

ARMY COMMUNICATOR

Spring 2025



25th RCSM Out
ITN's Viability for C2
Leading in Data Centricity



In This Edition:

3. **Chief of Signal Message**
Col. Julia M. Donley
4. **Regimental CSM**
Command Sgt. Maj. Linwood E. Barrett
5. **Regimental CWO**
Chief Warrant Officer 5 Chris R. Westbrook
6. **Editor's Note**
Laura Levering
7. **History: Legacy of 1LT Darling**
Steven J. Rauch
10. **Leading with Empathy**
Chaplain (Maj.) Glen Thompson
11. **Campus Construction Update**
Laura Levering
12. **2/502nd IR C2 Fix**
Capt. Cody Winston
14. **Using Words As Weapons**
Capt. Mike Martinez
16. **Lion Brigade's New Approach**
Lt. Col. Julie Leggett, Maj. Jonny Edmunds
18. **ITN Equipment in the LSB**
1st Lt. Katie Szewczyk
21. **Transformative Workshops**
Sgt. Malcolm Pope
22. **Decision-making in Data**
Maj. Christopher M. Dirks
25. **Drowning in Data**
Cpl. Mitchell Rasmussen
28. **Lessons in Data Integration**
Capt. Brian Lee Matias
30. **AFN-OTM**
*Lt. Col. Marreo Burch, Maj. Adam Black,
Chief Warrant Officer 2 Justin Carrier*
33. **Exploring Technology's Risk**
Maj. Michael Herb
35. **AUDS**
Candy C. Knight
37. **25D CTSBB**
Sgt. Maj. Thomas Lee Jr.
39. **Age of Transport Diversity**
Chief Warrant Officer 2 Tiffany Kitarogers

40. **AN/PRC-160 Upgrade**
Sgt. Truxtun Brodhead
41. **Professional Development**
Capt. Noe Lorona
43. **Training with Industry**
Laura Levering
44. **ITN's Viability for C2**
Maj. Tony Formica, Capt. Andrew Ciserano
48. **Up Next ...**

U.S. Army Signal Regiment Leadership

43rd Chief of Signal and U.S. Army Signal
School Commandant,

Col. Julia M. Donley

Regimental Command Sergeant Major,
Command Sgt. Maj. Linwood E. Barrett

Regimental Chief Warrant Officer,
Chief Warrant Officer 5 Chris R. Westbrook

Army Communicator

Editor-in-Chief,
Laura Levering

Harding Fellow,
Capt. Vincent J. Kirk

The Army Communicator is published as a command information e-publication for the men and women of the United States Army Signal Corps under the provisions of AR 360-1. Opinions expressed herein do not necessarily reflect the views of Office, Chief of Signal, the U.S. Army or the Department of Defense.

Send articles, photos, graphics, and story ideas for the Army Communicator to the editor-in-chief at laura.m.levering.civ@army.mil or [here](#).



Let's Get Social! Follow the U.S. Army Signal Regiment [here](#) on Facebook, [here](#) on LinkedIn, and [here](#) on Instagram!

A Call to Action: Lead in Data Centricity

Picking a topic for this issue was easy. In Deputy Chief of Staff Lt. Gen. Jeth B Rey's first message to the force, he gave all of us several tasks; the first of which is: Lead in Data Centricity. This data-centric Army of ours cannot function without a unified network, enabling access to the data layer.

Today's network isn't about emailing large PowerPoint briefs in Garrison. It is no longer there to provide dial tone. Today's network is for the data, and the data is for the Warfighter. Lt. Gen. Rey's call to action is only the latest evolution in our Regiment's 165 years of constant change. Our mindset must continue to change. How do we as Signaleers provide that unified network to all Warfighters, no matter the location, ensuring their ability to access their data? In a world where radios are computers, chat is preferable over voice, and our fellow Soldiers are increasingly technologically savvy, what are you doing to enable data services?

In the last month, I've had the privilege of observing C2 Fix at 101st Airborne Division (Air Assault) during Operation Lethal Eagle, Next Gen C2 at Project Convergence Capstone 5, and conversations at the Unified Network Summit No. 11. As the Army rapidly moves into the future of artificial intelligence-centered C2 systems, unmanned systems, and man/machine interface, bandwidth and spectrum demand grows exponentially. As Signaleers, we will continue to evolve to keep pace with the demand as the data-centric Army grows more reliant on the network.

In this issue, you will find many different ways in which the Signal Corps is "Enabling the Data Centric Warfighter" – articles like *2/502nd IR C2 Fix Best Practices and Recommendations* (Capt. Cody Winston), *Enabling Distributed Operations at the Tactical Level* (Lt. Col. Marreo Burch, Maj. Adam Black, Chief Warrant Officer 2 Justin Carrier), *Challenges and Lessons Learned in Data Integration* (Capt. Brian Lee Matias), and *AUDS: A New Era in Military Data Integration* (Candy Knight) just to name a few.

As I write this, I am attending the Data Literacy course at Carnegie Mellon University. It is one of several available to Army leaders to improve their understanding of data as well as receive a great overview on the capabilities of artificial intelligence. While it is an excellent executive level overview, many of our discussions have brought up the need to include context as well as individual application when it comes to data literacy training. Including data concepts across professional military education is a good start. The next step is to be able to answer, "How does this apply to me? What are you doing to improve your own data literacy and how are you applying that knowledge to improve your organization?"

In 165 years, our purpose hasn't really changed. As Signaleers, we enable command and control for our Army. The way we've done it constantly changes. From flags and torches, to balloons, to pigeons, telegraphs, aircraft, switchboards, satellites... Today, it is about data. Tomorrow, quantum computing?

As we look toward the future, we continue to honor those who got us here. Regimental Command Sgt. Maj. Linwood Barrett has been the Signal Corps' biggest advocate. He has done more to support the people of our Regiment than anyone else I know. He served to remind us to be proud of our achievements, and he never stopped challenging us to be even better. Our bright shining orange beacon, covering the globe, will dim just a bit as he retires. But never fear RCSM, your example will continue to inspire the Regiment for generations.

Signal Strong! Signal Proud!

Pro Patria Vigilans!

Watchful for the Country!

***Col. Julia M. Donley,
43rd Chief of Signal and U.S. Army Signal School Commandant***





Best Job Ever! Thank You!



Team Signal,

There are no words on the planet that can clearly explain how honored and grateful I am to have been afforded the opportunity to serve you as your 25th Regimental Command Sergeant Major. As I prepare to transition, I find myself reflecting on this incredible journey we have shared together. It has been a profound honor to serve alongside each of you, witnessing the unwavering dedications, resilience, and exceptional camaraderie that define our Regiment.

Over the years, we have faced numerous challenges, each one met head-on with ingenuity and perseverance. From providing vital communications support in the most demanding environment to adapting to emerging technologies at the drop of a dime, your commitment to excellence has never wavered. Together we have maintained a legacy rooted in professionalism, teamwork, and unwavering support for one another. We are all cut from the same cloth, forged in power, sealed by Barton Field gravel, and fueled by high quality Fort Eisenhower **orange** liquids.

As I move on to the next mission, I carry with me the valuable lessons learned and the memories we created together. I encourage each of you to continue to uphold the values of the Signal Regiment.

Embrace every challenge as an opportunity for growth and never hesitate to support one another along the way. Remember that we are strong alone, but we are **stronger together**. I want to extend my deepest gratitude to all of you – Soldiers, Families, and Civilians for your support during my tenure. Your dedication and loyalty have made my time here truly unforgettable.

For the past few months, I have taken some very deliberate actions to find ways to personally thank every one of you. Whether it be an email, phone call, text message, social media post, photo, or in person, I am sure I have failed and missed someone. Please know that it was not on purpose, and from the bottom of my heart, I appreciate all 58,000 Signaleers in the Regiment for all that they do.

I simply want to end by saying “thank you.” I thank you for adapting and evolving to meet the requirements of our Army. I thank you for coaching and mentoring each other. I thank you for ensuring that the band of excellence of the prestigious Regiment continues, regardless of your rank or position. I thank you for your professionalism and ability to overcome challenges. I thank you for finding the balance for your families, your teams, and yourself. I thank you for accomplishing the mission even though at times you are tired, cold, wet, frustrated and short-staffed. It is our superpower as Signaleers to provide communications at all costs. We have been providing this support to our nation’s Army for nearly 165 years, and we are here to stay!

Thank you for allowing me to be a part of this remarkable Regiment. I look forward to hearing about your future success and reminiscing on the extraordinary times we shared. Remember the strength of the Signal Regiment lies not just in our technical expertise but in our unity as a family.

We are warriors, and when the orange crest goes up or the wigwags get waved, we know exactly what to do ... We “Get the Message Through!”

**Command Sgt. Maj. Linwood E. Barrett,
25th Regimental Command Sergeant Major**



**No Comms, No Bombs!
Signal Strong! Signal Proud!**



The Data-Centric Warfighter and Ongoing Efforts to Leverage Data

In February 2022, the secretary of the Army set a goal for the Army to become more data-centric to enable success on the future battlefield. Since then, the Army has developed the 2021 Unified Network Plan (updated this year) and the 2022 Army Data Plan. There are many articles in the press and from the Army itself regarding this revolution in how we will fight future wars.

The Army University Press has many examples of units focusing on data centrality as they complete their culminating training exercises. I will highlight one here and urge you to take the time to read a snippet of what is in store for us as this is happening fast: <https://www.armyupress.army.mil/Journals/Military-Review/Online-Exclusive/2024-OLE/Data-Centric-Culture/>

Officers from 4th Infantry Division (ID) laid out an excellent article talking about their data problem, how they are leveraging the Army Data Plan to solve the problems at their echelon and describes their framework on how to drive their processes into the mainstream. It did involve a lot of education and collaboration to provide a data-driven set of automated processes and dashboard to enable the commander and staff in practical use of live data in enhancing readiness.

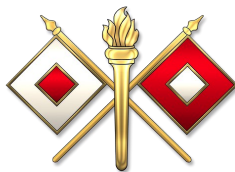
When 4th ID's stakeholders collaborated and shared the data they used in their daily duties, they quickly realized that there was the opportunity to cross-talk and work with each other's data to provide insights and provide answers to the commander's questions without the inevitable storm of follow-up questions experienced in the past as answers were incomplete or used untimely data in their analysis.

Enhancing the efforts to make data more accessible, the Unified Network Plan 2.0, <https://api.army.mil/e2/c/downloads/2025/03/04/0b7f95c5/army-unified-network-plan-2-0.pdf>, will enable a framework to streamline the Army's access to their network, resources, and data in a secure manner. This plan will enable you — as a Soldier, civilian, and in some cases, a contractor — to move from your home camp, post, or station to another and have access to the resources you are authorized to access without cumbersome processes or reimaging of machines through the centralized delivery of services such as identity, access, and credentialing management. No more System Access Requests when you PCS and global recognition of your past training to retain elevated privileges.

