Countering the drone threat: Europe's C-UAS opportunity

WHITE PAPER

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May 2026

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Abstract

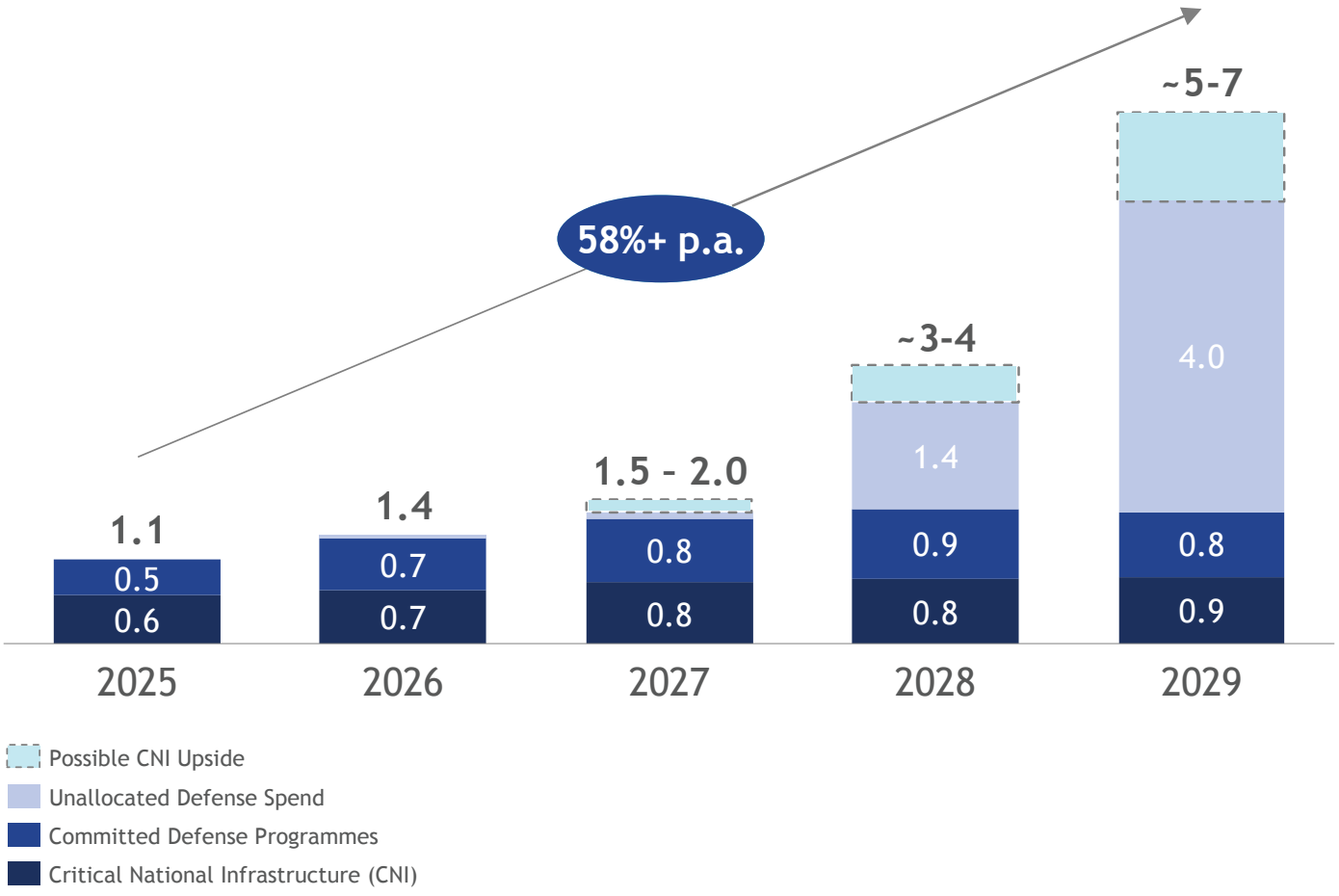
Counter-unmanned aircraft systems (C-UAS) are shifting from niche capability to baseline requirement across European defence and security. Demand is projected to exceed $5–7 billion by 2029, driven by the need to protect thousands of military and civil assets. Yet Europe's current landscape is fragmented, with parallel national programs, overlapping R&D, and limited industrial scale. This threatens both affordability and the ability to deploy interoperable, networked defences at speed. Partnerships offer a way forward. For primes, they enable shared R&D, faster progress down the experience curve, and the right level of focus on a secondary business line. For MoDs, partnerships lower unit cost, enable interoperability, and sustain production capacity. Europe now faces a choice: persist with fragmented efforts or embrace partnerships that deliver scale, interoperability, and resilience. Those who lead the structuring of this market will not just capture share, they will define Europe's role in the global C-UAS race.

