From Controller to Integrator

The Evolution of the TACP in Contested Airspace

By Major Harun Elbeyi, TUR Air Force, JAPCC

For decades, Allied ground forces have operated on the assumption that fixed-wing air support would be available, responsive, and decisive. However, the evolution of the modern threat environment challenges this premise. Particularly along the Eastern Flank, immediate and enduring air superiority cannot be assumed. Consequently, control of the air will likely be temporary, localised, and contested, particularly in Anti-Access/Area Denial (A2/AD) environments.[1] Ground units must be prepared to fight and survive without traditional air support while under continuous threat from precision fires and unmanned systems.

In such an environment, the ability to integrate and synchronise all available fires at the tactical edge becomes a condition for survival, not just an enabler. Achieving this objective necessitates convergent effects across all domains, particularly under degraded command and control conditions. These circumstances challenge the Tactical Air Control Party (TACP), NATO's primary air-ground integration capability at the tactical edge, whose traditional close air support (CAS) focus is no longer sufficient in contested, multi-domain environments.

This article argues that the TACP's role as communicator, coordinator, and controller must evolve into that of a Multi-Domain Fires Manager, integrating organic multi-domain fires, counter-UAS and unmanned systems, and electronic warfare (EW) effects while managing airspace in contested conditions.

Why the Current Paradigm is Insufficient

The new threat environment exposes a structural problem in how TACPs are trained and organised. Terminal attack control and support to land forces have evolved significantly over time, but the evolution has largely occurred under conditions of uncontested skies. TACP personnel are commonly qualified as Joint Terminal Attack Controllers (JTACs), who provide coordination and 'cleared hot' clearance for air-to-ground fires. Consequently, existing training pipelines are structured primarily around achieving and maintaining JTAC qualification, as defined by ATP-3.3.2.2 Joint Terminal Attack Controller Program. Along with ATP-3.3.2.1 Tactics, Techniques and Procedures for Close Air Support and Air Interdiction, these publications emphasise terminal attack control, including localised airspace coordination, targeting procedures, and collateral damage estimation, but largely omit broader multi-domain integration.

As a result, cross-domain fires integration, electromagnetic spectrum (EMS) coordination, unmanned aircraft systems (UAS) and counter-UAS (C-UAS) employment, and degraded-communications operations remain underrepresented in current training constructs. Unless Allies adapt training and force development to reflect new realities, TACP syllabi will become progressively less capable of preparing personnel to support land force commanders in contested and degraded multi-domain battlespaces.[2,3] Therefore, it is vital to identify what must be preserved, what must be added, and what must be enabled to address this gap.

Enduring Core Functions: Communications, Coordination, and Control

TACPs operate multiple radio and data link systems to maintain connectivity with aircraft, higher headquarters, and adjacent units. This includes voice communications, digital targeting systems, and emerging data link-based coordination tools, enabling real-time integration of fires. Under degraded or denied communications conditions, the TACP's ability to fulfil its core functions depends on pre-planned control measures, delegated authorities, and the commander's intent embedded at the lowest level prior to execution. This underscores the requirement for organic EMS awareness at the tactical edge.

Beyond terminal control, TACPs play a critical role in airspace deconfliction at the tactical level. This includes the procedural and positive separation of airspace users through coordination with entities such as the Air Support Operations Centre (ASOC) and the Joint Air-Ground Integration Centre (JAGIC), as well as adherence to the Airspace Control Order (ACO), Air Tasking Order (ATO), and Special Instructions (SPINS).[4]

'The TACP's role as communicator, coordinator, and controller must evolve into that of a Multi-Domain Fires Manager, integrating organic multi-domain fires, counter-UAS and unmanned systems, and EW effects while managing airspace in contested conditions.'

In contested environments, the TACP's airspace coordination function must expand beyond the traditional focus on fixed-wing CAS to encompass a broader range of airspace users and fires systems operating simultaneously within the same battlespace. This includes the synchronisation of rotary-wing assets, artillery and rocket fires, UAS, and loitering munitions, all of which may operate at overlapping altitudes, timelines, and engagement zones.

The TACP's defining authority is the control of air-delivered fires within the supported commander's battlespace. This includes executing terminal attack control in accordance with NATO doctrine, where the JTAC provides clearance and control instructions to aircraft, ensuring compliance with targeting procedures, rules of engagement, and collateral damage estimation. This authority is currently scoped to crewed air-delivered fires and Medium-Altitude, Long-Endurance (MALE) UAS; the employment of autonomous and semi-autonomous systems at the tactical level, including One-Way Attack (OWA) drones and First-Person View (FPV) UAS, falls outside this framework.