For fiscal year 2026, the Data for Leader's Competency Course (9E-F122/920-F119) and Data Engineering Foundations Course (4C-F83) will be in the Army Training Requirement and Resources System (ATRRS) for our Signal leaders to receive data literacy training as well as training for our 26B functional area officers and 255A warrant officers to receive data engineering training if they have already completed the FA26 or Warrant Officer Advanced Course prior to 2024.



***Chief Warrant Officer 5 Chris R. Westbrook,
Regimental Chief Warrant Officer***



Milestones Worth Sharing and Celebrating

The U.S. Army is celebrating a substantial milestone this year, as June 14 will mark the Army's 250th birthday. The theme for this year's celebration, "This We'll Defend," is intended to highlight the Army's objective of fighting and winning our nation's wars. From the Revolutionary War (1775) through current missions that are often unseen, Soldiers (and civilians) have dedicated themselves to protecting the freedom of this nation both stateside and abroad. As much as the Army is about protecting its land and people, it is also about offering opportunities to those who serve.

The Army of 2025 is a far cry from the Army of the Revolutionary War days. With more than 200 career choices for Soldiers and more than 500 career paths available to civilians, those who serve are also presented with opportunities to grow (personally and professionally), travel to places they might not otherwise have an opportunity to see, meet people from all walks of life, make a lasting impact, and so much more. Speaking of impact, did you know that the Army is behind some of the world's most notable inventions?

While skimming through the [U.S. Army Facebook](#) page recently, I came across the article, "[Did you know the Army invented this?](#)" Super glue, the first computer, and two-way portable radios are just a few items on the list. There is so much to be proud of as members of the greatest Army in the world, and this barely touches the surface. Then there is the Signal Corps, which will be celebrating 165 years. As someone whose background is Army public affairs, I will forever be proud of (and thankful for) the branch that provided me with a foundation, instilled immense pride in me, and taught me more about the Army than I could have previously imagined possible.

Throughout my career, I have encountered and written about countless Soldiers across multiple military occupational specialties – some more unique than others. I don't know if it's because I've worked the Signal Corps the longest/most consistently, but out of all the branches I've covered, I have never been met with one that exudes as much pride as the Signal Corps. I share this partly because although I will never *be* signal, in the few years that I have been in this position, one thing that I *have* taken on is a sense of pride that comes with it. I am proud to have started out my service as a Soldier. I am proud to have been able to tell the stories of Soldiers doing some of the toughest jobs they were called to do and missions fulfilled. I am proud to have been the trusted voice of the widows-turned-friends whose Soldier paid the ultimate sacrifice. And now I am proud to help keep the Signal Regiment alive through the Army Communicator (and other platforms) by assisting with "getting the message through" – *your* message. It is an important role that I do not take lightly.

Each of you has a story to tell. Next quarter's themes are intended to bring out those stories. As we celebrate the Army and the Signal Corps birthdays, think about what makes you proud to be a Soldier/Signaleer. Put those thoughts to pen/paper (keyboard to Word doc.), and send them to me. Soldiers are some of the most proud yet humble humans. Let the pride shine through and share those stories!



Laura M. Levering
Editor, U.S. Army Signal School



Submission guidelines

Articles need to be sent as a **Word** document with photos and graphics sent as **separate attachments**. Include a description of each photo/graphic along with the rank, full name, and unit of person who took photo (created graphic). Acronyms need to be spelled out on first reference, with the abbreviation of the term acceptable on subsequent reference. Between 500 and about 2,000 words per article is ideal. This helps ensure a minimum of one page and maximum of four pages in publication layout (depending on photos, etc.).

Summer 2025 deadline: June 14.

Summer 2025 themes: Stewarding the Profession;
250th Army Birthday; 165th Signal Corps Anniversary.

1st Lt. John E. Darling Jr. and the Battle for Fire Support Base Ripcord

March - July 1970

Steven J. Rauch

Signal Corps Branch Historian

This is the last article Steven J. Rauch provided prior to his retirement in June 2025. He feels it was his best written, most well-researched piece that reflects an important subject matter. It was previously published in the September 2020 Army Communicator but has been revised for this edition.

On July 23, 1970, Soldiers of the 2/506th Infantry Battalion, 101st Airborne Division, evacuated the hill known as Fire Support Base (FSB) Ripcord located about 25 miles west of Hue in South Vietnam. After almost five months of continuous fighting at Ripcord, the final casualties were Lt. Col. Andre C. Lucas, the battalion commander, and the battalion operations officer, Maj. Kenneth P. Tanner, killed while supervising the evacuation of the base. Their deaths added to the total of 112 men killed and 698 men wounded from March 13 to July 23, 1970. During that time, ground and aviation units of the 101st were subjected to heavy rocket, mortar, and ground attacks by the People's Army North Vietnam (PAVN). Many Soldiers compared the battle to Hamburger Hill, fought a year earlier, and concluded Ripcord was more wasteful in casualties. Among those who lost their lives during the battle for Ripcord were 1st Lt. Bob Kalsu, who had been an All-American lineman at Oklahoma and was a member of the Buffalo Bills offensive line; Pfc. Weiland C. Norris, the younger brother of actor/martial artist Chuck Norris; and 1st Lt. John E. Darling Jr., the battalion communications officer for 2/506th Infantry Battalion.

Darling was born in Fremont, Michigan, Oct. 17, 1946. During high school, he was a member of the National Honor Society, varsity football captain, varsity wrestling captain, and a Boy Scout. He later became an Eagle Scout and graduated with honors from Fremont High School in 1964. Darling received an appointment to the U.S. Military Academy and was remembered by his roommate John C. Cruden as "a natural leader: an individual gifted with those traits that attract other people to him."

Darling graduated from West Point on June 5, 1968, and commissioned into the Signal Corps. He attended U.S. Army Ranger School, the Signal Basic Officer Leader Course at Fort Gordon, the Battalion Communications Officer Course at Fort Sill, and U.S. Army Airborne School. After completing training, he was

assigned to 82nd Airborne Division at Fort Bragg, North Carolina, but soon deployed to Vietnam on Oct. 12, 1969. There he was assigned to Headquarters and Headquarters Company, 2/506th Infantry as the battalion communications officer – the equivalent of a battalion S-6 today.

The doctrine of using fire support bases to support ground operations had fully matured by 1970. An FSB was designed to provide a secure location for artillery support in remote locations and relied on helicopters to emplace, resupply, and displace the guns as needed. They also served as command and control centers, assembly points, and landing zones. FSBs were usually established via air assault onto a hilltop or mountain and had to be defensible against enemy attack. As might be expected, an FSB made for a tempting target for an attack, especially with indirect fires such as mortars and artillery.

In 1970, the Army set up a string of FSBs east of the A Shau Valley to prevent enemy movement into the coastal regions of Quang Tri and Thuan Thien Provinces. The 2/506th Infantry was given the mission of establishing FSB Ripcord in March 1970 to help support the 101st Division's offensive against the 803rd and 29th PAVN Regiments in the area. Poor weather hindered the operation until April 1, when Company B, 2/506th conducted an assault onto Ripcord, bringing with it the battalion jump TOC (tactical operations center). The TOC included Maj. Laurence J. Law, who was the battalion executive officer, and Darling, who was the battalion S6.

Peter McSwain, a signalman in the commo section, remembered,

"Lieutenant John Darling came to me and said, 'Mac, get your hard hat, your flak jacket, rifle, and some ammo, and go to the helicopter pad.' A bunch of us went there, took off, and landed on a hill that was all cratered and de-vegetated." The Soldiers immediately received intense small arms, mortar, and recoilless



*1st Lt. John E. Darling Jr.
(Signal History Collection)*

rifle fire from the PAVN 803rd Regiment. McSwain recalled, "As soon as I got a few yards from the Chinook, Lt. Darling yelled at me to jump into a shell crater. They told me we were getting mortar fire."

The jump TOC was positioned near some large boulders from where Law could coordinate aircraft support to include medivacs. The PAVN had pre-plotted mortar strikes which hit the boulder sheltering the jump TOC and severely wounded Law. Darling took charge at once and moved the radios and surviving operators into a shell hole. He then carried a wounded Soldier to a medical evacuation helicopter while under intense enemy fire. Darling then returned to the command post and directed helicopter gunship fire upon enemy positions. U.S. casualties for that day were 21 wounded and seven killed in action. Unknown to him at the time, Darling would be awarded the Silver Star on Sept. 20, 1970, for gallantry in action. The citation said in part:

"His actions under fire enabled the prompt evacuation of casualties and forced the withdrawal of the hostile force. Lieutenant Darling's personal bravery and devotion to duty were in keeping with the highest traditions of the military service and reflect great credit upon himself, his unit, and the United States Army."

Ripcord was abandoned later that day, but 2/506th returned April 10, and was able to set up the base. From April through June, the battalion continued construction and conducted security operations around the area as the 101st continued to prepare for an offensive into the A Shau valley. At Ripcord, a new battalion executive arrived directing the men to dig defensive positions and

install a 50-meter-wide perimeter of barbed wire as well as many land and claymore mines. The battalion TOC was built on the eastern slope near the top of the hill. Members of the HHC and battalion staff worked around the clock to improve the position with sandbags. Among those conducting that work were Darling and his signalmen. Later a separate communications center would be built, as the need for communications grew from squad level up to strategic aircraft to support the mission.

Amid the base development, on May 18, 1970, Darling boarded a UH-1 helicopter flown by C Company, 158th Aviation Battalion, that was on a resupply mission at Ripcord. He and Sgt. Harry J. Stone hitched a ride so they could take a new radio to A Company back at Camp Evans, and then Darling was supposed to begin his Rest and Recuperation leave the next day. However, during the flight, the UH-1 was hit by enemy groundfire. And although the pilot tried to make a forced landing, the aircraft crashed and rolled down a steep hill and out of sight due to the thick jungle canopy.

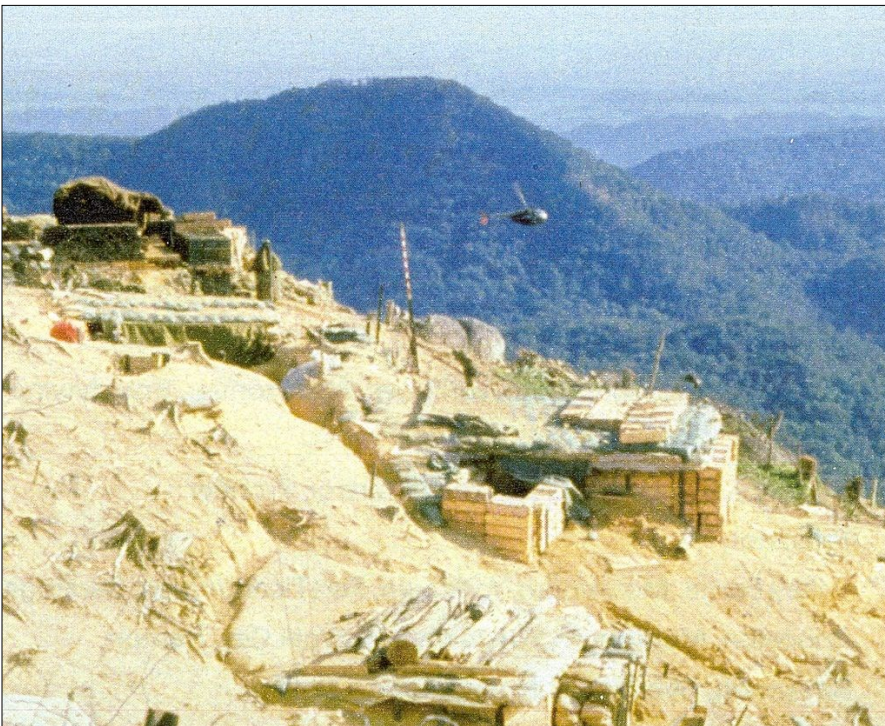
Three crewmen were killed along with Darling and Stone. The crew chief managed to jump from the UH-1 prior to the crash and was found the next day. Not knowing the exact whereabouts of the aircraft, a rifle platoon was inserted to conduct a search but was not able to find the UH-1 due to nightfall. It was not until May 31 that the aircraft was found, and the bodies, including Darling, were recovered. On June 2, 1970, the Army declared 23-year-old Darling to have been killed in action.