1 Europe's fastest-growing defence segment

Counter-unmanned aircraft systems (C-UAS) is moving rapidly from niche to necessity across European defence and security, emerging as one of the fastest-growing segments in the sector. Today, the European market is underpinned by announced C-UAS MoD spending growing from $600M (2025) to $800M (2029) (Exhibit 1). The key drivers of this acceleration are visible on the battlefield: from the Spiderweb operation in Ukraine to the escalation of drone strikes across the Middle East, recent conflicts have demonstrated the disruptive power of coordinated drone operations at scale - targeting critical infrastructure, supply chokepoints, military installations, and urban centres. These engagements have also exposed a structural tension: low-cost, rapidly iterated threat drones are being met by C-UAS systems that remain expensive, difficult to scale, and dependent on supply chains not yet built for sustained attrition. These lessons are reshaping European threat perceptions and procurement priorities as governments begin to recognize that C-UAS protection is becoming a baseline requirement for force protection and homeland security.

In the near term, the C-UAS demand is projected to rise significantly above announced programs, reaching $5-7 billion by 2029 with an annual growth rate of over 50% (Exhibit 1). This projection is grounded in the number of assets across Europe - from operational military bases and warships to nuclear plants, airports and public venues - now exposed to drone threats. The result is a sharp expansion in demand: every brigade, battalion, naval vessel, airfield, government building, or energy facility represents a potential end-user of C-UAS solutions. Altogether, an estimated 4,000-5,000 systems will be required in Europe alone, spanning across fixed-site, land/naval vehicles & man portable solutions – deploying a variety of potential effectors (Exhibit 2).

EXHIBIT 1: EUROPEAN C-UAS MARKET GROWTH, DEFENSE & CNI, ~$B/YEAR



Military Assets: Demand will extend well beyond current programs

Current MoD procurement efforts are focused mainly on land-based defences, portable systems, vehicle-mounted solutions, and fixed-site protection. Yet given the number of European military bases and the planned expansion of armed forces under NATO targets, a much larger volume of systems will be needed.

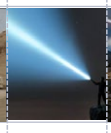
The naval domain is also lagging: few dedicated programs have been announced, but as drones and loitering munitions threaten ships, ports, and offshore installations, demand for shipborne and coastal C-UAS will follow land forces lead and grow significantly.

Altogether, military requirements are expected to account for 1,500-2,000 systems across NATO Europe.

Civil infrastructure: The next major growth driver

Beyond the military, hundreds of critical civilian sites are increasingly vulnerable to drone incursions, from nuclear power plants and energy transmission nodes to airports and large event venues. Recognizing this risk, the EU has begun to issue regulatory frameworks that enable lawful deployment of C-UAS in civilian settings, laying the groundwork for broad adoption. As these frameworks mature, demand is expected to accelerate sharply by the end of the decade. Meeting this need will likely require 2,000-3,000 systems, making infrastructure protection one of the largest and fastest-rising C-UAS segments.