The growing proliferation of small UAS (sUAS) requires TACPs to combine procedural control measures with dynamic coordination to deconflict trajectories, frequencies, and effects across multiple domains. In such a construct, the TACP retains its doctrinal authority for terminal attack control of air-delivered fires while simultaneously coordinating additional fires systems that may not fall under traditional JTAC control frameworks. Realising this expanded integration function requires three new organic capabilities within the TACP: an sUAS operator, a C-UAS specialist, and an EMS specialist.

The Rise of sUAS and C-UAS

Since 2022, the war in Ukraine has been characterised by small FPV UAS on the battlefield and thousands of OWA drones supplementing conventional cruise and ballistic missiles for long-range strike campaigns. The tactical success of these weapons increasingly depends on persistent local Intelligence, Surveillance, and Reconnaissance (ISR) and rapid sensor-to-shooter integration at the lowest levels of command.

A TACP-organic sUAS operator provides an immediate, manoeuvre-integrated capability at the tactical edge. Operating primarily within NATO Class I and Class II UAS categories, the sUAS operator enables persistent observation, target detection, identification, and tracking in support of time-sensitive targeting and dynamic fires execution.

A critical function of the sUAS operator is the seamless interface with the JTAC during the execution phase of the kill chain. This includes target handoff, target location confirmation, and persistent sensor-based support to collateral damage estimation and battle damage assessment, enabling the JTAC to accelerate decision-making in time-sensitive scenarios while maintaining doctrinal compliance.

Beyond ISR, the sUAS operator contributes directly to fires integration through the employment and coordination of strike-enabled unmanned systems, including loitering munitions and emerging collaborative and swarm-enabled capabilities. The operator

A NATO TACP completing the landing phase under an autonomous or remotely controlled parachute system designed to deliver equipment loads of up to one tonne in 3rd Main Jet Base LTD-9 Shooting Range, Konya, Türkiye.

coordinates with the JTAC to sequence unmanned strike effects within the fires plan, deconflicting with crewed air-delivered fires to prevent competing engagement geometries.

C-UAS specialists within the TACP are responsible for the detection, identification, classification, and coordination of responses to adversary unmanned aerial threats. To do this, they employ a layered capability set including radio frequency (RF), electro-optical/infrared (EO/IR), acoustic, and radar sensors. Defeat options may include electronic attack, directed-energy systems, dedicated

An Electronic Countermeasures Officer of the VAQ-130 Zappers, the US Navy's oldest active electronic attack squadron, at his station.

C-UAS effectors, or conventional air defence weapons. While engagement authority remains with the supported commander, air defence element, or EW authority, the C-UAS specialist provides threat assessment, recommends the most suitable defeat mechanism, and ensures airspace and spectrum deconfliction with friendly aircraft and UAS operations. This deconfliction responsibility requires continuous coordination with the organic sUAS operator to prevent fratricide during concurrent unmanned operations.

Finally, the increasing use of OWA drones and FPV UAS introduces a significant doctrinal gap within NATO's existing fires and targeting authority frameworks. OWA and FPV systems do not fit neatly within the authority framework. These systems are new and typically controlled directly by ground elements who operate with varying levels of autonomy, particularly in electronically contested environments. A practical resolution is a tiered advisory clearance model in which engagement authority remains with the supported commander. In this model, the TACP provides mandatory target validation, collateral damage assessment, and airspace deconfliction for OWA drones and FPV UAS employment, scaled according to target type, proximity to friendly forces, and the degree of system autonomy. Adding sUAS and C-UAS competencies brings the TACP role into the present, but a third organic capability is required to prepare TACPs for the multi-domain, integrated future: EMS management at the tactical edge.

Electromagnetic Spectrum Operations

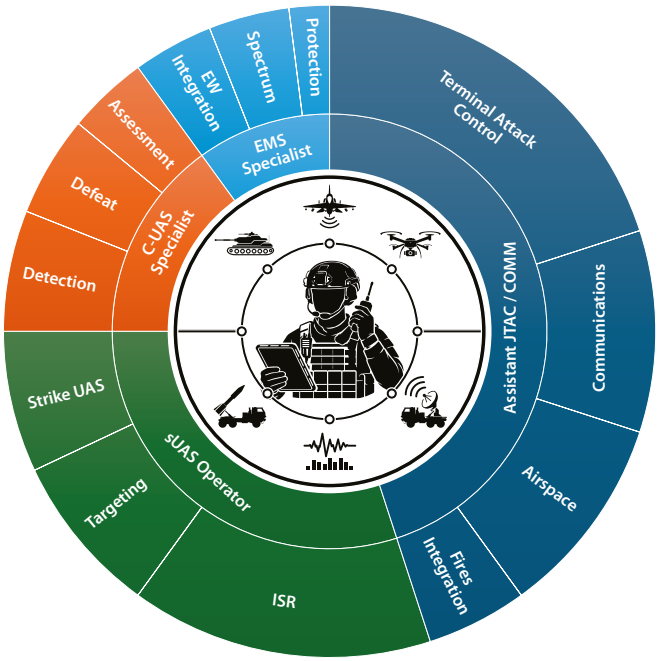
EMS coordination within TACP operations is currently conducted at higher echelons or by dedicated EW and communications units, with TACPs relying on pre-planned measures and higher headquarters coordination for spectrum management and the delivery of electronic effects. The inability to achieve even limited air superiority without synchronised electronic and cyber effects makes organic EMS expertise at the tactical edge essential.[5]

