developing Reconnaissance Capabilities at an EU Level,"* News article, 23 January 2024, DG DEFIS, European Commission, https://defence-industry-space.ec.europa.eu/developing-reconnaissance-capabilities-eu-level-2024-01-23_en.

kept separate: EU space infrastructure developed under a largely civil legal basis, and the operational use of that infrastructure for security and defence, which remains intergovernmental under CFSP/CSDP and MS agreements. If this split is not addressed explicitly, it risks introducing precisely the latency and ambiguity that defence users fear.

In practice, this implies a governance arrangement that is balanced rather than centralised. The Commission would act as programme owner and budget authority; the European Union Space Programme Agency (EUSPA) would manage service operations, accreditation and security monitoring; the EU SatCen would remain the central hub for GEOINT service exploitation and delivery to security and defence users, while ESA would most probably seek to retain a role beyond its traditional upstream space development, in particular in the midstream layer of data access and sharing, building on the capabilities it will certainly mature through the ERS EO programme. Around this EU-owned core, national and commercial assets would be federated through common tasking interfaces and data standards, with the EU acting as orchestrator rather than sole owner. Such an arrangement would be viable only if priority mechanisms and data-release rules are clearly defined ex ante through binding security decisions and pre-agreed operational modes.

Control and sovereignty under this scenario would be deliberately layered. The EU would gain autonomous tasking and access rights over a limited but dedicated governmental EO backbone, potentially exercised through EU SatCen, an Agency of the Council managed by Member States, while Member States would retain sovereign tasking of national assets for sensitive missions. Selected data and products could be pooled into the EU framework or shared with NATO through APSS. This does not remove national sovereignty, but it changes its expression. Autonomy becomes collective rather than national: no single Member State controls the system, but no external actor does either. For smaller states, this can be reassuring, as it reduces dependence on asymmetric bilateral arrangements. For larger states, trust will depend on whether governance rules genuinely preserve national red lines.

From an operational and technical perspective, an EU framework would directly improve interoperability and reduce duplication. Without coordination, Member States tend to develop their national systems often through parallel investments, a dynamic already visible as larger states such as Germany, France and Italy develop broadly comparable capabilities across optical, radar and, increasingly, hyperspectral sensors. An EOGS architecture would create incentives to specialise and interoperate rather than replicate, while still allowing national reinforcement where required. It would also improve scalability by providing a secure baseline of GEOINT services to all Member States. That said, scalability is not automatic: as

demand grows, prioritisation will become contentious, and larger states may still find EU services insufficient for high-tempo operations unless national and EU layers are carefully synchronised.

The industrial impact of an EU GEOINT capability could be significant. A dedicated EU service like EOGS would generate a strong and predictable demand signal, allowing EU procurement and regulatory tools to shape standards in sensors, ground infrastructure, cloud processing and AI adapted to defence needs and requirements. Crucially, only action at EU scale would make it realistic to develop large-scale digital space infrastructure for defence, combining inter-satellite links, low-latency data pipelines, sovereign ground and in orbit cloud environments and defence-relevant AI for rapid exploitation. In this context, coordinated EU and ESA investments in digital space, AI factories and secure cloud infrastructures could act as powerful catalysts for industrial consolidation, technological maturity and strategic autonomy.

Finally, an EOGS-based architecture would allow Europe to better leverage past EU investments that currently remain fragmented. EDF 5 years multi-million investments projects in Space Based ISR[28] have advanced federation layer capabilities, low-latency delivery and multi-sensor constellations. European Defence Agency (EDA) initiatives (LEO2VLEO[29], VLEO-DEF, Mightysat) address orbital agility and responsiveness, while Permanent Structured Cooperation (PESCO) project COHGI[30] for instance is focusing on secure data exchange and shared archives. Ground-segment projects (PEONEER[31], HYSPEC, DTE4DS) explore AI-assisted analysis and multi-sensor fusion.

What is missing today is a system-level framework to connect these efforts into an operational capability. EOGS could provide that framework, but only if governance, sovereignty and prioritisation issues are addressed upfront.

Scenario 2: Europe's geospatial intelligence capability evolving through nationally owned constellations

[28] European Commission, *SPIDER — Space-based Persistent ISR for Defence and Europe Reinforcement (Factsheet, EDF 2022),* PDF, European Defence Fund, June 2023, https://defence-industry-space.ec.europa.eu/system/files/2023-06/SPIDER-Factsheet_EDF22.pdf. And European Commission, *"EDF 2025 Call Topic Descriptions,"* Commission Implementing Decision C(2025) 568 final, Brussels, 29 January 2025, PDF, European Defence Fund, https://defence-industry-space.ec.europa.eu/document/download/fd8f705a-208e-485e-83e1-1b89d3a977c6_en?filename=EDF%202025%20Call%20Topic%20Descriptions.pdf.