EXHIBIT 2: C-UAS EFFECTORS AND THREATS TYPES

		Kinetic = physically intercept or seize drone					Non kinetic = disable or take control of drone without physical impact					
		Conventional projectiles			Unconventional projectiles		Jamming		Directed energy weapons			Cyber
Type		Air to air munitions	Surface to air missiles	Small arms & weapon systems	Nets	Collision drone	RF jamming	GNSS Jamming	Dazzling	Laser	High power microwaves	
Description		Missiles fired from aircraft	Ground-launched missiles	Gunfire to bring down low-flying drones	Capture drones by entangling them mid-air	Crash into target drone to destroy it	Block drone's control or data signals	Disrupt drone's GPS navigation	Blind drone sensors with intense light	Burn or disable drone parts with focused light	Disrupt drone electronics with energy pulses	Hack drone systems to take control or force landing
Illustration												
Class I (<150kg)	Micro (200g - 5km) Mini (3000ft - 25km) Small (5000ft - 500km)	–	–	✓	✓	✓	✓	✓	✓	✓	✓	✓
Class II (150-600kg)	(18000ft - 200km)	✓	✓	×	×	×	–	–	–	–	–	×
Class III (>600kg)	MALE (45000 ft - unlimited) HALE (65000ft - unlimited)	✓	✓	×	×	×	×	×	–	–	–	×

✓ Yes – Limited × No

Source: Joint Air Power Competence Centre (NATO CoE)

2 A fragmented and duplicated landscape

Today, the market is populated by a diverse set of players covering one or several steps of the value chain (Exhibit 4), belonging to three archetypes:

- **Primes,** which are developing end-to-end C-UAS offerings, leveraging their command-and-control and system integration capabilities, but often rely on a host of third-party suppliers for key subsystems (sensors, effectors, AI software).
- **Smaller emerging integrators**, which are typically mid-sized firms that focus on assembling solutions, particularly on the non-kinetic side (e.g., radio-frequency jamming, directed-energy systems). They bring agility and innovation but lack the industrial scale to deliver comprehensive systems across domains.
- **Subsystem providers:** dozens of smaller tech firms and startups across Europe provide individual pieces of the puzzle (radars, jamming devices, interceptors, etc.) to Primes and emerging integrators.

The result of this patchwork is significant innovation and variety, but also a decentralized and fragmented supply chain, where very few companies cover the full stack alone.

Geographically, the phenomenon is even more pronounced. Every major European defence nation has launched its own C-UAS developments.
Each of these national solutions was pursued largely independently, often driven by domestic industry champions and specific national requirements. This is particularly visible in the number of different platforms covered by announced programs: Europe counts more than twice as many as North America, underscoring the duplication and lack of consolidation across the EU market (Exhibit 3). While these efforts have advanced the state of the art, together they form a jigsaw of overlapping products rather than a coherent European architecture.

EXHIBIT 3: CUAS VALUE CHAIN

Design	Subsystems			Assembly & integration	MRO
	Detect	Decide & communicate	Intercept		
n.a.	~120M€	~40M€	~260M€	~50M€	n.a.
Development of overall C-UAS system architecture and subsystem requirements Includes high-level selection of deployment platform types (e.g. fixed-site, vehicle) and identification of UAS threat classes the system is built to defend against	**Threat detection:** • **EO/IR:** Electro-optical and infrared capabilities (video cameras, thermal sensors, etc.) • **Radar:** Radio wave sensors	**C2+** system responsible for command, control, communications, and linkage to wider defense systems	**Threat neutralization:** • **Fire control system:** Software and hardware that process sensor inputs and guide weapon targeting • **Effectors:** Weapons system for kinetic and EW for non-kinetic (soft-kill) of threats	**Integration of subsystems** into seamless entity Covers integration of mechanical, electronics, and software components	**Lifecycle sustainment** of system post-deployment On top of regular maintenance, modifications expected to form significant share of service due to modular structure of C-UAS

Industry players may specialize in subsystem manufacturing, system integration, or offer E2E solution delivery across the entire value chain

Beyond duplicative R&D spending, this creates two structural challenges:

