

Tactical Assault Kit: The military's OS at the Edge



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The Tactical Assault Kit (TAK) has quietly become one of the most influential digital tools in US defense. What began as an experiment to put situational awareness software onto a smartphone has grown into a government-owned, open architecture used by more than 350,000 personnel across the joint force and government agencies.

TAK now underpins the Army's Nett Warrior program, serves as a common operating picture for special operations forces, and is expanding into homeland security missions. At the edge, it connects small units, sensors, unmanned systems, and fires in real time. At the enterprise level, it connects with command-and-control architectures and data platforms shaping joint operations.

Its growth was not driven by a single service or vendor but by a distributed community that continues to build, test, and connect new capabilities on top of the

government-owned core. The Air Force Research Lab's plugin-based design made TAK adaptable from the start. Developers across defense, government, industry, and mission add plugin capabilities without altering the baseline software, enabling rapid innovation and preventing vendor lock. Operators, meanwhile, have pushed TAK beyond its original mapping functions to support multidomain missions in contested environments.

This eBRIEF traces TAK's evolution, examines its ecosystem of contributors, and captures perspectives from those who use and develop it every day. It highlights where TAK is today and where it's headed next as artificial intelligence and edge processing reshape the tactical network.

— Barry Rosenberg
Technology & Special Projects Editor, *Breaking Defense*

U.S. Marines with 5th Air Naval Gunfire Liaison Company, III Marine Expeditionary Force Information Group, teach Marines with Marine Fighter Attack Squadron (VMFA) 242 and VMFA 121, Marine Aircraft Group 12, 1st Marine Aircraft Wing, about the Android Tactical Assault Kit (ATAK) at Marine Corps Air Station (MCAS), Iwakuni, Yamaguchi, Japan, July 12, 2024. (U.S. Marine Corps photo by Lance Cpl. Justin Cledera)



ON THE COVER: 2nd Lt. Sophia Talkington, a field artillery officer with the Multifunctional Strike Troop, 2nd Armored Brigade Combat Team, 1st Cavalry Division, uses an Android Tactical Assault Kit (ATAK) at NTC rotation 26-02 (U.S. Army photo by 1st Lt. Tyler Williams)

How TAK remains the military's "Tactical Operating System"

TAK has become one of the military's most transformative tools by giving special operators, soldiers, and others easy access to what are essentially plugins that provide real-time situational awareness on a government-owned software platform.

The idea behind TAK was a lightbulb moment around 2010 for some involved in building the Army's Land Warrior program; these individuals questioned why the service was investing in bulky, expensive hardware when the same computing power and the ability to accept military and commercial plugins already existed in smartphones.

That inspiration redirected Land Warrior toward leveraging commercial technology, eventually leading to introduction of the Android Tactical Assault Kit, or ATAK, and its various permutations, such as Windows TAK (WinTAK), WebTAK, TAK-X, TAK Server, and iTAK for iOS devices.

For military services with ground forces especially dependent on situational awareness, the introduction of the TAK government-owned software platform compliant with commercial off-the-shelf devices shifted everyone's thinking away from purpose-built, multimillion-dollar systems to simpler, less costly options that dramatically increase flexibility. Consequently, Land Warrior has since evolved into today's TAK-enabled Nett Warrior program, and the concept of a "tactical operating system" has taken root across the services.

The Air Force Research Laboratory (AFRL) was the original developer of TAK, which has been embraced by the Army and United States Special Operations Command (USSOCOM), in particular — along with government organizations like the Department of Homeland Security, Federal Emergency Management Agency, and Customs and Border Patrol. TAK and its offshoots provide readily available plugins for digital maps and position/navigation — to name two applications — for user collaboration over geography.

TAK is now maintained by the TAK Product Center (TPC) at Ft. Belvoir, VA.

An open, government-owned foundation

From its earliest development at AFRL, TAK was built around openness. Its plugin architecture allowed developers to add capability without modifying the core code, enabling rapid innovation and adoption. What began as a mapping and blue-force tracking tool expanded into a multiplatform environment supporting 3D drone feeds, advanced navigation, robotic control, and even parachute jump planning.