Darling's life had an impact on those who knew him then and long after the battle. The battalion chaplain's assistant, Rick Blythe, wrote about his experiences at Ripcord. In a letter home on May 25, 1970, he included the comment, "Our communications officer was found. His chopper was all shot up. Only the crew chief survived. He's in a state of shock. Lieutenant Darling was well-liked by everyone."

One of Darling's signal Soldiers, Ernie Claxon, remembered, "We called him 'the Duke.' He acted like John Wayne. He was a good man, straight-up honest good guy. He led by leading."

Another Soldier in HHC said, "Darling was a Soldier's Soldier. He was an Airborne Ranger. He was a West Point graduate. I thought he was an outstanding officer and Soldier."

The last days of Ripcord began on July 18, when the PAVN shot down a CH-47 Chinook, which crashed into the



Aerial view of Fire Support Base Ripcord. (Signal History Collection)

artillery ammunition storage area, ignited the artillery ammunition, and destroyed six 105 mm howitzers and 2,238 rounds of ammunition. The next day, the PAVN attacked the base with mortar fire, and the 2/506th sustained 11 more wounded. At that point, 101st leadership decided Ripcord was becoming a liability and holding it did not justify further casualties. Orders were issued to abandon the base by July 23, and once all friendly personnel had left, B-52 bombers were sent in to obliterate anything remaining.

Though he did not serve long as the battalion S6 for the 2/506th Infantry at Ripcord, Darling should be remembered for his actions April 1, 1970, when he assumed command of an infantry battalion jump TOC, worked to save the lives of his fellow Soldiers, and direct firepower against the attacking enemy. Darling made a difference through his leadership during the chaos and applied all the training he had



Plaque dedicated to 1st Lt. John E. Darling Jr. at Darling Hall, Fort Eisenhower (then Fort Gordon), Georgia. (Signal History Collection)

accumulated during that one day on an obscure hill in Vietnam. His untimely death May 18, 1970, ended his physical presence but not his memory.

Those who knew Darling remembered him as friendly, likable, and an all-around great guy in addition to being a skilled signal officer. Darling was posthumously awarded a Silver Star Medal, Bronze Star Medal, and Purple Heart.

On July 8, 1994, the 27th Chief of Signal, Maj. Gen. Robert E. Gray, dedicated the new Soldier Support Center and Garrison Headquarters, Building 33720, as Darling Hall, in honor of 1st Lt. John E. Darling Jr. Since that time, every Soldier who has attended training at the U.S. Army Signal School has passed through the doors of Darling Hall where several of Darling's photos, medals, and Silver Star citation are displayed prominently in the lobby to serve as inspiration for signal Soldiers in the 21st century.



Located along Chamberlain Avenue a short distance from Main Gate, Darling Hall is often the first stop for Soldiers and their family members arriving at Fort Eisenhower, Georgia. (Signal History Collection)

There is Power in Leading with Empathy

Chaplain's Corner



Chaplain (Maj.) Glen Thompson
U.S. Army Signal School

Do you want to build strong effective teams? Do you want to foster a positive work environment? Do you really see and value your troops? Are we preceptive, adaptive, self-aware, and authentic? As the Army is in an ever-changing environment, leading with empathy is one way to achieve a safe workspace. Empathy is one of the character foundations of an Army leader.

Understanding Empathy

Leading with empathy can be complex. According to the Leader Professional Development published by the Center of Army Leadership (CAL), leading with empathy can be complicated for six reasons. First, we may not listen well to the other person. Second, we may believe that showing compassion is a weakness in the Army. Third, we may lack self-awareness. Fourth, we make the conversation about ourselves. Fifth, we may want to fix the problem before hearing what the other person has to say. Lastly, we may be blinded by the mission. Empathy can be complicated, but leaders with character adapt and overcome.

In order to understand empathy, we need to understand what it is not. The [Empathy Smart Card](#) produced by the Center of Army Learning states that empathy is not about you, it's not feeling sorrow for someone else, it's not even acknowledging that hardships exist. Leaders ought not exhibit resistance or limited perspective on others' needs. It's about the ability to comprehend another person's actions or emotions. It's an awareness of another's problems and understanding their situation. It's about putting yourself in someone else's shoes.

Empathy Defined

As defined in The Army Leadership and the Profession (ADP 6-22), "empathy demonstrates an understanding of another person's viewpoint. It identifies with others' feelings and emotions."

Lastly, empathy displays a desire to care for Soldiers, Department of Army civilians, and others. Leaders must seek to understand someone else's feelings. Leaders show empathy when they can truly relate to someone else's situation and emotions. As leaders, we do not want to lack empathy or not appreciate its importance.

Cultivating Empathy

Field Manual (FM) 6-22, Developing Leaders, states three ways leaders can cultivate empathy. First, be attentive to others' views and concerns. Second, personally act to improve situations for Soldiers, DA civilians, family members, and local community. Third, model empathy for your subordinates. Setting the example of empathy will be one of the most effective ways.

Conclusion

Leaders must embrace empathy as the military transitions in an ever-changing environment. Leaders must be approachable and interested in personally caring for their subordinates.

Empathy contributes to professionalism, which drives results. Leaders with empathy have excellent self-awareness. They strive to understand their teammates by being fully present and exercise active listening. They find practical ways to serve their team and build mutual trust. Leaders make their subordinates seen, valued, and heard.

Once empathy is established in the area of operations, it must be maintained. There are excellent resources to maintain empathy in the workplace. Below you will find three of them:

Empathy Smart Card: https://usacac.army.mil/Portals/1/Organizations/COE/MCCOE/CAL/Empathy%20Smart%20card%20-%20Aug%202024.pdf?ver=8WMApq5xFr_YkjACCjBNlg%3d%3d

Leading with Empathy, Leader Professional Development: https://usacac.army.mil/Portals/1/Organizations/COE/MCCOE/CAL/LPD_Leading_With_Empathy_Quick_Start_Guide_FINAL_v3_20230621.pdf

Empathy Survey: https://usacac.army.mil/Portals/1/Organizations/COE/MCCOE/CAL/LPD_Leading_With_Empathy_Handout_FINAL_v2_20230621.pdf



*Chaplain (Maj.) Glen Thompson,
U.S. Army Signal School*

Campus Construction, Base Transformation Progressing

Modernization

Article, photos by Laura Levering
U.S. Army Signal School



U.S. Army Signal Corps leaders receive a tour of MCA2, which will contain signal and cyber professional military education classrooms and instructional laboratories.

Signal Towers was memorialized nearly three years ago, signifying a major leap towards modernization for both signal and cyber professionals. At the heart of these modernization efforts is the building (and completion) of a U.S. Army Cyber Center of Excellence campus. And although there is still much work left to do, a recent tour made it evident that a lot of work has been done.

Traveling along Chamberlain Avenue, once Fort Eisenhower's main east-west thoroughfare, it's impossible not to notice the progress. To date, several outdated 50-to-60-year-old buildings have come down and a sizeable portion of Chamberlain Avenue closed. In their places stand two Military Construction, Army (MCA) sites with another two in the works.

MCA1 will contain the Cyber School Headquarters along with a Sensitive Compartmented Information (SCI) Training, Research and Network Center. MCA2 will be a mix of signal and cyber professional military education classrooms and instructional laboratories. It will also house the commanding general's command suite and headquarters staff, a resource center, and conference rooms. MCA3 is where Advanced Individual Training will take place for signal Soldiers,

and MCA4 is planned to house a mix of learning environments that will include a 2,000-seat lecture hall serving as a "shared space for all of CCoE, as well as the installation, to use," explained John Batson, deputy commandant, U.S. Army Signal School.

Batson was among several Signal Corps leaders who went on a guided tour of MCA2 on Feb. 25. Brett Wiliford, resident engineer, U.S. Army Corps of Engineers South Atlantic Division (CESAD), led the tour and answered questions – one of the main ones on peoples' minds being, "When will this project be completed?"

MCA3 and MCA4 have yet to break ground. MCA3 is scheduled to begin construction later this year, while MCA4 is expected to be included in the FY25 Facility Investment Plan for construction in 2029. MCA1 and MCA2, on the other hand, are closer to the finish line.

"They're on track for construction to finish by the end of this year," Wiliford said.

Fitting out the facilities with furniture, equipment and other necessities will likely add an additional 22 months, but Soldiers can anticipate MCA1 and MCA2 will be "troop ready" by 2028. Although it might seem like a while off, Col. Julia Donley is confident the wait will be worth it.

"It is a giant leap forward for signal training in comparison to the current 1970s facilities we are using," said Donley, 43rd chief of Signal and U.S. Army Signal School commandant. "It will also be a greater learning experience for the signal leaders who are going to come through Fort Eisenhower whereas today they're struggling with degrading facilities."



U.S. Army Signal Corps leaders leave the site of the future U.S. Army Cyber Center of Excellence campus following a tour of MCA2.

2/502nd IR C2 Fix Best Practices, Recommendations

JRTC 24-10

Capt. Cody Winston

101st Airborne Division Sustainment Brigade

In August 2024, 2nd Battalion, 502nd Infantry Regiment (2/502nd IR) “Falcon” participated in Joint Readiness Training Center (JRTC) Rotation 24-10, a comprehensive exercise that included a large-scale long-range Air Assault (L2A2), brigade-level force-on-force (FoF) operations, and a brigade live-fire exercise (LFX).

Throughout the rotation, Falcon continued to integrate our Capability Set 23 (CS23) Integrated Tactical Network (ITN) equipment into our operational strategy, rigorously testing its effectiveness in varied and dynamic combat scenarios. Our efforts focused on enhancing the reliability, interoperability, and functionality of our communications to ensure robust and seamless command and control (C2).

Below are Falcon’s formal observations and lessons learned regarding integration of the Krause-1000 (K1000) drones into our communication architecture, evaluation of the Instant Connect Enterprise (ICE) Tactical Assault Kit (TAK) application, and continued efforts to improve our Mobile User Objective System (MUOS) on-the-move (OTM) capabilities.