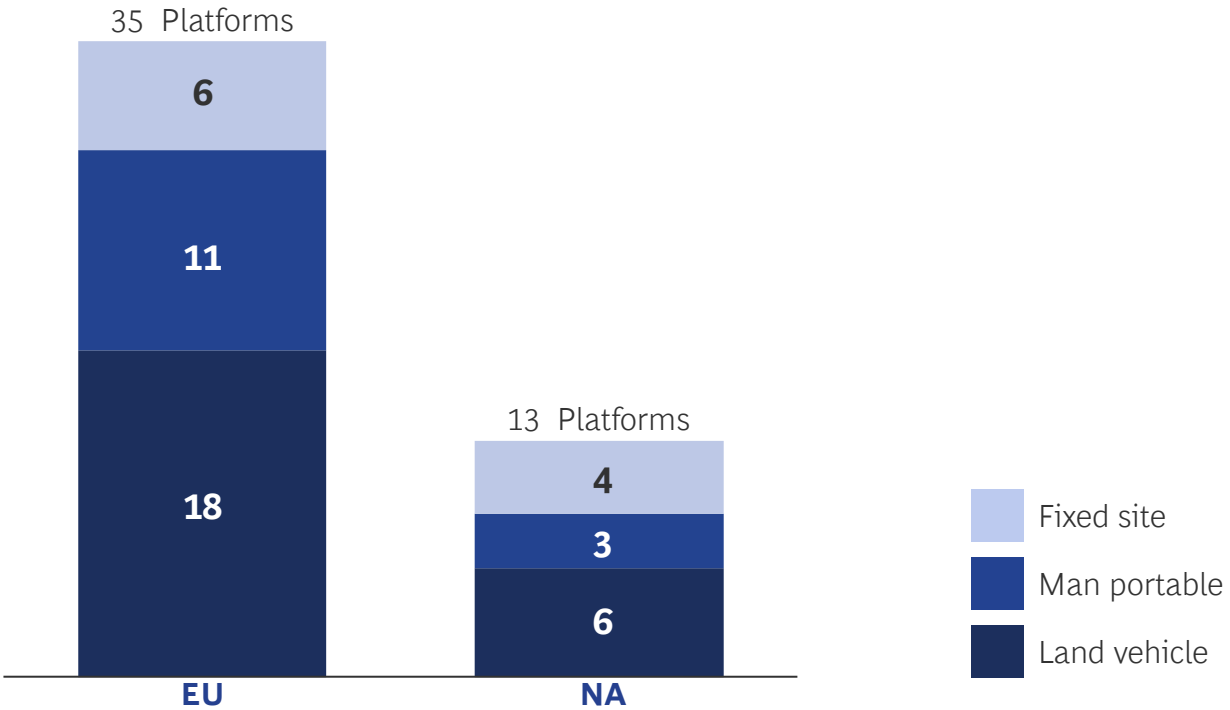
Challenge 1: Limit to scale and affordability

The fragmentation of Europe C-UAS efforts goes to the detriment of scale-up potential and affordability. With dozens of players each pursuing separate national programs, no single effort achieves the scale needed for efficient mass production. Orders remain small and dispersed, preventing economies of scale and leaving factories sized for boutique production. The result is higher unit costs and slower ramp-up. This dynamic undermines Europe's ability to equip itself quickly and at-scale with European-made solutions

Challenge 2: Hindrance to networked solutions

The lack of coordination also hinders the shift toward a networked, system-of-systems approach. Each national program designs bespoke architectures and standards, making it difficult to integrate sensors, effectors, and command-and-control across borders. Instead of interoperable defences, Europe risks a patchwork of siloed systems that cannot share data or operate seamlessly together. This not only delays the deployment of robust, multi-layered counter-drone networks but also leaves gaps in coverage against a rapidly evolving threat.

EXHIBIT 4: NUMBER OF DIFFERENT C-UAS PLATFORMS COVERED BY ANNOUNCED PROGRAMS.



SOURCE: TAMARACK

3 Strategic opportunity: Primes have a role to play toward achieving scale, synergy, and European leadership

Primes have a central role to play in overcoming Europe's fragmented C-UAS landscape. To capture the demand set to accelerate far beyond today's announced programs, Europe's leading defence companies must take a role in shaping how the industry organizes and grows. Three opportunities stand out:

