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Space, Defence and Resilience

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NATO Members' Defense Growth Opportunities

The Impact of the Top 3 Strategic Imperatives on the NATO Members Defense Market

SI8	Geopolitical Chaos	Industry Convergence	Disruptive Technologies
Why	• The Russo-Ukrainian war is the most significant global defense event, ever since the 9/11 terror attacks. • Ongoing and intensifying Russian military aggression pushes NATO Alliance to further strengthen military capabilities, allocated growing defense budgets, widening Alliance and updating modern military posture.	• The Russian aggression and immediate threat to European soil has catalyzed genuine and historical shifts in the NATO Alliance defense industry ecosystem and competitive landscape. • On the other hand, there is a significant decrease in Russia's international standing as a global leading arms exporter.	• The Russo-Ukrainian war emphasizes the dramatic impact that disruptive technologies create; from AI for target recognition and big data intelligence analytics through small Kamikaze drone based on Western technology up to Main Battle Tank active protection.
Frost Perspective	• NATO members, in particular European countries, are shifting dramatically their defense posture, while the war is entering its second intensive year on ground. • As parties are substantially dispute about war end-game apparatuses, expect growing political attention and accelerating ramifications in European Defense posture, including establishing massive indigenous production facilities on European Soil, for the first time since WW2.	• NATO members' defense industries are entering an unprecedented transformative era focused on establishing s military industrial base for arms mass production. • This phenomena calls for changes is traditional business models, deepening localization regulation and impacting competitive landscape—both with newcomers and consolidation trend (M&A).	• NATO defense OEMs are challenged by emerging technologies, hence, the struggle to mitigate it by R&D and integration efforts. • The defense institutional establishments across NATO and the EU facilitate innovative environmental workspaces and laboratories to support faster and robust process to adopt disruptive technologies for defense uses.

Source: Frost & Sullivan

NATO Members Defense: Growth Drivers, Global, 2023–2025

Driver	1–2 Years	3rd Year
The war dramatically shifts NATO and European defense strategic posture and catalyzes growth in national defense budgets across the NATO Alliance. The willingness of European countries to increase their defense budgets—after decades of consistent drop in defense segment—is a significant catalyst for defense spending in Europe and the NATO alliance. A significant expectation of an increase in budget allocations will be recorded mainly in Eastern European countries bordering Russia, which are concerned from similar precedents to the war in Ukraine on their territory. Poland, for example, is urgently boosting its military capabilities to deter Russia from further aggression.	**High**	**High**
The US defense industry is struggling to keep up with the production demands of mass quantities of weapons required to support Ukraine, which is undermining the operational readiness of the US Armed Forces. Accordingly, the Biden Administration, the DoD is adjusting defense foreign policy and demanding that its NATO partners not only increase defense budgets in line with NATO standards (2% of GDP) but also **expand industrial bases for mass production of weapons in Europe.**	**High**	**High**
Commercial mass production of dual-use technologies is changing the defense regulatory: Regulatory relief is expected during the forecast period, amid US Administration lifting partial boundaries for arm sales export policy, in particular those weapon systems and platforms that are subject to missile technology control regime (MTCR) regulation. This trend is expected to exceed potential arm sales to NATO members' defense market, with specific regulatory reliefs for UAVs, precise ammunitions, and active defense platforms.	**High**	**High**

Source: Frost & Sullivan

NATO Members Defense: Growth Restrains, Global, 2023–2025

Restraint	1–2 Years	3rd Year
European military industrial base short fall amid growing production demands for ongoing and intensifying needs to support Ukraine on battlefield. As such, most NATO members experienced lack of various land ammunitions stockpiles during the last year, increasing the risk for arm supply shortages to Ukraine, potentially degrading its military power during war time. In addition, European weapon systems and platforms inventory in all domains had fallen since the end of the Cold War; this brought on a substantial challenge to transform European defense industries into military mass production industrial base in a timely manner. Yet, due to US demand, NATO members seek to rehabilitate military mass production capabilities.	**Medium**	**Medium**
Ongoing Inflation rates across NATO markets have a negative impact on members' Defense Industrial Base and supply chains, as raw materials costs are constantly increasing due to geopolitical instability in Europe, following the Russo-Ukrainian war. The war also intensifies Aerospace & Defense supply chain disruptions, increasing business environment uncertainty, especially for vendors focused on fixed-price contracts. This trend is slowing contracts awards and new military procurement programs across most NATO members that are pushing for military modernization.	**Medium**	**Medium**