Krauss-1000 Integration

During JRTC 24-10, 2/502nd IR tested the K-1000’s effectiveness in extending the range of our Tactical Scalable Mobile Ad Hoc Networking (TSM), a newer mesh radio networking waveform. The K-1000 is a high-altitude, long-endurance drone designed for intelligence, surveillance, and reconnaissance missions. The drone’s ability to operate for extended periods, coupled with its pseudo-satellite functionality, provided us with a reliable airborne relay with recorded air-to-ground links up to 40 kilometers. This minimized communication disruptions and ensured that all units remained connected to the TSM mesh network, regardless of their location on the battlefield.

Due to a shortage of drone operators, 2nd Mobile Brigade Combat Team, Strike, could only pilot one K-1000 at a time. This limited our capabilities because each drone can only retransmit two TSM nets simultaneously. To overcome this obstacle, Strike dedicated one net to the brigade and prioritized the other net to whichever battalion was the main effort in the fight.

At the battalion level, we also directed each platoon leader to monitor the brigade TSM net to ensure the commander had a direct link to each element, regardless of which battalion is the priority. Additionally, the K-1000’s availability relied heavily on the weather.

Moving forward, we recommend having enough trained drone pilots to operate at least two drones simultaneously during operations to ensure that the brigade net and all three infantry battalion nets are relayed across the battlefield.

C2 Fix Updates

Efforts to extend communication range and ensure connectivity set the stage for the next phase of our initiative, advancing the mobility and effectiveness of command posts through new C2 Fix technologies. The C2 Fix initiative seeks to improve the mobility, scalability, and survivability of command posts while simultaneously simplifying the network infrastructure commanders use to maintain C2. A key component of this simplification process is the use of Android Tactical Assault Kits (ATAKs).

ATAKs are designed to provide Soldiers with a mobile situational awareness tool that enables real-time mapping, secure communication, coordination on the battlefield, enhanced decision-making, and operational effectiveness. Furthermore, the ATAK’s integration with other systems and sensors helps provide a comprehensive operational picture to commanders at all levels. During this rotation, 2/502nd IR was tasked to test and validate a new suite of TAK applications. ICE is a new TAK application that we frequently used throughout the rotation.

Instant Connect Enterprise

ICE is a push-to-talk (PTT) communication platform that enables real-time voice communications across various devices and networks. During JRTC Rotation 24-10, we used the server on our Tactical Radio Integration Kit (TRIK) to establish, maintain, and secure reliable communication between our radios, ATAKs, and government cellphones. The server acted as the central hub, processing and managing the data transmitted between the ICE application and our battalion command net. This integration enabled secure, instantaneous voice communications across the battalion and facilitated rapid sharing of critical information amongst key leaders. It also enhanced our ability to make timely decisions and synchronize efforts across the battlefield.

We positioned the TRIK Voyager 8 in the rear to safeguard it from electronic warfare and enable the brigade to sustain beyond-line-of-sight (BLOS) communications during site jumps. This ensured our brigade maintained over-the-horizon capabilities and enhanced the reliability and range of our communications systems in a hostile environment. However, the effectiveness of our communications was significantly

impacted by a key limitation of ICE: its reliance on Wi-Fi connectivity. Wi-Fi networks are often unreliable, susceptible to jamming, and difficult to secure, especially in dynamic combat situations. This dependency not only forces units to operate within the limited range of network access points, reducing mobility, but also creates an electronic signature that can be detected and exploited by the enemy.

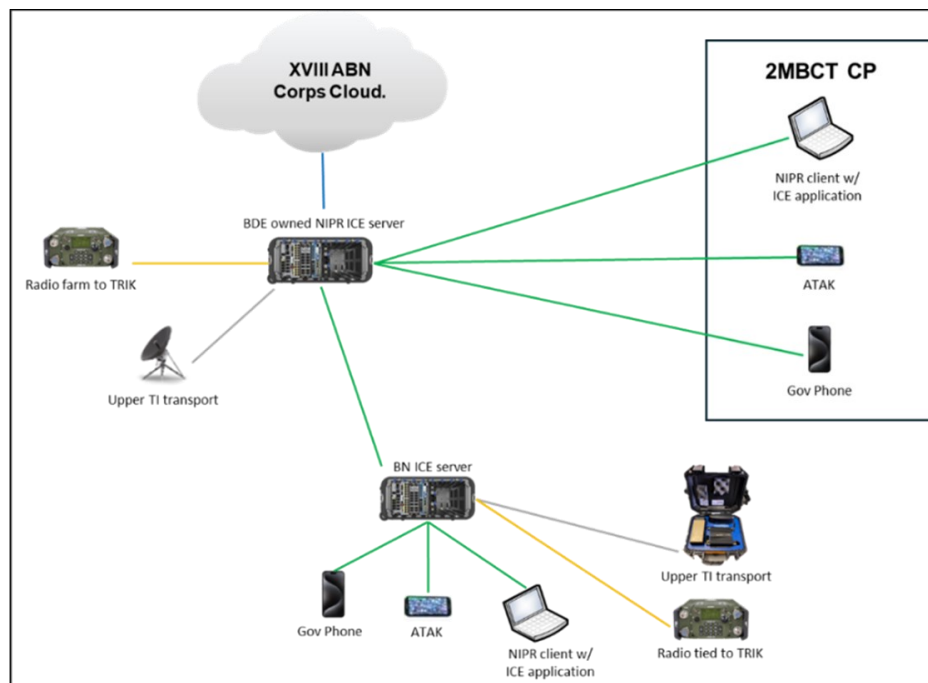
Furthermore, we found that the audio volume and options for ICE on ATAK were insufficient, making it difficult to hear communication traffic during operations. One improvement we recommend is increasing the volume levels and adding customizable audio settings to better accommodate the noisy and dynamic environments typical of battlefield conditions.

Additionally, creating an additional USB-C port on the ATAK would enable us to use headphones without having to disconnect from the docking station on the chest rig. Implementing these enhancements will ensure clearer communication and more effective coordination amongst units.

MUOS On-the-Move

Our final initiative focused on improving our MUOS on-the-move (OTM) capabilities. As MUOS is our primary means of communication with higher headquarters and company command teams, enhancing its effectiveness is crucial. From a vehicle perspective, we installed two Ultra High Frequency (UHF) X-wing antennas on our C2 box truck. This new antenna configuration provided more reliable and robust communication links while on the move and expedited main command post site setup.

Given these positive results, this solution could be implemented across all command vehicles, especially since the fielded ITN MUOS antennas have proven less effective. Unfortunately, the MUOS antenna fielded with the man-pack radio continues to prove



2/502nd IR ICE Data Flow

ineffective during combat operations. This is primarily due to its inability to maintain a stable signal in challenging environments such as wooded areas and lower ground. The antenna struggles to perform effectively because dense vegetation and terrain obstacles can obstruct the signal path, leading to service loss and unreliable communication. As a result, this limitation impacts our ability

to maintain consistent and dependable communication with higher headquarters and other units in these critical conditions.

One potential solution to improve signal reception is upgrading the fielded antennas with high gain or multi band models that are designed for challenging environments. Additionally, signal boosters or repeaters would also allow us to extend and amplify the MUOS signal in weak areas.

Conclusion

During JRTC Rotation 24-10, 2/502nd IR advanced its communication capabilities through rigorous testing and integration of new technologies. We effectively used Krauss-1000 drones to extend our communication range, though limitations in drone availability and operational conditions highlighted the need for increased deployment and training.

Our use of ICE demonstrated improvements in secure, real-time communication, but exposed issues with its reliance on Wi-Fi and poor audio settings. We also encountered performance issues with the MUOS man-pack antenna, particularly in obstructed environments.

Moving forward, we will address these challenges by seeking to deploy additional drones for expanded coverage, enhancing ICE's audio and connectivity features, and looking into the feasibility of upgrading our fielded antenna systems. By implementing these recommendations, we will further strengthen our operational effectiveness in communications and ensure that we find a way to win in the fiercest conditions.

Enhancing Leadership through Organizational Writing

Words as weapons

Capt. Mike Martinez

U.S. Army Command General Staff College

Military leaders must master communication and leadership skills because these abilities improve their performance and prepare their unit's future leaders. Field grade officers who master these skills become essential leaders who guarantee their unit's success while developing future leaders.

The structure of a military organization relies on field grade officers to serve as indispensable team members because they ensure that a unit runs efficiently by understanding the commander's priorities within the unit, they can quickly solve complex problems, and they can effectively manage a team that accomplish tasks to meet the needs of the commander's intent. As a field grade officer, it is essential to be knowledgeable in reading and writing to leverage those skills to communicate effectively and develop and increase junior leaders' performance.

Moreover, field grade officers can successfully develop a robust organization by creating a writing program within the unit because effective writing can solve complex organizational problems, it develops confident leaders, and it builds trust that enhances communication, ensuring all team members are aligned with the unit's vision.

Solving complex organizational problems is possible with an effective writing program by articulating risks and providing a solution that minimizes the resources needed to solve the issue. An organization's power to influence outside the chain of command is valuable because senior leaders can prioritize that unit and allocate the necessary resources to solve problems.

Effective writing is a technique for influencing senior leaders. Writing a one-page information paper on a problem set enables senior leaders to digest the information quickly and decide what resources are needed to solve that problem. Ault and Kem (2019, p.109-110) emphasized that the ability to write clearly and concisely in proper English is instrumental in defining and solving problems. Therefore, detailed and precise individual writing can help a unit gain the necessary resources or change policies to solve issues within a unit.

A writing program can help develop confident leaders within an organization to achieve the unit's vision. Leaders who do not understand how to write clearly and concisely can fail due to creating confusion among personnel, leading to mismanagement of time and resources. For example, if the battalion commander

tasks battalion S3 to make an operation order for a training event, and if that order is not clear on the task, it leads to the company commander wasting time in understanding the task and potentially wasting resources, which can delay the execution of the task.

Preventing mismanagement of time and resources within an organization requires leaders

to take the time to develop and execute leadership development for junior leaders, such as writing programs to build junior leaders into influential team members within an organization. A leader development program assists in transforming Soldiers and Army civilians into experienced and confident leaders who can lead teams and organizations effectively. Thorne (2017, p.1) explains that the leader development process is intentional, ongoing, incremental, and anchored in Army Values.

Building an effective writing program requires the organizational leader to assess the specific writing needs and objectives of the junior leaders within the unit to ensure relevance and applicability. The next step is to design a structured curriculum. It should include real-world scenarios such as publishing an article or practicing writing executive summaries that can help junior leaders understand the impacts of effective communication through writing. It can also help those leaders learn how to synthesize a lot of information into one paragraph early in their careers.