TACPs synchronise rotary-wing, fixed-wing, and artillery fires while maintaining local force protection in a simulated contested environment. Exercise Anatolian Phoenix 2024, Türkiye.

In degraded or denied environments where persistent jamming, spectrum congestion, and dynamic threat emissions are highly likely, the traditional model becomes increasingly ineffective. TACPs at the tactical edge often lack real-time visibility of the electromagnetic environment and have limited ability to request, coordinate, or adapt electronic effects in response to rapidly evolving conditions. EMS Operations (EMSO) are therefore integral to modern joint operations, encompassing the ability to detect, exploit, and protect the electromagnetic environment.[6]

Consequently, TACPs require an organic EMS specialist to sense, manage, and influence the electromagnetic environment at the tactical edge. The specialist is responsible for spectrum deconfliction, ensuring that friendly communications, data links, and sensor systems can operate effectively within a congested and contested electromagnetic environment. This includes managing frequency allocation, coordinating emission control measures, and mitigating interference between joint and coalition systems. This function is particularly critical in degraded communications conditions, where the EMS specialist provides the local spectrum visibility needed to sustain command and fires integration without dependence on higher-echelon coordination.

The EMS specialist coordinates the integration of EW effects in support of operations. This includes requesting, synchronising, and directly enabling electronic attack, electronic protection, and electronic support activities in alignment with the supported commander's intent and the TACP's fires integration function. The specialist should be equipped with portable spectrum-monitoring and direction-finding systems, spectrum analysis tools, and secure interfaces to higher-echelon EMSO assets. The specialist provides local electromagnetic situational awareness, recommends electronic effects, and coordinates their integration with fires and manoeuvre under delegated electromagnetic spectrum management authorities and established frequency assignment procedures. Electronic attack and active electronic effects require coordination with, and in most cases authorisation from, the appropriate EW authority at a higher echelon. The EMS specialist does not independently direct offensive electronic action but provides the targeting data, deconfliction analysis, and integration advice that enable faster and more precise authorisation. This distinction preserves the existing command authority framework while embedding the expertise needed to exploit it at the tactical edge. By embedding this capability within the TACP, electromagnetic effects can be integrated directly into the fires and manoeuvre



The Modular TACP Organisation © JAPCC

framework, enabling the TACP to coordinate and contribute to these effects within its area of operations.

Enabling Capabilities and Recommendations

Institutionalising the Multi-Domain Fires Manager concept requires enabling action across the five key areas. The following recommendations address doctrine, technology, logistics, training, and organisation in turn.

Doctrine: Codify a tiered, pre-delegated fires integration and local airspace management authority for TACPs, distinct from terminal attack control, enabling procedural deconfliction, fires synchronisation, and unmanned systems employment under degraded communications conditions in a contested environment. A practical solution would be a tiered advisory clearance model in which the TACP provides target validation, collateral damage assessment, airspace deconfliction, and fires integration advice for OWA/FPV employment, while engagement authority remains with the supported commander.

Technology: Technological enablers, such as Digitally Aided CAS (DACAS), Edge artificial intelligence (AI), and C-UAS systems, will be critical to achieving this transformation.[7,8] Decision support at the tactical level requires a distributed and resilient hardware architecture capable of operating under contested conditions, including deployable processing units at both the dismounted soldier and vehicle-mounted levels.[9,10] In such degraded communications conditions, TACPs and manoeuvre units require systems that can operate with limited connectivity, enabling local data processing, decision-making, and fires integration without reliance on centralised coordination nodes.

Logistics: Recent high-intensity conflicts confirm that small unmanned systems are effectively ammunition-class assets, with direct implications for logistics and force structure.[11] Rather than being managed as specialised or scarce assets, sUAS should be integrated into standard supply chains with clearly defined allocation scales and replenishment procedures. Ukraine's rapid expansion of drone factories and pilot schools highlights the need for continuous sUAS replenishment at scale.[12]

Resupply rates must account for high expenditure in contested environments, where losses due to adversary action, EW, and operational wear are frequent. Consumption rates for sUAS can mirror or exceed traditional munitions usage rates, requiring continuous replenishment cycles to sustain operational tempo and ISR coverage. Integration with existing ammunition supply point infrastructure is critical for efficiency and scalability. Classifying sUAS alongside conventional munitions enables their incorporation into established logistics processes, including transportation, accountability, and prioritisation within contested supply chains.