- **Develop partnerships:** Rather than competing in silos, Primes could form joint ventures or consortia focused on shared challenges. Such models already exist abroad with, for example, partnerships being formed to support the lower layer of the Golden Dome. In Europe, comparable approaches could unite players around the protection of offshore wind farms, ports, and energy infrastructure or to deliver interoperable land-based drone defence on the Eastern flank. Such alliances build critical mass, accelerate development, and reduce duplication. They could also establish shared integration and test facilities, enabling Primes to demonstrate interoperability, speed up certification, and present governments with deployment-ready networked systems.
- **Drive shared architectures/ standardization:** By agreeing on open but jointly owned command-and-control standards, Primes can ensure their systems interoperate across borders and forces and enable the deployment of network systems. This prevents a "winner-takes-all" dynamic and instead creates a European backbone that all Primes can build on.
- **Shape civil-military dual-use markets:** Primes can expand beyond defence ministries by partnering with airport operators, energy companies, and law enforcement, packaging civil applications alongside military solutions. This not only diversifies revenue but also locks Primes into fast-growing dual-use demand segments.

The rest of this document focuses on the opportunity to partner, detailing the benefits for each stakeholder group and the potential partnership models.

4 Why partnerships matter

Primes: Lower costs, faster learning, economy of focus

By driving scale and enabling a networked European C-UAS market, Primes can move from competing in fragmented niches to leading an integrated ecosystem. Beyond the ability to land larger contracts, and set the standards others will follow, the payoff for Primes is threefold:

- **Shared R&D and reduced unit cost:** C-UAS may not demand the same upfront R&D investments as large guided weapons, but iteration loops with customers are far shorter, requiring constant reinvestment into a complex tech stack (exhibit 4). The Shahed-136 drone is a clear example: in just two years it underwent multiple major upgrades: new warheads, decoys, propulsion tests, AI targeting. Because adversary drones evolve on such short cycles, counter-systems will adapt at the same pace. Anduril's 10-year, $642 million Program of Record with the U.S. Marine Corps reflects this dynamic on the defensive side, citing rapid iteration and continuous upgrades enabled by its open-architecture system. Partnering will prevent duplication, smooth the cash profile, and lower unit cost.
- **Going down the experience curve:** Fragmented national programs result in small-scale runs that trap suppliers in slow-learning cycles. Partnering consolidates orders and production, enabling faster descent down the experience curve. As a low-maturity product group, C-UAS is expected to follow classic learning curve dynamics observed across defense and aerospace programs: each time cumulative production doubles, unit costs typically fall by 10-20%, driven by process learning, standardization, and productivity gains. In past missile, small UAV, and radar programs, such effects have consistently materialized, with higher volumes also justifying investments in dedicated tooling, automation, and modular assembly, further accelerating cost reductions and ramp-up capacity. A concrete example is the US-Israel Iron Dome co-production of Tamir interceptors: annual output scaled from a few hundred missiles in the early 2010s to several thousand by the 2020s, enabled by shared facilities and joint funding. This ramp-up not only reduced costs but also improved reliability and ensured supply resilience during high-intensity conflicts. Maintaining production in Europe will require concentrating demand to secure such volumes locally rather than sourcing from abroad. Overall, partnerships are the mechanism that accelerates movement down the experience curve, enabling both cost efficiency and the capacity to surge when required.
- **Economy of focus:** For primes, C-UAS is a secondary line of business compared to core franchises like missiles or combat aircraft. Pursued alone, it risks either receiving limited attention or requiring disproportionate time relative to its scale. Partnering provides a balanced path: by ring-fencing C-UAS into a shared structure with joint governance, development, and investment, Primes can ensure the right level of focus without diluting attention from core programs. This model gives customers continuity and dedicated effort, while allowing companies to maintain efficiency and avoid stretching themselves thin.