This approach created something more than a product — it built a community. TAK's government-owned, modular design



A U.S. soldier assigned to the 101st Airborne Division, Strike Brigade, utilizes ATAK to monitor battlefield positions, during Combined Resolve 26-1 at the Hohenfels Training Area, Joint Multinational Readiness Center (JMRC). (U.S. Army photo by Pfc. Lilah Windle)

encouraged collaboration among government and commercial developers alike, ensuring that innovation could flow freely rather than being confined to a single vendor or program office.

The TPC oversees the core software for 15 TAK "product owners." They are:

- SOCOM Program Executive Office for Special Operations Forces; Digital Applications (PEO SDA) and Program Executive Office for Special Operations Forces Warrior (PEO SW);
- Army Project Manager (PM) Close Combat Systems within the Joint Program Executive Office for Armaments and Ammunition; PM Aviation Mission Systems and Architecture; PM Integrated Visual Augmentation System within PEO Soldier; PM Mission Command within PEO Command, Control, Communications, and Network;
- Marine Corps Tactical Systems Support Activity (MCTSSA), Marine Corps Systems Command's Science and Technology Reinvention Lab;
- Naval Air Systems Command;
- Air Force PEO ISR & SOF; Senior Materiel Leader (SML)- Airspace Mission Planning, and Senior Materiel Leader-Aerial Networks within the Life Cycle Management Center;
- Customs and Border Protection, Federal Bureau of Investigation, and National Geospatial-Intelligence Agency.



U.S. Marines set up a Marine Air Traffic Control Mobile Team and connect to an ATAK through use of an MPU5 radio connected to a Starshield system at LZ Westfield, Marine Corps Air Station Kaneohe Bay, Hawaii. The ATAK is used to plan and coordinate aircraft and personnel movements. (U.S. Marine Corps photo by Lance Cpl. Logan Beeney)

Though the software itself is free for government users, program owners fund the TPC through normal appropriations, creating a sustainable model that balances accessibility and accountability.

Instead of building specialized and costly hardware, the Pentagon is fielding \$1,000 smartphones running TAK — effectively channeling billions of dollars in commercial research and development into battlefield utility. It's a lean, efficient approach that has changed how the Pentagon thinks about equipping the tactical edge.

It also allows all the product owners and organizations like Army Combat Capabilities Development Command (DEVCOM) to constantly develop new plugins for urgent operational needs. For example, DEVCOM's C5ISR Center has developed the capability to give squads aided target recognition for unmanned aircraft systems (UAS) without soldiers having to continually monitor a UAS video feed. Data is available through a common operating picture viewed on the device, along with some ability to command and control the unmanned system.

"The primary goal is to provide autonomy at the squad level by using high-level autonomous behaviors like Smart Search, which enables autonomous area searching, target detection, and the ability to track and follow high-priority targets," said Mathew Wilson, the program lead at C5ISR Center. "Removing the need to manually control UAS while automatically detecting and relaying threat information to the squad keeps more soldiers in the fight."

The TPC is not just exclusively for US defense-developed plugins. For example, Anduril and Technology Services Corporation (TSC), an RF-based tracking company, announced in October that they have delivered a plugin that connects to TSC's Mobile Tracking System (MTS) to track manned and unmanned aircraft.

"We do a lot of mobile software development at Anduril, and we like the portability and modularity of the MTS, which, like TAK, is used not just in defense, but in a lot of civil and

industrial applications as well," said Scott Knight, systems engineer at Anduril. "Partnering with TSC to create a new TAK plugin was a natural step to enhance situational awareness for all of our operators."

Brandon Wolfson, CEO of TSC, noted, "This TAK plugin is another example of how we are committed to rapidly fielding mission-critical capabilities where they are needed most."

TAK's open architecture has also enabled incorporation of complementary technologies. The AFRL recently collaborated with Mattermost to embed secure chat capabilities and partnered with goTenna, recently acquired by Forterra, to support low-bandwidth communications for data and text. This new capability developed outside the core program demonstrates how an open model encourages innovation from every corner of the ecosystem. No single organization must own every component; instead, collective effort continually advances the technology.