Source: Frost & Sullivan

NATO Members Defense—2023

Main Battle Tank (MBT)

The war brought the tank back to the forefront, dramatically sharpening its vitality on the modern battlefield. Accordingly, there has been a significant growth in demand for various of MBTs among NATO members, alongside the release of old platforms stockplies to support Ukraine. The focus is on tank modernization, armament, active defense systems and survivability.

Missile Defense (MD)

NATO members demands for MD solutions are accelerating, in particular to counter hypersonic, high and medium altitude missiles threat, response and medium-altitude missile threat. It generates MD digitization and integration to overall military ConOpS, as NATO Alliance will strive to create a multi-layered air defence architecture.

UAVs

The war accelerate significant shift at this domain, with growing importance of tactical UAV (Categories 3 to 5) over strategic platforms (categories 4 and 5), alongside an expansion of UAV utilities, particularly ISR. In addition, the spread of drone swarm requires adjustments in demand and industrial production lines.

Artificial Intelligence (AI)

In light of technological shift towards Genrative AI (GAI), the Russo-Ukrianian war accelerates the integration of AI application into military methods and platforms, such as Automated Target Recognition (ATR) and military intelligence analytics, which enhances intelligence and operational effectiveness on battefiled.

Disclaimer: This report covers main segments based on recent developments. All contracts follow.

Source: Frost & Sullivan

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What about space?

- The war is an AI global laboratory, with unprecedented funding for AI activities along technological support from both public and private sectors. As a result, the war has pushed drastically for growing use of AI technologies for various tasks: from facial recognition, through automated target recognition (ATR), including through precise ammunition, up to satellite imagery mass data and advanced military intelligence analytics.

Source: Frost & Sullivan

Platform Definition	Contract Description	Leading Companies
AI-Driven-Geospatial Intelligence	AI's most widespread use in Russo-Ukrainian war was geospatial intelligence. This practice is focused on geolocating sensitive military locations and armored convoys, based on analyzing various sensors, including open-source data and satellite imagery for targeting. Palantir Technologies is a world-class leader in this domain, whereas the other vendors mentioned focused mainly on providing Ukraine Armed Forces with advanced satellite Imagery products and raw intelligence materials.	Palantir Technologies Planet Labs BlackSky Technology Maxar Technologies Berkeley AI research [BAIR] (All US)

Source: DoD, IMOD; Frost & Sullivan

NATO Innovative Fund (NIF)