[29] iSiSpace. *"EDA Signs with iSiSpace for LEO2VLEO Satellite Constellation Launch,"* news release, iSiSpace, https://www.isispace.nl/eda-signs-with-isispace-for-leo2vleo-satellite-constellation-launch/.

[30] Permanent Structured Cooperation (PESCO), *"Common Hub for Governmental Imagery (CoHGI),"* project page, https://www.pesco.europa.eu/project/common-hub-for-governmental-imagery-cohgi/.

[31] European Commission, *"EDIDP – PEONEER,"* press document, Commission Press Corner, https://ec.europa.eu/commission/presscorner/api/files/attachment/865741/EDIDP%20-%20PEONEER.pdf.pdf.

If a European owned GEOINT capacity does not receive the blessing of MS before the next MFF, EU capability would remain limited to Copernicus service, with its civil security orientation and open-data logic, and to the EU SatCen services, whose role could be expanded but without access to another dedicated EU-owned space segment. In this scenario, sovereignty would be exercised almost exclusively through national capabilities, with coordination occurring through bilateral or multilateral arrangements, ad hoc coalitions, and NATO frameworks.

This scenario largely reflects the current state of play, where Member States are already investing heavily in national GEOINT capabilities to address specific regional priorities. France continues to modernise its optical and military reconnaissance systems and SAR capabilities[32], Germany is reinforcing its radar, hyperspectral and sigint capacity following the adoption of its Space Safety and Security Strategy in 2025[33]; Italy is building a broad multi-sensor ecosystem through COSMO-SkyMed and IRIDE, and Poland, Netherland and Finland are accelerating investments to support resilience along the eastern flank[34]. In parallel, Spain, Portugal and the UK are focusing on maritime surveillance in the Atlantic[35], while Greece is developing sovereign EO capabilities to support national security and civil protection[36].

Governance is where this scenario looks simpler on paper but more fragile in practice. Sovereignty stays national: each capital decides what to collect, what to share, and when, under its own classification rules and domestic constraints. That clarity is exactly why national constellations remain attractive for sensitive defence missions but limited in terms of capacities due to the smaller number of satellites. The real challenge emerges when operating at European scale. In a crisis, access depends on political decisions taken case by case, shaped by national priorities, risk tolerance and sometimes domestic politics, without clear mechanisms to resolve prioritisation disputes beyond ad hoc negotiation. NATO can partly compensate for collective-defence needs: APSS introduces a more structured pooling appraoch and Memoranda of Understanding (MoUs) can improve predictability inside NATO channels. But it does not cover EU-specific requirements (EU crisis management, civil-security

[32] Notably through commercial assets including Pléiades NEO (VHR optical) and Unseenlabs[16] (signal intelligence)

[33]European Federal Ministry of Defence (Bundesministerium der Verteidigung) and Federal Foreign Office, *Space Safety and Security Strategy 2025*, PDF, November 2025, https://www.bmvg.de/resource/blob/6042580/128dbebd8cce8d7b8e61eb680edf91ad/weltraumsicherheitsstrategie-2025-en-data.pdf.

with private initiatives driven by Rheinmetall in cooperation with IceEye for tactical C2 capacity, Announcement of the launch of a SAR, Sigint constellation driven by Helsing in cooepration with the Norwegian Kronsberg.

[34] For Poland through the development of national constellations including CAMILA, MikroSAR and MikroGlob (radar and optical) as well as through commercial procurement including with Airbus for 2 Pléiades NEO-like satellites.

[35] Through the development of the Atlantic constellation, comprising up to 16 optical and communications satellites for maritime surveillance and environmental monitoring over the Atlantic and western Mediterranean.

[36] through its National Satellite Space Project (2023-2028) to deploy radar, optical, and thermal infrared satellites.

missions, autonomous EU decision support), where reliance on voluntary sharing, and often on US-provided intelligence, remains structural.

Control and autonomy therefore become uneven across the Union. Capable states can task and retask their own assets at will, integrate their GEOINT tightly with other data intelligence sources, and apply strict national release policies. Smaller Member States without sovereign space assets (which still account for most EU members, as only a handful operate their own sovereign constellations) remain dependent on a limited number of European providers, NATO channels, or commercial imagery, with access conditions that can shift quickly. The practical effect is that Europe can have many satellites sensors and still struggle to generate a shared operational picture at the tempo required, because tasking and prioritisation remain fragmented.