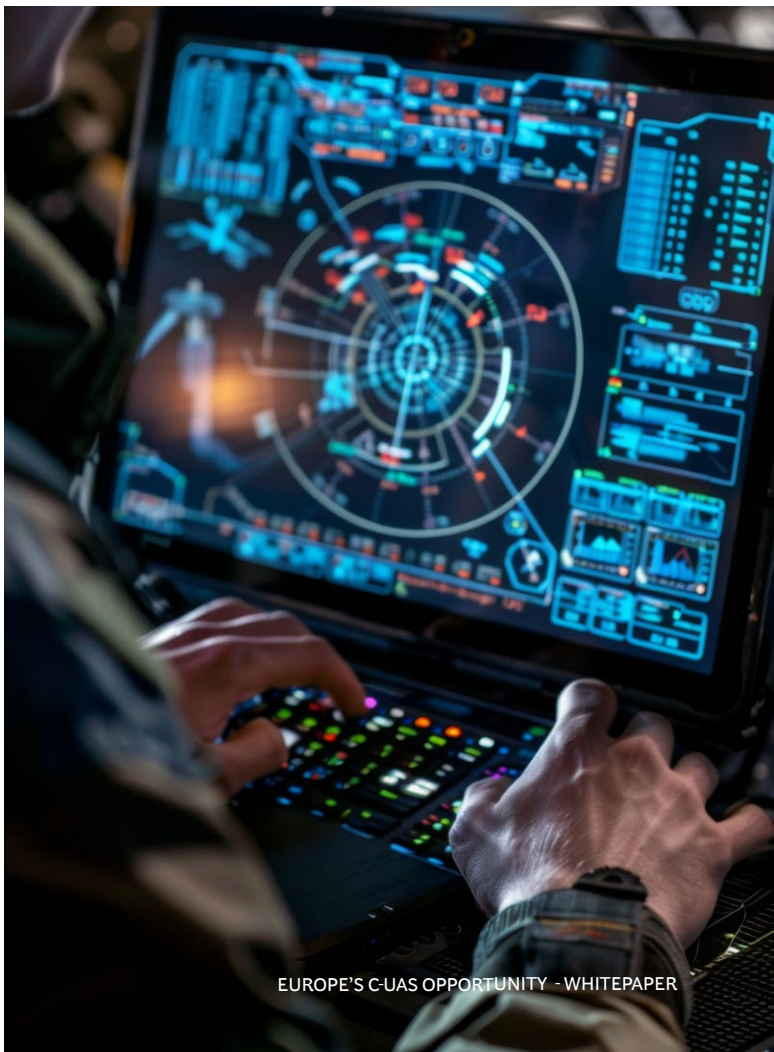


EXHIBIT 5: CUAS TECH STACK

Main C-UAS subsystems for Land, Fixed-site, and Man-Portable applications

			Example	CAGR '25-'29 Announced	CAGR '25-'29 Total	Description
	550					
Detect	55	EO/IR		10%	60-70%	Electro-optical and infrared capabilities for visual and thermal threat detection
	67	Radar		32%	95-105%	Sensor type utilizing radio waves for tracking and cueing of airborne threats
Decide & communicate	42	C2+		15%	70-80%	Command, control, and communications systems
Intercept	76	EW/SIGINT		17%	75-85%	Electronic warfare and signals intelligence for detecting and soft-killing threats
	120	Weapons System		10%	60-70%	Effectors used to neutralize targets
	62	Fire Control System		12%	65-75%	Software and hardware that process sensor inputs and guide weapon targeting
Integration & Platform	40	Baseline Chassis		7%	55-65%	Core platform on which capabilities are mounted on
	39	Vetronics		22%	80-90%	Vehicle electronics, e.g. displays, GPS systems, intercom
	50	Integration		20%	80-90%	Integration of capabilities, especially in the context of land vehicles
	Subsystem market '25					

CAGR: >20% 10-0% 20-10%

Note: *Subsystems '25 market values larger than overall C-UAS market considering subsystems sales happen earlier than platform sales in program lifecycle*

ByMoDs: more systems, seamless networks, European resilience

For MoDs partnership will ensure greater affordability, interoperability across forces, and the socio-economic benefits of anchoring production in Europe.

- Lower unit cost: Partnerships reduce duplication of R&D and spread fixed investment over larger consolidated orders. For Ministries of Defence, this translates into more systems delivered for the same budget, enabling wider coverage of critical assets at sustainable cost.
- Interoperability: Joint development ensures common standards across European forces. This allows sensors, effectors, and command-and-control nodes to interoperate seamlessly, enabling networked defenses instead of fragmented, siloed national solutions. For MoDs, interoperability not only improves operational effectiveness but also simplifies training, logistics, and sustainment.
- Socio-economic benefits and strategic independence: By concentrating demand into European partnerships, governments secure a resilient industrial base in the EU. This delivers socio-economic benefits in terms of high-skilled jobs and innovation while reducing reliance on suppliers outside Europe. For MoDs, the payoff is greater sovereignty and freedom of action, ensuring critical systems remain available even under geopolitical stress.