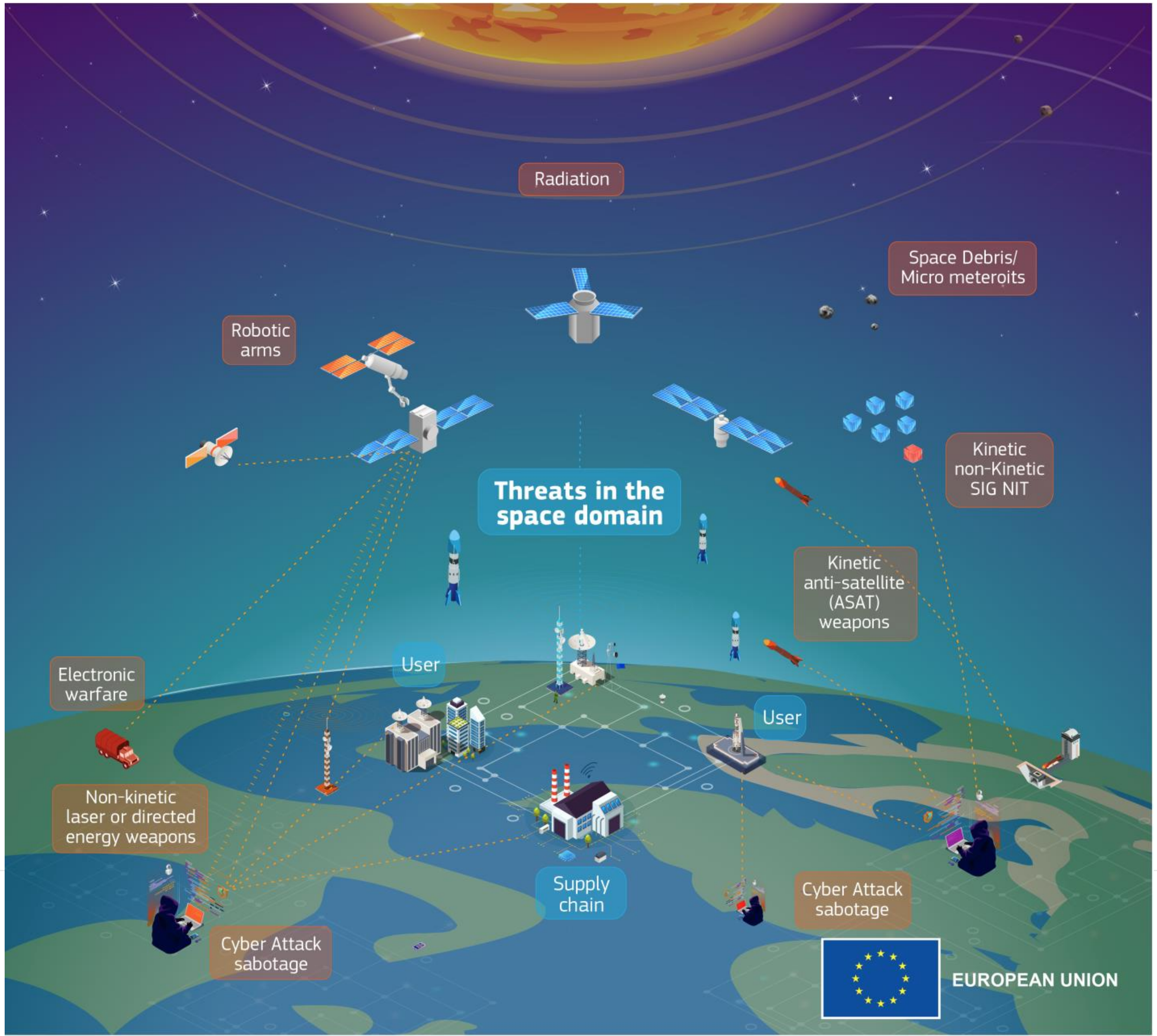
- Multi-Sovereign Venture Capital Fund launched in 2022 aims to create a business and R&D environment for NATO members' Aerospace & Defense ecosystem.
- NIF is focused on emerging and disruptive technologies that can impact NATO defense posture and capabilities in nine technological domains: AI, data and computing, quantum-enabled technologies, autonomy, hypersonic technologies, space, biotechnology and human enhancements, novel materials and manufacturing, and energy and propulsion.