Effective writing builds credibility and trust within an organization that can help solve complex problems. Building credibility and trust requires creating a positive climate where leaders can allow their team to feel valued and empowered. According to ADP 6-22 Army Leadership and the Profession (2019, p.6-68), leaders build trust and boost morale by engaging with their team members, communicating honestly, ensuring fair treatment, and acknowledging individual contributions and collaborative efforts. Through encouragement and



*Capt. Mike Martinez, U.S. Army
Command General Staff College*

trust, leaders can encourage subordinates to publish articles on lessons learned during training exercises or identify innovative materiel or non-materiel solutions that can address existing gaps for the entire Army. Publishing articles can share knowledge and demonstrate the organization's commitment to continuous improvement and collaboration. Furthermore, an organization well-known in the Army community encourages other units to provide recommendations to aid their success, whether in garrison or during real-time operations. This collaborative approach strengthens relationships and enhances overall effectiveness across the Army.

In conclusion, writing programs within a unit can help field grade officers successfully develop an efficient organization by solving complex issues, shaping

teams into confident leaders, and building trust that will align an organization with their goals.

Communicating through effective writing is essential to ensuring complex issues, such as gaining the proper resources, are resolved. Additionally, a writing leader development program can help junior leaders become effective writers and critical team members by teaching them to take a lot of information and provide the bottom line upfront for a commander or senior leader. Effective writing can establish credibility within a team by developing information papers highlighting the problem and solutions and publishing articles focusing on lessons learned and new materiel or non-materiel solutions. Overall, effective writing ensures there is a shared understanding across the organization that leads to the mission's success within the unit.

Bio

Capt. Mike J. Martinez is a signal officer currently assigned as a student at U.S Army Command General Staff College at Fort Leavenworth, Kansas. Martinez earned a Master of Science in Information Technology Management with a concentration in Information Assurance and Cybersecurity Management, and a Bachelor of Liberal Arts in Criminal Justice from the University of Texas at El Paso. Notable assignments include capability developer within Army Future Command, a fellow from the Training with Industry program with Verizon, and a battalion S6 within 502nd Military Police Battalion (Criminal Investigations Division).

References

- Ault, Robert T., and Jack D. Kem. "Where Field Grade Officers Get Their Power." (March-April 2019): 108–16. Accessed July 23, 2024.
<http://www.armyupress.army.mil/Portals/7/military-review/Archives/English/MA-2019/Ault-Kem-Field-Grade.pdf>.
- Headquarters, Department of the Army (HQDA). Army Leadership and the Profession. Army Doctrine Publication (ADP) 6-22. Washington DC: Department of the Army, 2019.
https://rdl.train.army.mil/catalog-ws/view/100.ATSC/72D4C9DC-B1F1-45F7-8BB0-148CBA9AF247-1428690957971/adp6_22.pdf
- Thorne, Colin B. "Improving Junior Infantry Officer Leader Development and Performance." *Master of Military Art and Science* (June 2017): 224



'Lion' Brigade Takes New Approach to Training

Change is needed

Lt. Col. Julie Leggett, Maj. Jonny Edmunds
35th Corps Signal Brigade

Training Circular (TC) 6-02.1 was published in July of 2019, coincidentally before the fielding of the first expeditionary signal battalion-enhanced (ESB-E). This latest version of the training circular included new "Signal Assessment Tables" (SATs) drawn from models of maneuver branch gunnery tables. Similar to tank and Bradley gunnery, the SATs escalated from individual, to crew, to section training, certification, and validation, including a total of seven tables.

When this TC was published, most signal elements still operated Warfighter Information Network-Tactical (WIN-T) Increment 1b or 2 assets, which included multiple four to eight-man teams that combined into sections responsible for providing services.

For example, under the WIN-T architecture, a Satellite Transportable Terminal (STT) or Phoenix (PHX) team is responsible for satellite transmissions, and a Joint Network Node (JNN) or Command Post Node (CPN) team is responsible for network services, which forced units to integrate separate nodal and transmissions teams to provide user services. In this case, section training was relevant and still applies to brigade combat teams, division signal companies, and S6/G6 staff sections that operate WIN-T equipment today. However, with the advent of ESB-Es, "section" training validation (tables V-VII) are no longer an appropriate model, given smaller Scalable Network Node (SNN) teams of network communication systems specialists (25H) that operate both the satellite terminal and network node. With the four-man SNN team, there are no longer separate STT teams and separate JNN/CPN network teams that would require validation together as a section. Therefore, training conducted simultaneously with multiple teams reduces the complexity for the SNN team, which would otherwise operate alone and unafraid.

Since the model has not yet formally changed, units often attempt to comply with concurrent team training to form sections. However, this "section training" resources the team with oversight and increased cognitive diversity they wouldn't typically have on site during missions.

The validation of eight or more Soldiers in a section formation would provide cognitive and experiential diversity in training that is not available on a real-world mission. Any training above a four-man team configuration will essentially make validation easier, especially when units interpret validation as lining up nodes in a

field together in a race to install.

For SNN teams, the real test comes as they experience complex challenges at the team level and technically troubleshoot and think critically, while isolated from other peers and leaders in their organization. This is the scenario we must replicate in training, where there is no available on-site assistance. SNN teams require a new approach to training, and it must be centered around the critical high-payoff tasks in ESB-Es: troop leading procedures (TLPs). Priority should focus on training, certifying, and validating the four-man SNN team as the unit of action and as an isolated element.

The training also requires teams to perform mounted navigation at night to link up with the supported unit, and then perform signal site selection while assuming enemy observation. Ultimately, this level of training will equip the SNN team to perform in real-world scenarios where they are attached to supported units without the comfort blanket of mid-grade leaders from their organization and company network operations (NETOPS) support on site. Advanced SATs will ready teams beyond the fundamentals, empower them to solve complex problems, gain confidence in operating independently, and ultimately produce expert Signaleers.

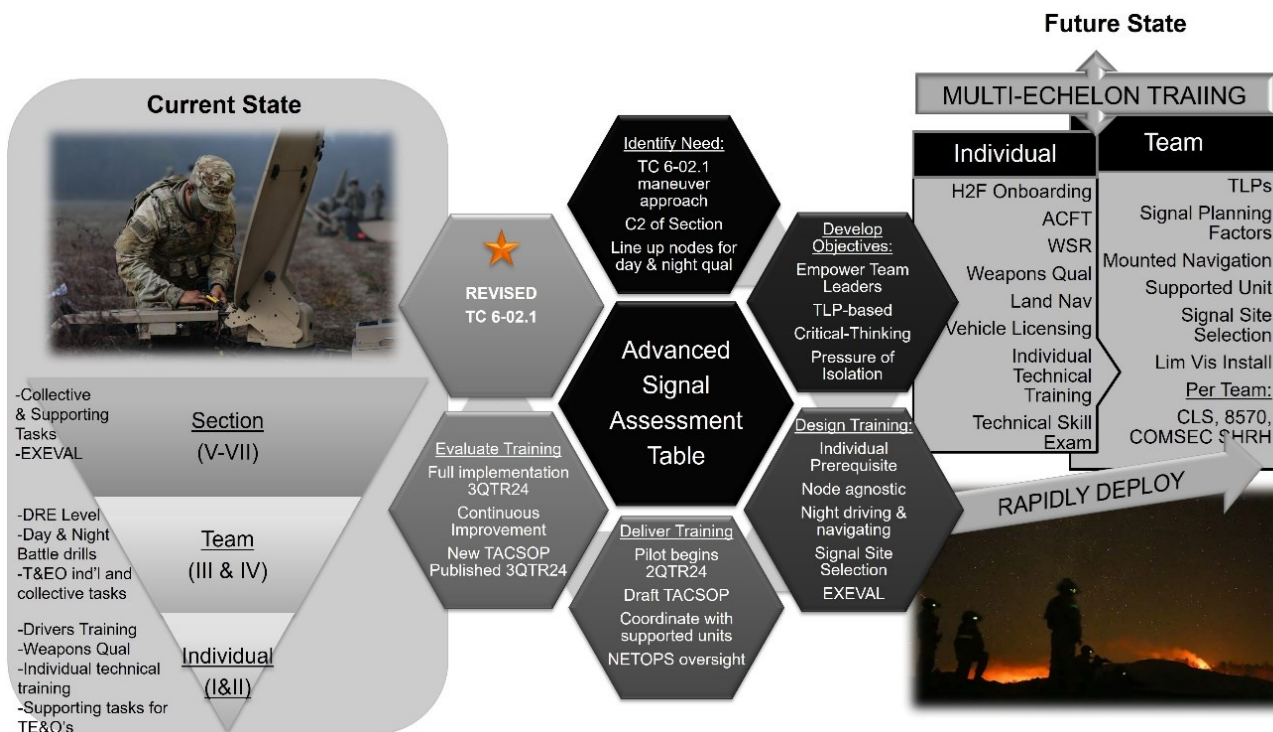
The graph on the next page depicts 35th CSB's approach to develop advanced SATs tailored to SNN teams and ESB-E formations. The "Future State" emphasizes the glidepath of individual warfighting tasks, technical skills, and collective tasks at the team level. Instead of the traditional seven gunnery tables, 35th's proposal features individual validation followed by qualification on an advanced SAT. This approach provides the opportunity for multi-echelon training that extends to the battalion and brigade levels, all designed to integrate within a rapid deployment timeline.

The advanced SAT is TLP-based, empowering team leaders with the critical thinking skills to receive a mission, make their own plan, reconnoiter, and then perform mounted navigation to link up with a notional or real supported unit. Once on the objective, teams are then required to think critically and solve problems as they are evaluated on signal site selection and equipment installation procedures. This new validation standard will increase competency and confidence at both the individual and team levels.

While this condensed but more challenging training solution appears to be working for teams in the 35th CSB, there needs to be broader change in the signal community. Without the ability to lock crews sternly on a training glidepath like Bradley or tank crews,

signal training often ends up being ad hoc and on-the-job-training, either partially validating teams or fully validating a partial team. Adopting a model with individual prerequisites prior to a one-time team validation gives Soldiers back their greatest resource of all: time. This additional time will allow them to approach training support missions and real-world operations with a fully certified team in-lieu of a seven-step certification process.

It is time for signal leaders to notice that change is needed, to include publishing a communally reviewed update to TC 6-02.1 that acknowledges the ESB-E equipment set. Along with updating the TC, revised SATs need to be introduced across all signal professional military education to ensure that Soldiers arriving to all tactical signal formations understand the processes and standards for training and evaluating team readiness.



Bios

Lt. Col. Julie Leggett is the brigade S3 for 35th Corps Signal Brigade. Her previous assignments include battalion executive officer and Network Operations officer-in-charge at the 112th Signal Battalion (Special Operations) (Airborne), tactical officer at the United States Military Academy at West Point, and brigade S6 and signal company commander for 3rd Armored Brigade Combat Team, 1st Cavalry Division.

Maj. Jonny Edmunds is the executive officer for 63rd Expeditionary Signal Battalion-Enhanced at Fort Stewart, Georgia. His most recent previous assignments include student at Command and General Staff College, small group leader/instructor at the Signal Captains Career Course, and company commander at 44th Expeditionary Signal Battalion.