A distributed ecosystem and AI future

TAK's success depends on a distributed ecosystem of contributors. Booz Allen develops ATAK- and WinTAK-compatible tools, Chesapeake Technology International (now part of Parsons) supports TAKX, and RTX BBN maintains TAK Server. Each organization brings unique expertise, driving innovation through competition. This array of contributors prevents any single company from dominating the environment and ensures continuous progress across platforms and mission areas.

The next phase of TAK's evolution will be defined by artificial intelligence and distributed sensing. The current system primarily operates on a "pull" model, where users seek data as needed. Future iterations will incorporate "push" logic — filtering and delivering the most relevant information automatically. With commercial mobile devices now capable of running advanced algorithms locally, TAK can bring AI processing to the tactical edge.

The long-term vision centers on a collaborative sensor mesh in which every TAK-enabled device acts as both consumer and contributor, feeding real-time information back into the collective intelligence. This vision promises faster decisions, richer situational awareness, and greater resilience across the network.

More than a communications tool, TAK has become a proof point for a new kind of defense innovation in which openness, shared ownership, and competition coexist. The government maintains control of the core codebase while encouraging private-sector creativity, ensuring long-term sustainability without vendor lock.

As TAK continues to connect with next-generation command and control initiatives like the Army's NGC2 and AI-driven architectures, it stands as a model for how the Pentagon can modernize efficiently, affordably, and collaboratively. By

building on openness and evolving toward intelligence at the edge, TAK is not only connecting warfighters — it's redefining how the military builds and sustains capability itself.

Inside Special Operations Command's use of the TAK

As TAK continues to evolve across the services, SOCOM remains one of its most experienced, long-term operational users. Breaking Defense asked SOCOM's PEO SDA and PEO SW — both TAK product owners — to respond to a series of questions on how they employ TAK and help to drive its continued improvement.

Written responses were provided by SOCOM public affairs officer Lt. Cmdr. Kassie Collins.

BREAKING DEFENSE: PEO SW and PEO SDA are TAK product owners. What does that mean?

COLLINS: Both Program Executive Offices SOF Digital Applications (PEO SDA) and PEO SOF Warrior (PEO SW) are voting members of the TAK Configuration Steering Board (CSB), helping shape the direction, priorities, and decisions for the TAK platform. These roles ensure TAK evolves in alignment with SOF's operational needs.

How does SOCOM presently use TAK? What is its value in today's battlespace?

TAK is deployed across USSOCOM, providing operators with real-time situational awareness and mission-critical capabilities directly at the tactical edge. TAK integrates more than 175 tools into a single interface, enabling operators to perform complex tasks like mapping, data sharing, battlefield communication, medical triage, route planning, fires execution, and more. This reduces risk, enhances decision making, and drives operational efficiency.

Are there specific SOCOM TAK capabilities or functionalities that aren't necessarily available to the Army, for instance?

TAK capabilities developed by USSOCOM are shared with conventional forces, ensuring interoperability across the joint force. USSOCOM provides SOF-developed plugins to the Army and other services; the services also share with USSOCOM. This collaborative approach ensures TAK remains a unified tool across the joint force.

How has TAK evolved to provide increased capabilities for situational awareness, geospatial information, and other functions?

TAK has evolved into a robust platform supporting terrain analysis, full-motion video (FMV) viewing, small unmanned systems (sUxS) control, and more. The addition of the TAK Server has expanded TAK's use cases, enabling communication across echelons, the joint force, interagency partners, and partner nations. This evolution has transformed TAK into a critical enabler for multidomain operations.

What are SOCOM's demand signals about how they want to see TAK evolve, such as ChatOps and low-bandwidth functionality?

SOF operators use TAK to support disconnected operations and low-bandwidth environments. This includes tools such as AI-driven mission planning to reduce manual processes and enable rapid adjustments during contingency operations. TAK's core mapping, situational awareness, and geospatial analysis features already work offline, with network connections enhancing functionality.

TAK's evolution focuses on sharing data across echelons, partners, and systems to ensure situational awareness on the battlefield. This includes bespoke plugins for specific operator needs and broader efforts to integrate TAK with other systems.

How does TAK address jamming/electronic warfare (EW)?