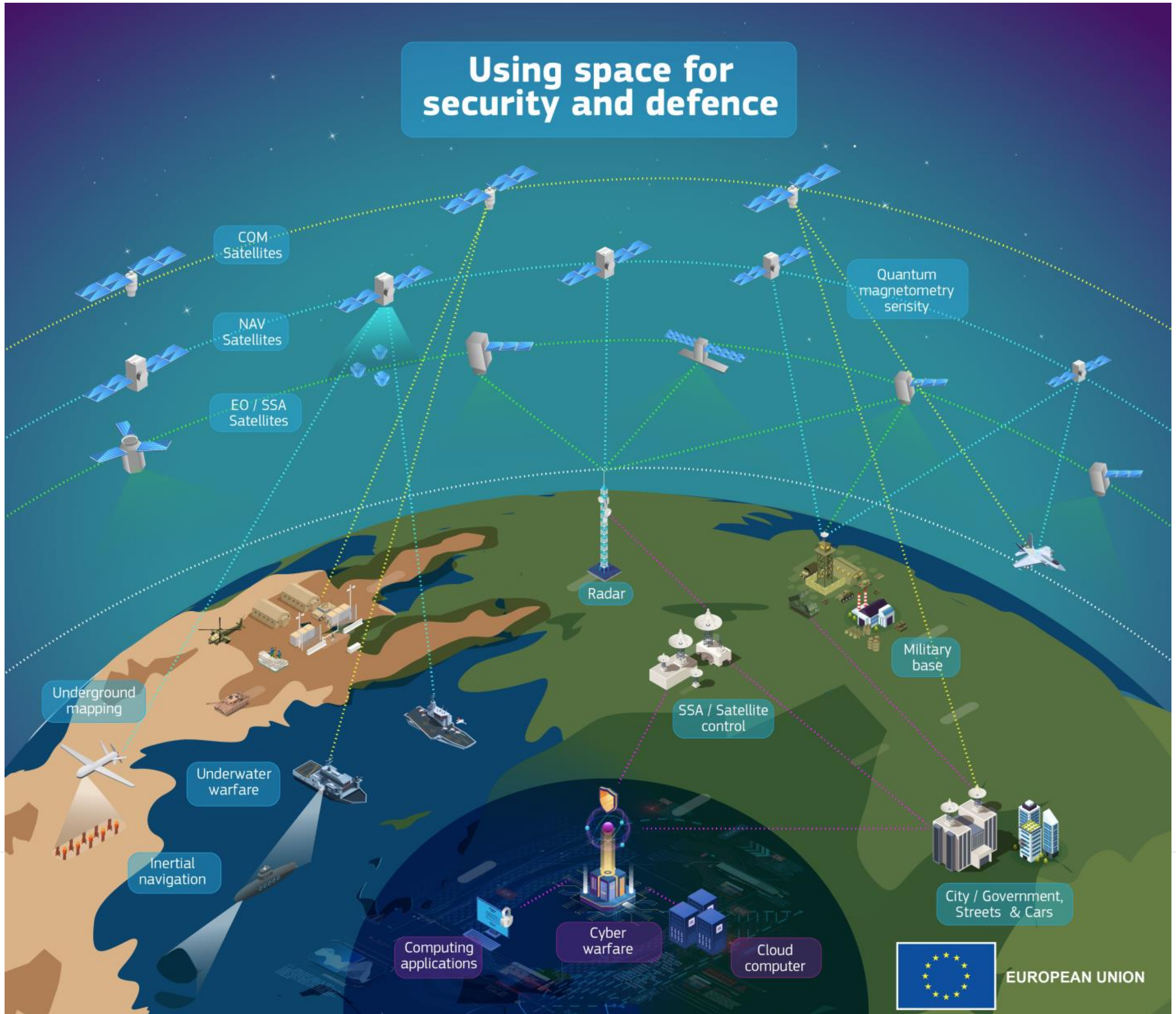
Sources: NATO, Frost & Sullivan

Meanwhile in Europe…

EU Space Strategy for Security and Defence

EU is taking action to **protect** its space assets, **defend** its interests, **deter** hostile activities in space and **strengthen** its strategic posture and autonomy.






PROGRAMME OF
THE EUROPEAN UNION
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IRIS²
INFRASTRUCTURE FOR
RESILIENCE,
INTERCONNECTIVITY
AND SECURITY
BY SATELLITE

Belgian EU Presidency H1/24, some space related focus areas

Research & Space

Priorities

- Open strategic autonomy
- Valorisation of research results
- Research and innovation for challenges for the EU:
  - Green Deal
  - Citizen participation
  - Health
  - International cooperation (TBC)
- Cyber resilience of space infrastructure

Defence

Priorities

- Strategic Compass:
  - "EU Rapid Deployment Capacity"
  - "Military Planning and Conduct Capability"
- Reflection on the establishment of a European Defence Union (incl. Focus on security & defence industry and review of the European Defence Fund)
- Reflection on the Institutional architecture of European defence (incl. internal & external aspects of CSDP crisis management)
- Budgetary aspects of European defence (incl. MFF midterm review & recommendations for next MFF)
- Military mobility
- Cyber
- EU Space Strategy (cf. ES PDY)
- NATO-EU cooperation

Three points

- For Research and Space: Cyber resilience of space infrastructure
- For Defence: EU Space Strategy
- Deepening of NATO-EU cooperation