A Look at the Impact of ITN Equipment in the LSB

Transformation in Contact

1st Lt. Katie Szewczyk
U.S. Army Signal School

In Military Review's article, Continuous Transformation, Gen. James E. Rainey states, "As technology makes warfare more complex, the difference between skilled and unskilled armies becomes more pronounced. The real impact of technology is that it will increase punishment of unskilled commanders and untrained formations. The consequences of failure to adapt will be severe" (Rainey, 2024, p.11).

The 225th Light Support Battalion (LSB) is doing Transformation in Contact (TiC) in the near-term, which will inform deliberate transformation and concept-driven transformation in the long-term. This article will highlight the implementation and impact of fielding Integrated Tactical Network (ITN) and commercial off-the-shelf (COTS) equipment in the LSB, within a light brigade combat team (LBCT) prototype.

It is crucial to develop strategies and foster a culture of innovation to ensure 225th LSB remains adaptable and connected. The 225th tried and tested its new "Light" concept with mission command (MC) and command and control (C2) during real-world exercises Nakoa Diamond 24-04, Nakoa Fleek 24-04, and the Joint Pacific Multi-Readiness Center (JPMRC) 25-01 international exercise on the Island of Oahu.

Background of Brigade Support Battalions

Brigade support battalions (BSBs) are the backbone of logistical, medical, and maintenance support. They enable brigade combat team (BCT) commanders to maintain freedom of action, operational reach, and prolonged endurance. TiC transformed 225th BSB to 225th LSB. The drive to be lighter, faster, and more dispersed to support the LBCT altered the communication system requirements for the organization. The LSB, formerly task organized as a BSB, historically operated collocated in a brigade support area (BSA). The shortened kill chain, as seen in Ukraine with unmanned aerial system attacks, as well as the LSB transformation, requires LSB commanders to transform their C2 structure to be lighter and more dispersed.

The 225th LSB has prototyped a 'light logistic cluster' concept, disaggregating the BSA into multiple C2 nodes to reduce their physical and spectral footprint. The cluster concept forces company and battalion headquarters to execute distributed MC by splitting into three separate light logistic clusters. Company capabilities are task organized to support maneuver battalions based on their requirements. The general support company's (GSC) combat logistic platoons (CLPs) are under the operational control (OPCON) of the maneuver

task forces forward, who move autonomously from the LSB. This disbursement requires an increased reliance on communication capabilities in accordance with the Primary, Alternate, Contingency, and Emergency (PACE) plan to effectively communicate with the LSB, as well

as the maneuver task forces they support. Not only does this require modernized equipment, but it also requires the battalion (BN) S6 team to diligently review equipment allocation as requirements change. The BN S6 team must continually monitor each BN C2 node, each CLP, and simultaneously support every company command post (CP) to ensure the LSB is fully operational. Once clustered and the S6 team is split to support each cluster, these requirements become increasingly challenging as the team is stretched across additional light logistic clusters.

Implementation of ITN

ITN secures its place with the goal of having multiple means to communicate in case one link goes down. These multi-channel radios provide satellite communication (SATCOM), Mobile Ad-hoc Network (MANET), and resilient waveforms, all on one single radio platform, thereby providing the warfighter with multiple options. ITN provides a simplified, independent, and mobile network solution that is available down to the small unit dismounted leader, facilitating MC, situational awareness, and accurate position location information (PLI) air to ground. ITN includes several varieties of high-capacity, line-of-sight tactical radios, including both single channel radios and dual channel leader and manpack radios. It includes voice and data gateways, tactical cross domain solutions, variable height antennas, and small satellite terminals with capabilities that enable transmission between different formats and vehicle-based kits. ITN radios deliver applications through the Nett Warrior end-user device, Android Tactical Assault Kit (ATAK), to consolidate the air, ground, and fires into a single common operating picture. ITN technologies enable



*1st Lt. Katie Szewczyk,
U.S. Army Signal School*

communications through sensitive but unclassified-encrypted (SBU-E) enclave, providing a network that is more secure and resilient by offering units multiple network communication pathways in contested or congested communications environments.

The LSB's current Modified Table of Organization and Equipment (MTOE) is built around a centralized concept for a legacy infantry brigade combat team (IBCT) and does not support the light, fast, and disaggregated LBCT/LSB. The introduction of ITN provided modernized communication capabilities but also posed challenges in ensuring interoperability with legacy systems. With the desire to be light and mobile, legacy at the halt systems are no longer effective in 2LBCT (Prototype). We have shelved the Tactical Communications Node-Lite (TCN-L) and Satellite Transportable Terminal (STT) and integrated Starshield, Mobile Broadcast Kits, and Scalable Class of Unified Terminals (SCOUT) to provide end-users with a reliable and mobile non-classified internet protocol router (NIPR) connection. Each user accesses the NIPR network via a virtual private network (VPN). While legacy systems such as Advanced SINGARS System Improvement Programs (ASIPs) and Army Navy / Portable Radio Communications (AN/PRC-148) Multiband Inter/Intra Team Radios (MBITIRs) still have their place within platoons to assist the fielding gap of ITN equipment, ITN has solidified its place and relevance at the command levels and CPs. Understanding the new equipment, implementing it into the organization, and adapting to it are the exact goals of an 'Always Ready' unit that is transforming in contact.

Legacy systems required our CPs to spend a significant amount of time to setup a communication package. For example, the TCN-L package requires two vehicles with trailers, generators that need to be grounded, and power generation prior to any network setup. The mobile WiFi (MiFi) pucks can be pre-charged and provide on the move NIPR capabilities prior to the establishment of a CP. Alternately, the mobile broadband kit (MBK) and Starshield can be easily powered through solar generators or tactical vehicles through a power inverter kit. To fully setup a CP with a TCN-L, at least four Soldiers are required; with new ITN equipment, a single Soldier can setup an entire CP with three radios, three external antennas, one laptop, and a MBK or Starshield. With a significantly smaller and more user-friendly communication package, the S6 team can meet the disaggregated intent and split our shop throughout the clusters for technical support.

How the LSB Integrates these Systems

Voice communications have been, and should always be, the bedrock of tactical communications. They must be seamless, BCT-wide, and at minimum

down to the team level. The ability to communicate in real time, with full mobility and regardless of terrain, is critical.

While the intent of the ITN fielding was to phase out legacy equipment through the implementation of ITN, the LSB still requires legacy systems to fill gaps across its formations to ensure seamless communication. When 2nd LBCT(P) received their initial ITN fielding, we utilized contractor support for vehicle kit configurations; contractors assisted with adapting the older components to work with new software and phased out some equipment entirely.

Mounted Mission Command-Software (MMC-S) is a software-only upgrade to Joint Battle Command-Platform (JBC-P), providing digital C2 and situational awareness at all echelons to the mounted, dismounted, and CP domains.

MMC-S provides all movement and maneuver applications and Warfighting Functions, including the integrated common operational picture (COP), Intel, Fires, Engineering, Medical, Logistics and several other third-party applications. It receives over-the-air updates for maps, software, security patches, and network keys. MMC-S utilizes the existing JBC-P components, requiring only a new software update to run. MMC crosses domains with the Tactical Assault Kit (TAK) network for instant message (IM) free text chat and PLI to monitor troop and convoy movement. The TAK network provides real-time PLI based off GPS locations.

Currently, we run our TAK software off MiFi pucks and mobile broadcast kits. The Windows Tactical Assault Kit (WinTAK) Nett Mission Planner (NMP) has been designed and developed to run on the Windows operating systems in both tactical and C2 environments. The ATAK software application runs on a Samsung end-user device, which is mounted to the individual user's Improved Outer Tactical Vest (IOTV). ATAK is an extensible, collaboration system that provides situational awareness by integrating imagery, maps, and information overlays over a tactical meshed network. WinTAK promotes information flow and communication from the tactical environment to command enterprise locations. Both TAKs share the same common operating picture, can send data packages, and cross domain.

The MBK, MiFi, and Starshield package have begun to replace the LSB's tactical network vehicles like the TCN-L and STT. This was a seamless transition for the LSB, especially with the NIPR Windows 11 upgrade providing every user a VPN through Cisco AnyConnect, enabling wireless NIPR connectivity anywhere. These wireless capabilities allow our users to connect to the NIPR network through WiFi (Cellular 4G/5G) on the MBK or MiFi, as well as WiFi via satellite on the Starshield. This transition

provided a much faster setup and on-the-move capability for the LSB.

The fight directly impacts the effectiveness and longevity of combat operations. Given the LSB's pivotal role, reliable communication becomes more than just a matter of tactical advantage; it becomes the lifeblood of the organization. To increase survivability, 225th LSB disaggregates into three clusters to shrink our physical and spectral footprint. This forces the S6 to reorganize communication asset distribution to ensure each BN node can effectively communicate with adjacent units. Each node must be able to execute seamless external and internal communications.

The introduction of ITN has created a robust network with a coherent communication groundwork to support these nodes. Disaggregating into these separate clusters and utilizing fewer radios and network assets to run a CP through ITN has majorly lowered our spectral footprint on the battlefield.

Currently, the LSB utilizes the AN/PRC-158 Harris Radio to dual channel frequency modulation (FM), TSM, and primarily Mobile User Objective System (MUOS). This radio is a modular dual channel radio, capable of running a wide variety of software communications architecture through narrowband and wideband waveforms. These waveforms include: MUOS, TSM, FM, ultra-high frequency (UHF), UHF SATCOM, integrated waveform (IW), Soldier Radio Waveform (SRW), and a robust tactical network. The LSB uses this radio in the main company and cluster CPs to talk beyond line-of-sight (BLOS).

Through the AN/PRC-158 and the AN/PRC-163, we utilize the TSM waveform which provides a self-forming, self-healing, and infrastructure-less MANET. It is designed from the ground up to support simultaneous voice, data, video, and position location information in a single tactical network. While using TSM, every radio is a receiver, transmitter, and relay; there are no restrictions to the number of radios that can be in a mesh MANET. TSM has a wide network coverage (depending on terrain and hops), and the network

will continually adapt in real-time as Soldiers move across the battle space, fall out of the mesh, or create a new hop between systems. 2nd LBCT(P) utilized VHAs and a K1000 drone with a repeater radio attached to extend this mesh during our exercises.

Each cluster is allocated three AN/PRC-158, one AN/PRC-160, one WinTAK, one Starshield, and one MBK at a minimum. One AN/PRC-158 radio supports external channels to other CPs across the island, the second radio supports internal channels within the cluster, and the third monitors and reports to higher echelons. Internal to each CP, we use the FM and TSM waveform; external to each CP, we use BLOS MUOS and FM with extensions or retransmission teams in place to relay FM communications.

The WinTAK at each CP provides the data IM feature to all leaders across the formation with ATAK. The MBK at each CP provides end-users a NIPR connection via VPN; this allows a staff that is dispersed across three locations to simultaneously participate in creating products and supporting military decision-making process (MDMP). The main cluster CP utilizes the Starshield and an additional radio to monitor and report on the brigade nets.

The Way Forward

As the Army adapts and evolves its network to reduce complexity and tailor capabilities at each echelon, it relies on persistent experimentation, fielding, and Soldier feedback to refine network operational concepts.