Emerging players & Specialist suppliers: Secured demand, program access, acceleration

For emerging system providers and specialist suppliers, partnering is a way to secure market access, gain visibility in major programs, and stabilize demand to support further investment and innovation.

- **Market access:** Partnering with a prime opens access to large tenders and long-term contracts that smaller firms would struggle to capture alone. It positions specialist providers within major defense programs and validates their technology at scale.
- **Secured demand:** Being embedded in a prime-led consortium ensures visibility of the order pipeline and demand stability. This provides the predictability needed to invest in capacity, talent, and further innovation.
- **Acceleration of innovation and time-to-market:** Collaboration with primes shortens the path from prototype to operational deployment. Specialist providers benefit from faster customer feedback loops, and access to shared test and certification infrastructure.

5 Two models stand out for the European C-UAS market

While the case for collaboration is clear, the question remains how best to organize it. Europe has options that balance scale, political feasibility, and industrial resilience. Two models stand out: Prime-led joint ventures, which consolidate integration and production into a single entity, and regional alliances, which pool capabilities across countries while preserving national representation. Each offers a distinct pathway to reach scale, reduce duplication, and ensure interoperability, critical conditions if Europe is to meet the surge in C-UAS demand by the end of the decade.

Prime Joint Ventures

The big players carve out and consolidate their C-UAS activities into a joint venture, similarly to how MBDA was formed in 2001 by merging the missile businesses of Airbus (then EADS), BAE Systems, and Leonardo (then Finmeccanica). This creates critical mass, eliminates duplicated integration work, and gives governments a single European point of contact. The scale advantage allows faster ramp-up in production and stronger leverage in tenders. The challenge is governance complexity and the natural reluctance of primes to cede autonomy to a shared entity.

Regional alliances

Regional defence firms across tiers combine complementary systems/capabilities without creating a carved-out JV. Regional structuring is politically attractive, as each MoD sees its national industry represented and funding aligned with local security needs. It also concentrates manufacturing capacity within the region, strengthening resilience and reducing dependence on extra-regional suppliers. A strong precedent at European level is the IRIS-T short-range air-to-air missile, delivered through a consortium of Germany, Italy, Spain, Greece, Norway, and Sweden. Development and production were shared across national industries (Diehl, Saab, Nammo, Avio, SENER, HAI), resulting in a frontline weapon now in serial production and operational across multiple air forces. This shows that alliances can manufacture at scale, deliver interoperable capability, and reinforce European/regional autonomy, though decision-making remains more complex than in a consolidated JV.

Aside from Prime-led partnership, **constellations of emerging system providers and specialist suppliers** could also join forces to integrate niche innovations (AI detection, RF takeover, directed energy). By combining, they become visible to MoDs and gain credibility to win contracts that would be out of reach individually. This model is particularly relevant for non-kinetic solutions, where SMEs can bring differentiating technologies, whereas larger incumbents remain indispensable for kinetic effectors. It is already happening in practice, for example, UK C-UAS trials have seen SMEs like Openworks (capture systems), Kirintec (jamming), and Robin Radar (detection) partnering to deliver full-chain prototypes. The limitation remains limited industrial scale, as such constellations typically require eventual integration/partnership with a prime to move from prototype to mass production.

6 Conclusion

Europe is at an inflection point in counter-UAS. Demand is growing rapidly, but fragmentation and duplication threaten to slow the response. Partnerships, whether through prime-led joint ventures, regional alliances, or coalitions of emerging players, offer a path to scale, interoperability, and resilience while anchoring production in Europe. If pursued decisively, these models can deliver faster, more affordable protection for European forces and infrastructure, while securing the industrial base. Ultimately, those who take the lead in structuring this market will not only capture larger shares but also shape Europe's role in the global C-UAS race.

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