TAK's core functions (mapping, situational awareness, and geospatial analysis) do not rely on a network, making it resistant to jamming and EW. TAK integrates with tools like SNC TRAX to enable communication across diverse pathways, ensuring data can still flow through alternative mediums when networks are disrupted.



U.S. airmen with the 86th Security Forces Squadron check their ATAK during Operation VARSITY 25-1 at Ramstein Air Base, Germany. (U.S. Air Force photo by Airman 1st Class Dylan Myers)

What's the current state of TAK adoption and deployment across special operators?

TAK is widely fielded across USSOCOM at the tactical level, making it a standard tool for operators. USSOCOM addresses bespoke operator needs through agile software development and an annual Capability Needs Statement process, where operators identify and prioritize the most critical gaps in capability.



Staff Sgt. Mark Pfaus, the communications and information non-commissioned officer with the 10th Homeland Response Force (HRF), Washington National Guard, conducts ATAK training to military and law enforcement personnel on Bangor Naval Base, Wash. (U.S. Army National Guard Photo by Sgt. 1st Class Nicolas A. Cloward)

Acknowledging that there are other technologies like Lattice now being developed, what's the role of TAK going forward? Are you using tools like Lattice?

TAK operates at the tactical edge, providing situational awareness and mission-critical capabilities directly to operators. Lattice ingests and analyzes data at higher echelons, collating thousands of sensor feeds (including TAK) for advanced analysis.

Systems like Lattice and MAVEN Smart System complement TAK by ingesting and analyzing large data streams. TAK interoperates with these systems, creating a seamless flow of information that enhances situational awareness and decision making across the force.

TAK feeds data into systems like Lattice and receives insights back, creating a flow of information between tactical and strategic levels. TAK's non-proprietary nature ensures it can scale across SOF, the joint force, interagency partners, and foreign allies without licensing restrictions.

How will TAK connect with technologies like AI/ML and advanced sensors on modern smartphones?

TAK is actively integrating artificial intelligence (AI) and machine

learning (ML) to automate time-intensive tasks like mission planning. This includes both on-device AI capabilities and plugins that connect to higher echelons for advanced processing.

TAK also leverages smartphone sensors and plugins to enhance situational awareness, providing operators with actionable data in real time. These capabilities reduce cognitive load and improve operational efficiency.

How does TAK support multidomain operations and coalition interoperability?

TAK is accessible to U.S. forces, interagency partners, and foreign partners. TAK's open backend architecture allows rapid integration with systems like Lattice, Palantir, and SNC TRAX. This ensures interoperability across domains, coalitions, and mission partners, enabling streamlined collaboration during complex operations.

What's SOCOM's long-term vision for TAK?

USSOCOM aims to expand TAK's use across partners and allies, maintaining a flexible, non-proprietary system that adapts to evolving threats. TAK's ability to unify situational awareness across echelons and partners remains central to its long-term vision.

EVOLUTION AND FUTURE OF THE TACTICAL ASSAULT KIT FOR SOLDIERS AND SPECIAL OPERATORS

The TAK has become one of the Pentagon's success stories, evolving from a research project into a widely adopted tool across the services. Born out of an AFRL experiment and propelled by USSOCOM's operational needs, TAK today also underpins the Army's Nett Warrior program, connects Department of Homeland Security teams, and links coalition partners worldwide. With more than 500,000 users, it is increasingly viewed as the "tactical operating system" for modern warfighters.

Breaking Defense discussed TAK's development, current adoption, and road ahead with [Booz Allen](#) Vice President John Carl.



*Booz Allen Vice President
John Carl*

Describe the Tactical Assault Kit and how it began.

Carl: TAK started as a research project out of the AFRL and kicked off with ATAK, the Android Tactical Assault Kit. SOCOM had a need to increase situational awareness of the individual operator, and AFRL developed ATAK as a way to use cell phones as a commercial-off-the-shelf (COTS) platform. They deployed situational awareness software onto them and networked them together. It began as a cooperative development between SOCOM and AFRL and is now the foundational software for the Army's Nett Warrior program — moving from heavy, expensive, bespoke systems to a commercial smartphone running government-owned software at vastly reduced cost.

How has TAK evolved to where it is today?