Training: Rebalance TACP qualification pipelines towards multi-domain fires integration, adopting a 40/25/15/10/10 training split across CAS, cross-domain fires, airspace management, EW/degraded command and control, and digital/AI competencies, complemented by modular specialisation tracks. Modular specialisation tracks should enable individual TACPs to qualify as sUAS operators, C-UAS specialists, or EMS specialists, without requiring all team members to hold all qualifications, preserving force structure efficiency while building the collective capability the team requires.

Organisation: The TACP construct should be expanded to include three new specialist roles: an sUAS operator, a C-UAS specialist, and an EMS specialist. This integration requires highly flexible and rapidly adaptable organisational structures capable of absorbing these specialist roles to maintain operational relevance and effectiveness in modern, multi-domain conflict environments.

To balance capability with force structure constraints, these specialists do not need to be organic to every TACP; instead, they should be modularly assigned based on mission requirements, threat assessment, and the operational environment. The TACP team leader retains overall responsibility for fires integration and airspace coordination, while each specialist operates within their domain under the supported ground commander's authority and in coordination with relevant higher-echelon functions: fires, airspace, EW, and UAS management. This structure preserves the TACP's existing command relationships while embedding the organic multi-domain capability the contested battlespace demands.

Conclusion

By evolving from a fixed-wing liaison role into a Multi-Domain Fires Manager, the TACP provides a practical and scalable solution to the challenges of contested airspace and degraded communications. The TACP achieves its evolution into a Multi-Domain Fires Manager through three new organic roles: the sUAS operator, the C-UAS specialist, and the EMS specialist, gaining the capacity to sense, contest, and integrate effects across domains where air superiority can no longer be taken for granted. This evolution is not an expansion of function for its own sake, but a necessary adaptation to ensure continuity of joint effects under conditions where traditional airpower advantages cannot be assumed. This adaptation enables distributed control while preserving established command relationships, ensuring that NATO can maintain tempo, resilience, and coherence in future contested operations across NATO airspace. ●

1. NATO. (2025). Joint Air Power Strategy – Revised Edition. Brussels: NATO HQ.
2. NATO ACT. (2023). Multi-Domain Operations Concept. Norfolk: Allied Command Transformation.
3. NATO Command and Control Centre of Excellence. (27 January 2026). C2 considerations in the Arctic (Shortread). NATO C2COE.
4. Güleç, A., & Kelley, J. (2024). 'Air-Land Integration: Preparing NATO for Multi-Domain Operations in A2/AD Environments,' Joint Air Power Competence Centre (JAPCC).
5. Sdrakas, A. (2026). An MDO approach to NATO's counter-IADS strategy: Integrating suppression of enemy air defences and cyber-electromagnetic activities. JAPCC Journal, Edition 41.
6. North Atlantic Treaty Organization. (2020). AJP-3.6.1: Electronic Warfare. NATO Standardization Office.
7. JAPCC. (2024). Digital Aided CAS – Future of Joint Fires. Kalkar: JAPCC.
8. AUSA. (2025). Edge AI and Counter-UAS Technologies. Association of the United States Army.
9. JAPCC. (2026). AI Handbook: Practical Considerations for the Warfighter. Kalkar: JAPCC.
10. CSIS. (2025). Harnessing Edge AI to Strengthen National Security. Washington, DC: Center for Strategic and International Studies.
11. Griffiths, Z., & Ivas, J. (21 November 2025). The case for treating drones as ammunition. War on the Rocks. https://warontherocks.com/2025/11/the-case-for-treating-drones-as-ammunition/.
12. Sparkes, M. (2026). Inside Ukraine's drone factories and pilot schools. New Scientist. https://www.newscientist.com/video/2517407-inside-ukraines-drone-factories-and-pilot-schools/.

ABOUT THE AUTHOR

Major Harun Elbeyi
TUR Air Force, JAPCC

Major Harun Elbeyi is a Turkish Air Force officer with operational and staff experience in logistics, combat search and rescue, close air support, joint fires, and personnel recovery. He is qualified as a NATO JTAC, National JTAC Instructor, free-fall jumpmaster, and pararescue jumper evaluator, with nearly 200 free-fall jumps and more than 700 flight hours. He served within the Kosovo Force (KFOR) and supported operational analysis projects utilising the Synthetic Theatre Operations Research Model (STORM). He holds a bachelor's degree in computer engineering and a Master of Science degree in Civil Aviation Management. Since 2025, he has served at the JAPCC as a C-UAS/CAS SME.