Driven by TiC, 225th LSB is experimenting with new ideas and innovative efforts. Overall, the Army must prioritize communications modernization across the entire formation, or it risks sustainment formations with significant communication gaps. Sustainment formations require ITN in their formations to stay integrated with their maneuver counterparts. ITN has enabled 225th LSB to demonstrate C2 on the move. Integrating ITN into units is paramount to allowing units to tailor capabilities based on their needs and continue the desired transformation.

Bio

1st Lt. Katie Szewczyk commissioned into the Signal Corps in 2021 after graduating from Youngstown State University, Ohio, with an undergraduate degree in English. She has supported or led signal domain operations from the tactical to the strategic level. Her previous assignment was in the 25th Infantry Division, 2nd Light Brigade Combat Team (Prototype), 225th Light Support Battalion as the S6 OIC. She is currently a student in the Signal Captains Career Course at Fort Eisenhower, Georgia.

Reference

Marcus, James. E. (2024). *Continuous Transformation*. Military Review - Army University Press.
<https://www.armyupress.army.mil/Portals/7/military-review/Archives/English/September-October-2024/Continuous-Transformation/Continuous-Transformation-UA.pdf>

DEO Workshops Transform Visions into Solutions

Improving readiness

Sgt. Malcolm Pope

2nd Theater Signal Brigade



Sgt. Christian Van De Kamp, data officer, 2nd TSB, writes notes during a software development workshop Nov. 22, 2024. (Photo by Candy Knight, 2nd TSB)

The 2nd Theater Signal Brigade's (TSB) Data Engineering Office's (DEO) mission is to identify and implement innovative approaches to enhance one of the brigade's essential tasks: data collection and strategic usage. A significant aspect of the DEO is Software Development. This team is at the forefront of the Army's efforts to create automated, data-driven processes and operations aimed at improving readiness through predictive analysis.

The team is currently developing applications for the brigade's Resource Management Directorate's Invoice Project. The Invoice Project revolves around its configuration, accounting, integrity, reports, and security application. The Directorate's budget team expressed concerns and identified the need to transfer all financial responsibilities from CAIRS to a new platform to reduce costs and enhance overall performance. DEO members, along with Finance and Procurement team members, came together to accomplish this task. The DEO's Software Development team aims for an application production date of May 2025. Implementing the application will save 2nd TSB an estimated \$1.2 million annually.

The DEO hosts a Power Platform Workshop each Friday to aid with application and software development. The workshop provides a forum for data officers, software engineers, and developers within the European Theatre to collaborate and gain better

insight into how they can use the Microsoft A365 Power Platform tools in their daily operations. The workshop allows attendees to gain experience and enhance their skills by testing 'Power Tools' such as Power BI, Power Apps, and Power Automate as part of these applications' continuous development and enhancement. Each application enhances the users' data collection and analysis abilities.

Power Apps: Used to create applications for various processes and will serve as a foundation for the entire project. With the Invoice Project, Power Apps improve upon the existing CAIRS application and create a more responsive design that is more appealing and encourages an improved user experience.

Power Automate: Used to automate and streamline repetitive tasks to save time and optimize performance, reduce user error and improve employee satisfaction.

Power BI: Provides the opportunity to seamlessly connect to various data sources, allowing the Resource Management team to fully integrate all sources required to generate the most accurate reports. Power BI ensures real-time insights are accessible, with interactive visuals promoting improved user experience.

The 2nd TSB continues to seek out innovative initiatives that enable the brigade to deliver integrated and interoperable theater communications and cyber capabilities to enable decision dominance across all levels and phases of war in support of combat forces and mission partners in Europe and Africa.



The 2nd TSB's DEO team poses for a photo during a software development workshop. (Photo by Candy Knight, 2nd TSB)

Making Decisions through Data Overload

It begins with commanders

Maj. Christopher M. Dirks

1st Armored Brigade Combat Team

An armored battalion commander is ordered to destroy an enemy armored company near a pass to enable brigade maneuver. When the commander arrives at the objective, there are reports over frequency modulation (FM) that the main effort is in direct contact with a platoon of tanks. Then, a report comes from battalion scouts observing a platoon of enemy engineer assets moving toward the pass. The commander's S2 reports a heavy armored company maneuvering north of the battalion's location. At the same time, the battalion observes drone footage from One System[®] Remote Video Terminal (OSRVT[™]) showing an anti-tank infantry platoon south of the pass. The electronic warfare platoon leader is reporting over the Joint Battle Command Post (JBCP) that a brigade-sized electronic is identified 20 kilometers away. Tactical Airspace Integration System (TAIS) is shown on the current operations floor, displaying multiple rotatory and fixed air assets in the air. Simultaneously, the fires support officer (FSO) states that a battery received counterfire and is recommending a change to the High-Priority Target List (HPTL).

In today's large-scale combat operations (LSCO) environment, commanders, like in the scenario above, receive more data at a condensed time than ever before. The average person consumes 74 gigabytes (GB) of data daily, and this number is growing by 5% per year (Heim and Keil, 2017). In context, the amount of data used to send astronauts to the moon in 1969 was 0.000076GBs, or 4 kilobytes of random-access memory and 72 KBs of read-only memory (Kurinec, 2023, p. 9). The average data consumption in today's society typically focuses on one streaming system at a time rather than multiple at once (TikTok, YouTube, etc.). Commanders on the modern battlefield do not have that luxury. They will receive reports and information from various sources simultaneously, leading to stalled decision-making due to either data overload or missing key pieces of data due to data saturation.

How can commanders make rapid and accurate decisions in such an environment? The solution to this is three-fold, with two already in Army doctrine.

First, commanders owe their staff a list of essential information, usually published in a Commander's Critical Information Requirement (CCIR), which feeds into the Decision Support Matrix (DSM).

Second, staff officers need to filter data into usable information and, using knowledge to understand what

is important, present this information to the commander to make decisions.

Lastly, the U.S. Army must utilize artificial intelligence (AI) to help limit human error and convert data to information faster. With these three supporting efforts, commanders can focus on the pieces of information they require to make accurate decisions.

As with all operations, the solution to solve data overload starts with commanders.

DSM and CCIR

Without filters to screen out irrelevant information, commanders can quickly become overwhelmed by the amount of data they consume. Commanders dictate the data they wish to receive by determining what decisions they want to make in their DSM. The DSM outlines decisions they need to make based on future events, decision points, and friendly actions (ADP 5-0, 2019, p. 2-6). A prime example is the commander's decision to commit reserve forces. From the DSM, CCIR is designated from likely information needed to make said decisions.

The DSM and CCIR are not new concepts, and they are usually created and approved after war-gaming during the Military Decision-Making Process (MDMP). The issue is that the DSM and CCIR are rarely updated during operations. An example is during Warfighter Exercise (WFX) 24-5 when "several challenges related to tracking the status of CCIRs and aligning them to the scheme of maneuver ... The sheer number of CCIRs resulted in staff desynchronization and a loss of collection focus due to unmanaged data" (Warfighter 24-25 Report, 2024).

Updating and validating CCIRs should occur minimally daily or as new decisions are required. This also means commanders must validate and update their DSM throughout the operation. Updating CCIRs and DSMs is as, if not more, important than establishing them during MDMP. Focusing on minimal CCIRs allows the staff to identify gold nuggets in the stream of data to help commanders make the correct decision. With the updated guidance on the information required to make new decisions, the staff can start filtering the data they receive.

Data versus Information

It is essential to understand the distinction between data and information. Data is factual material used for discussion or calculation (Webster, 2025). Information is knowledge obtained from the study, usually derived from previously gained data (Webster, 2025).

Staff officers produce information by filtering data and, with their knowledge and experience, provide the

The KM Cognitive Pyramid

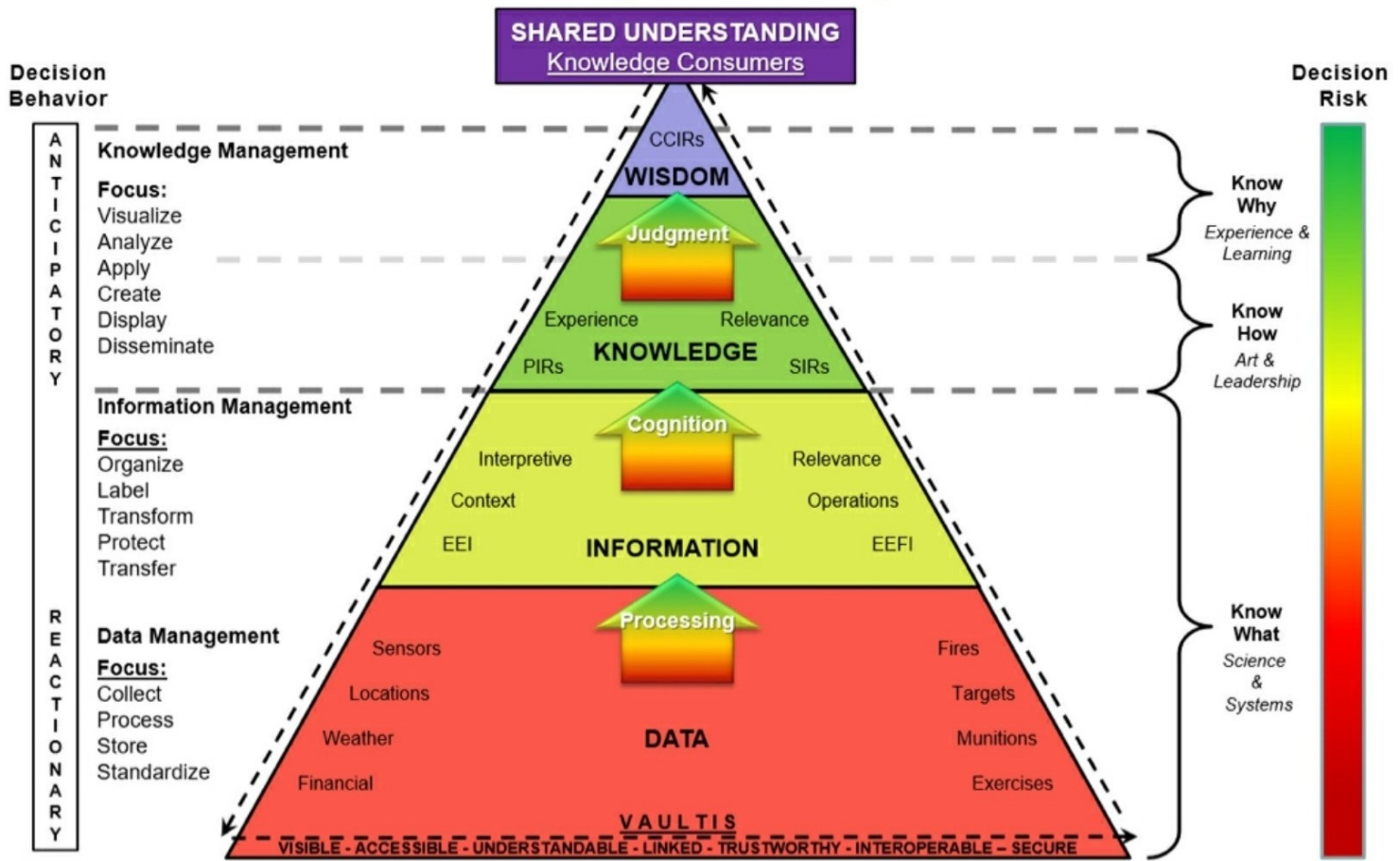


Figure of the Knowledge Management Cognitive Pyramid. (Matthew Viel)

information to commanders to enable decision-making (see Figure). With their wisdom and insight, they will take this information and make decisions.