TAK has evolved in both capability and innovation. It's no longer limited to Android phones; it's available on iOS as iTAK, on laptops with WinTAK, as a Linux-based version with TAKX, as TAK Server, and as WebTAK for larger-formation command and control and connectivity.

It's built with a plugin architecture similar to how you download apps to your phone, letting developers add capability without altering the core code. It's gone far beyond just maps: live drone feeds on 3D terrain, advanced navigation, robot control, parachute jump planning. That open model drives innovation for both government and commercial partners offering advanced TAK solutions that are simple, scalable, and secure.

What is its continuing value today?

One of the most critical capabilities on the battlefield is shared, accurate situational understanding. TAK links soldiers to each other and higher headquarters, showing friendly and enemy locations on a single map. It cuts down on radio chatter, accelerates decision cycles, and helps leaders at every level. As I mentioned, it started with Special Operations Forces and now has expanded across formations and even into the civilian world. It's not just a tool — it's an enabler of the force.

How does TAK compare in cost to other options?

The core software comes from the TAK Product Center and is government-owned. Any government entity can use that baseline software without licensing costs. Then they just need commercial hardware — a smartphone, a laptop. This eliminates the need for bespoke hardware that can cost hundreds of millions.

TAK open systems architecture allows you to connect new and existing equipment, and the marriage of COTS/GOTS that you get from TAK is massively more cost-effective with better results.

What role does Booz Allen play in TAK?

As one of the original developers of TAK, Booz Allen plays a significant role in the continuous advancement of TAK systems through ATAK- and WinTAK-compatible solutions. We deploy a suite of products like Sit(x)[®] through the TAK ecosystem that enhance operational and situational awareness capability at the edge.

With a proven record of supporting interoperability, Booz Allen uses TAK to drive market-leading innovations as well as create a baseline for connectivity with its investment partners (Firestorm, ScoutAI, etc.). Our TAK-compatible plugin technology sustains a trusted, reliable ecosystem that our customers can count on when in the field.

What is the current state of TAK adoption?

TAK has over 500,000 users across the globe, including the Pentagon, DHS, coalition partners, and ministries of defense. It's the backbone of Nett Warrior and SOF, and the Marine Corps is now beginning to deploy it more robustly. It's not everywhere, but broad adoption in many different sectors inside the Pentagon has made it the standard for mobile situational awareness, or, as I say, it is the tactical OS that's delivering results on the battlefield today.

Challenges are not technical but rather related to funding and policy. Nett Warrior is limited by how much funding it gets, and each service has its own cybersecurity process. Broader adoption comes down to funding; leadership decisions to standardize; and cybersecurity processes, like authorizations, to operate.

What do warfighters think of the system?

The special operators and soldiers who use TAK love it. It's a game changer. They are asking for new capabilities — updates to the UAS tool, ways to do more complex missions — because they see huge value. As future leaders who use TAK rise into command roles, adoption will accelerate.

Another point is that TAK is at the tactical edge, and sometimes that edge gets overlooked when big programs like NGC2 get the focus. But for NGC2 to really work, you need TAK at the edge to connect the soldier into it.

How would TAK work in conjunction with new capabilities like Lattice command and control?

We don't see it as a zero-sum game. TAK and platforms like Lattice can complement each other. Think of Lattice as the operational data layer/lake and TAK as the government-owned interface at the tactical edge. Connected together, one plus one equals three.

TAK is already a common language at the edge. Keeping TAK government-owned avoids vendor lock-in while still letting private-sector systems connect. It fosters competition and innovation in the commercial space as well.

What's the vision for TAK over the next 18 to 36 months?

TAK is being positioned to become the ubiquitous, AI-enabled command and control platform for the joint force at the tactical edge. With the power in commercial devices today, you can do AI at the edge. The TAK Product Center is working on more intelligent filtering and pushing of relevant information. They're also looking at collaborative sensor mesh — every TAK device as an active contributor back into the collective intelligence. That means faster decisions, richer situational awareness, and more resilience.

Final thoughts?

Booz Allen supports the TAK Product Center's vision by continuing the advancement of TAK through a product suite of plugin-ready solutions that brings faster mission success to our warfighters. We are committed to working with partners throughout the TAK community to deliver the best solutions to our customers.

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