Technically, this scenario in continuity with the current situation tends to drive duplication rather than interoperability. Without an EU-level tasking and service layer, Member States naturally try to "complete" their national space based ISR capabilities often through parallel procurements and commercial deals. Germany is a good example of this dynamic: commercial initiatives are used to complement sovereign systems (including partnerships to reinforce SAR capacity, e.g. Rheinmetall with ICEYE, alongside other emerging industry moves in SIGINT[37]). Poland is also layering capabilities: CAMILA is being complemented through additional satellites for joint use across defence, interior and civil agencies; MikroGlob (four microsatellites with infrared imaging) is prepared to fill gaps; and MikroSAR (three ICEYE satellites) strengthens responsive, all-weather monitoring. In the Mediterranean, Italy's IRIDE is intended to deliver persistent, high-resolution capacity in support of crisis response and border security across the basin, while Greece's investment in a secure governmental IT hub signals an ambition for an end-to-end sovereign chain. In the Atlantic, the Spain-Portugal-UK Atlantic Constellation strengthens optical coverage, while Spain also adds SAR capacity through agreements (including ground-segment elements) and additional satellites expected to enter service in 2031.

The direction is clear: capability grows, but it grows in parallel, and often with duplication.

Scalability follows the same two-speed logic. Strong states scale through new satellites and commercial partnerships (Germany and Sweden's agreement with Planet are two example[38]),

[37] Including cooperation announced in 2025 between Helsing with Kongsberg Defence & Aerospace, alongside Hensoldt and Isar Aerospace, to develop a sovereign space-based ISR/targeting constellation by 2029.

[38] Defence Industry Europe, *"Planet Labs Germany Signs €240 Million Agreement to Provide Satellite Services for European Security,"* Defence-Industry.eu, 4 July 2025, https://defence-industry.eu/planet-labs-germany-signs-e240-million-agreement-to-provide-satellite-services-for-european-security/. and Planet Labs PBC, *"Planet Signs 9-Figure Deal with*

while others remain mostly consumers. NATO's APSS can mitigate this for Alliance operations, but EU-specific crisis-management needs remain unequal. Over time, this could create a division between GEOINT "providers" and "clients" inside Europe, with significant political implications for crisis management and burden-sharing.

The industrial picture is also mixed. A national path preserves national champions and allows faster domestic procurement cycles, but it fragments the market and limits economies of scale. France, Germany and Italy can sustain strong domestic ecosystems; others rely more on commercial or foreign supply chains. NATO demand may stimulate innovation, but it is vendor-agnostic and does not automatically translate into European industrial advantage. Without a common European demand signal and standards push, dependence on non-European suppliers for parts of the EO space supply chain (launch with the predominance of Starlink, non- EU cloud processing and storage or duplicated sovereign clouds,) risks deepening rather than shrinking.

Finally, the question of priority-setting becomes more accute without an EU framework. In a major crisis, demand for GEOINT data and products would rapidly exceed supply. Without agreed priority rules, each actor can claim urgency, making prioritisation implicit, opaque, and highly political. This not only reduces efficiency but also slows operational response, encourages duplication, and fosters mistrust. In this scenario, Europe would effectively accept that pooling remains voluntary and reversible by Member States and by commercial providers because there is no EU-level mechanism to stabilise participation through incentives, minimum service commitments, or predictable compensation.

Sweden," Business Wire, 12 January 2026, https://www.businesswire.com/news/home/20260112080353/en/Planet-Signs-9-Figure-Deal-with-Sweden.

CONCLUSION

Geospatial intelligence has become a core element of strategic power. For Europe, the challenge is no longer only technological but political: whether it can organise, govern and use geospatial intelligence with the speed, reliability and autonomy required in crisis and conflict.

Europe's current trajectory remains one of parallel development. National systems, EU programmes, NATO frameworks and commercial services are all expanding, but without a unifying architecture. In this context, additional public investment alone risks deepening fragmentation. The analysis in this paper argues that the decisive challenge will be the governance choices that determine how EO assets are prioritised, shared and used when it matters most.

This brings a set of concrete questions:

- Is Europe willing to establish EU-level tasking and priority rules for a limited but sovereign geospatial intelligence backbone, and under what conditions?
- How much national control must be preserved to make pooling politically sustainable, and how should "sovereign modes" be protected within a federated system?
- What rules should apply in situations of scarcity, when multiple national, EU and NATO demands compete for the same capacity?
- How can governance ensure continuity of service if national or commercial contributions are constrained in a crisis?
- What role could EU industry play to secure potential commercial markets and maximize the return on investment?

Developing an EU Earth Observation Governmental Service would not answer these questions automatically, but it would force them to be addressed explicitly and in advance. Rejecting it would defer them, leaving coordination to voluntary arrangements and crisis-driven bargaining. Europe's geospatial intelligence future will therefore be shaped less by satellites than by whether political leaders are prepared to confront these governance choices directly.

The Armament Industry European Research Group

Armament Industry European Research Group

2 bis, rue Mercœur - 75011 PARIS / France

+ 33 (0) 1 53 27 60 60

ares@iris-france.org

iris-france.org/ares

The Armament Industry European Research Group (Ares Group) is a high-level network of security and defence specialists across Europe. Its aim is to provide a forum to the European armament community, bringing together top defence industrial policy specialists, to encourage fresh strategic thinking in the field, develop innovative policy proposals and conduct studies for public and private actors.