Some EDF call topics 2023

Defence medical response, Chemical Biological Radiological Nuclear (CBRN)	■ Federating CBRN systems - European CBRN system (D) ■ Defence medical countermeasures Alliance (R)	■ €40 M
Information superiority	■ Detect and Avoid (D) ■ Laser Communications (D) ■ Tactical RPAS (D)	■ €99 M
Sensors	■ Electromagnetic signal propagation (R) ■ Optronics detector technologies (R) ■ Sensor Grid (D)	■ €69 M
Cyber	■ Automation of security penetration tests (R) ■ Cyber situational awareness (D) ■ Deployable autonomous AI Agent (D)	■ €60 M
Space	■ Threat surveillance and protection of space-based assets (R) ■ Initial operational capacity for Space situational awareness C2 and sensors (D)	■ €125 M
Digital transformation	■ Human language technologies for defence - Preparation of a technological challenge (R) ■ Human language technologies for defence - Organisation of a technological challenge (R) ■ Dedicated hardware architectures for energy-efficient AI (R)	■ €45 M

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ESA and Security

- Update of ESA – EU SatCen Collaboration going on, collaboration in:
  - climate change challenges
  - the definition of user requirements
  - the identification of synergies
  - the provision of geospatial products and services to user communities
- Continuation of Galileo
- Support to GovSatCom/IRIS2
- Civil Security from Space
- Renewal of launcher activities

Defence and Sustainability

- In 2023 and the following years, European countries will look into developing sustainable alternatives to defense products.
  - The heightened conversation around climate change and the consequent implementation of the EU's "green" regulations encourages defense manufacturers (and almost all industries) to comply with these frameworks to remain or become successful market participants.
  - An example is German company Rheinmetall's project to save energy and emissions in military installations, called Energy Independent and Efficient Deployable Military Camps (INDY). Part of the EU Green Deal and supported by the EDF, the program's main goal is to reduce fossil fuel dependence in military camps by the end of 2024.

Source: Rheinmetall; NATO; Breaking Defense; Frost & Sullivan

Defense Spending Assessment: Growth Drivers, Europe, 2023–2027

Driver	1–2 Years	3–4 Years	5th Years
The Ukraine-Russia conflict that started in February 2022 boosted the demand for military equipment and systems in Europe, especially in countries bordering the war zone. This situation will continue for as long as the issue stays unresolved.	High	High	Medium
Multiple countries (e.g., France, Poland) heavily allocate their defense budgets to modernization efforts and award contracts to replace legacy systems in various areas.	High	Medium	Medium
Joint frameworks like NATO and the EU encourage European countries to invest in collective defense initiatives and R&D.	High	Medium	Medium
European countries are forming business relationships with extra-continental nations, boosting bilateral commerce and technology exchange.	Medium	Medium	Low

Source: Frost & Sullivan

Defense Spending Assessment: Growth Restraints, Europe, 2023–2027

Restraint	1–2 Years	3–4 Years	5th Years
Russia used to be Europe's main power supplier but has now cut around 80% of its gas provision to the continent, increasing prices, including those of defense products.	**High**	**High**	**Medium**
Though Europe has a booming defense market, US Foreign Military Sales and investments still account for a considerable portion of military equipment and funds that Europe relies on.	**High**	**High**	**Medium**
For some NATO countries, the organization's defense spending benchmark is too low (2% of GDP), which can halt the sector's growth. Still, some members are struggling to reach the current minimum.	**Medium**	**Medium**	**Low**
Political difficulties often arise between European countries that can delay progress in defense cooperation. This was the case with Brexit in 2020 and with Finland's conflicting transition as a new NATO member.	**Medium**	**Low**	**Low**

Source: Frost & Sullivan

In summary

What caught my eye?

- Disruptive technologies are important and challenge OEMs
- AI, Satellite Imagery (in combination with AI), UAVs, Cyber
- EU/European initiatives such as EDF and IRIS2
- Deeper NATO – EU co-operation does not mean that bilateral is irrelevant
- ”Green Defence” is a real thing, at least in Europe

Digital Resilience program

Digital Resilience

Finland will be the leader of comprehensive digital resilience.

Finland is an internationally desired partner due to its expertise and high-value ecosystems that provide sustainable protection to businesses and critical infrastructures of societies.