Commanders have little use for data, as it lacks analysis and structure. Army staff officers must endeavor to provide commanders with information that has been thoroughly analyzed and vetted.

An example of briefing data is the S6 stating the status of retransmission, showing a line-of-site (LOS) slide, and detailing why the 'C' in the Primary, Alternate, Contingency, and Emergency (PACE) plan is down. While these are facts, little analysis has been conducted to provide commanders with quantitative information to make decisions. Instead, the S6 should identify why a loss of a key terrain will hinder lines of communication, leading to commanders changing their CCIR. Each warfighting function (Wff) has information the commander needs to know to succeed on the battlefield.

Staff officers must use CCIR to focus on the data that will provide the information required to make decisions. However, even the most competent staff officers make mistakes and either miss a critical piece of information or flood the commander with information that is not required. To mitigate this, using AI

increase the probability that commanders always have the necessary information available to make decisions.

AI Analysis in the Fight

AI systems have already been established at a minimal scale to help staff officers quickly provide information to commanders. An example is Camo-GPT, which can tell S4 how many kilometers a tank can maneuver if followed by a full M978A4. The issue is that Current Mission Command Information Systems (MCIS) do not yet harness modern AI systems' full power and benefits.

AI can help staff officers who are tired, cold, and hungry make fewer mistakes when pulling information from data. We can see examples of this in the game of chess. Stockfish is an AI that helps players plan future moves. The best chess grandmasters in the world can only calculate up to three to four moves ahead. Stockfish can calculate up to 15. That is a difference of 70 trillion possible moves that AI can calculate compared to the best players in the world (Allis, 1994). Each Wff can benefit from using AI to help analysis data.

S6 can use AI to help update the PACE plan by pulling friendly locations off the common operating picture (COP) and deconflicting with the enemy situational template (SITTEMP). S2 and S3 can use AI to

conduct better battlefield simulations allowing AI to calculate causalities in the Correlation of Forces Model, allowing a more accurate assessment during wargaming. Commanders can use AI to provide predictive actions and information required to win on the battlefield. Additionally, AI has been used to respond to tendencies and provide recommendations based on prior actions (Carli, 2011, p. 26-35). AI may offer aggressive recommendations to commanders who tend to be more aggressive and vice versa. AI can also recommend changes to the DSM and CCIR or make real-time recommendations on when to commit to the reserve.

Commanders will always have the final approval, but AI can help staff officers and commanders provide recommendations while making fewer mistakes.

In modern-day LSCO, commanders will be overloaded with data and require pertinent information to make critical decisions to win on the battlefield. The Army can achieve this through three methods: commanders provide a descriptive and updated DSM, which feeds into a defined CCIR; ensure staff can filter data into usable information and use their knowledge to provide the commander with insight to make decisions; and lastly, the next generation of AI should be integrated to support staff and commanders in prioritizing and minimizing human error when providing information to commanders. LSCO will be inundated with data, both relevant and irrelevant. We must be prepared to obtain the information needed to make decisions and win against our adversaries.

Bio

Maj. Christopher M. Dirks is currently the brigade S6 for 1st Armored Brigade Combat Team, 1st Armored Division, at Fort Bliss, Texas. He holds a Bachelor of Arts in history from Kansas State University, a Master of Arts in military history from Norwich University, and a Master of Arts in operational studies from Command and General Staff College. During his career, Dirks has served with 1st Infantry Division, 1st Cavalry Division, 11th Signal Brigade, 89th Military Police Brigade, and 1st Armored Division.

References

- Matthew.viel, CC BY-SA 4.0 <<https://creativecommons.org/licenses/by-sa/4.0/>>, via Wikimedia Commons
- D. M. D. Carli, F. Bevilacqua, C. Tadeu Pozzer and M. C. 'Ornellas, "A Survey of Procedural Content Generation Techniques Suitable to Game Development," *2011 Brazilian Symposium on Games and Digital Entertainment*, Salvador, Brazil, 2011, pp. 26-35.
- Sabine Heim and Andreas Keil "Too Much Information, Too Little Time: How the Brain Separates Important from Unimportant Things in Our Fast-Paced Media World." *Young Minds*. (2017)
- Santosh K. Kurinec, Mark Indovina, Karl McNulty, Matthew Seitz "Recreating History: Making the Chip that went on the Moon in 1969 on Apollo 11". *Rochester Institute of Technology*. p. 9. Retrieved Aug. 29, 2023.
- U.S. Army Center for Army Lessons Learned, U.S. Army "Warfighter 24-5 Report." WFX 24-5 occurred July 31-Aug. 10. 2024.
- U.S. Army, "The Operations Process", ADP 5-0, July 2019, 2-6
- Victor Allis, *Searching for Solutions in Games and Artificial Intelligence*. Maastricht, The Netherlands: Ph.D. Thesis, University of Limburg. (1994) ISBN 978-90-900748-8-7.
- Webster Dictionary, MAR 2025, <https://www.merriam-webster.com/dictionary/data>
- Webster Dictionary, MAR 2025, <https://www.merriam-webster.com/dictionary/information>

Data Training for all Echelons is Worth the Investment

Drowning in data

Cpl. Mitchell Rasmussen

555th Engineer Brigade

In 2020, International Business Machines (IBM) estimated that the world generated an immense 2.5 exabytes of data daily (IBM). To visualize this, consider that a modern CD has a diameter of 4.72 inches and a thickness of 0.047 inches, with a capacity of 700 megabytes. The interior dimensions of a standard 20-foot shipping container are 19 feet and 4 inches long; 7 feet and 9 inches wide; and 7 feet and 10 inches high (Stoltz). A stack of CDs measuring 7 feet, 10 inches high would contain 2,000 CDs, totaling only 1.4 terabytes. One 20-foot shipping container could hold 931 such stacks, amounting to around 1.2 petabytes. To match the daily data generation of 2020, one would need 2,134 shipping containers or 3.9 billion CDs. 2,134 shipping containers is enough to cover 5.9 football fields. Annually, that number soars to 778,910 containers, 1.4 trillion CDs, or 2,153.5 football fields.

A leading cybersecurity company, Imperva, comments on this massive wave of data, revealing that 49.6% of 2023 internet traffic came from bots; more than half of which were built for malicious intent (Smith). Global network Cloudflare reports a daily average of over 25 million HTTP requests per second, with 57% of their total traffic coming from API interactions (Cloudflare). This massive and increasingly malicious flow of data directly fuels the cybersecurity challenges of the Army. Furthermore, managing data has become challenging due to the growing volume of cyber threats and inefficient training. Addressing this requires improved education and more effective use of available tools. This is not a new issue.

As early as 2004, Professors Martin Eppler and Jeanne Mengis from Switzerland introduced the concept of information overload on an interdisciplinary basis (Eppler & Mengis). Even though it was a literature review, the paper showed that this information overload was a multifaceted problem not just limited to specific areas like accounting. Back in 2004, American internet users were still switching from dial-up to broadband, so even archaic data flows could be overwhelming. Now, for obvious security reasons, the U.S. military does not publish its data footprint size. However, signs indicate that the military also struggles to manage the current data flow.

In 2017, U.S. Navy Commander J. Lee Bennett called for modern software improvements to help Sailors avoid information fatigue syndrome caused by the vast amount of maintenance-related data (Bennett).

In his 2024 article “The Coming Military AI Revolution,” Col. Josh Glonek explains that artificial intelligence (AI) is the only way to handle the data, as the human mind cannot process and analyze such immense volumes (Glonek). The Army has already proven success of AI through use of Army Vantage, the data platform of the Army Data and Analytics and Platform (ARDAP). In 2020, Army Vantage helped contracting officers recoup over a billion dollars in unsettled funding commitments. One can imagine what AI could do to a backlog of work orders. However, relying solely on technology is not enough. Lt. Col. Brian Forester proposes that while future success will depend on AI-driven analytics, leaders must avoid overanalyzing and instead focus on cultivating effective data analytic knowledge (Forester). One of the better indicators of data analytic knowledge is the use of Microsoft Excel.

The Army often misuses Microsoft Excel, treating it as a one-size-fits-all solution without fully leveraging its capabilities. In the 2024 Fall/Winter edition of the Army Communicator, Maj. Donald Ingham and Capt. Noe Lorona criticized the Army's lack of innovation, attributing this partially to the failure to fully utilize available tools, including Excel (Ingham & Lorona). Excel is mentioned as a “powerful tool for organizing, analyzing, and automating data” (Ingham & Lorona). However, having personnel trained on the software may not be in the picture.

A research paper written by Jonathan Pemberton and Andrew Robson in 1995 found that, in a sample of 57 office staff personnel, roughly 50% had only basic spreadsheet skills, 25% lacked any skills, and the remaining 25% had advanced but not expert-level skills (Pemberton & Robson). When 75% of an office staff lacks the skills to properly utilize Excel, mistakes are bound to happen. From 1990 to the present, numerous companies have lost hundreds to billions of dollars due to Excel user errors.

On the other hand, using Excel beyond its limitations also hinders operations. For instance, the Army Digital Training Management System can export mandatory training summaries as Excel files, which can be reformatted into pivot tables. However, creating a unit training tracker database remains a laborious task involving multiple Excel files. In that case, having the option to export the data as either an Access or Azure database file would be more suitable for the task. The 93rd Signal Brigade solved this problem by developing the Training Tool Tracker

</

Developed by 93rd Signal Brigade, the Training Tool Tracker Application enables training managers to check training records efficiently. (U.S. Army photo)

Application to help their training manager track training more efficiently. This tool uses Microsoft Power BI and SharePoint Online to provide both an overview of unit and individual training status.

Enlisted personnel need more opportunities to develop data science skills, like the examples above, to better support their leaders. Officers have numerous opportunities to acquire data science skills through various programs and certifications. For example, the Army Talent Management program allows STEM degree holders to commission as network or information systems engineers and work as data scientists.

Additionally, the functional area (FA) 49 Operation Research/System Analysis (ORSA) is available to officers with graduate STEM degrees or those who have completed the ORSA-Military Application Course (Henry & Smith).

In contrast, enlisted personnel have fewer opportunities for official training in data science. The closest option is the Knowledge Management Qualification Course (KMQC), which is limited to battle staff personnel and focuses on managing organizational knowledge rather than data analysis. Apart from the KMQC, enlisted personnel are left to self-study and earn certifications for promotion points and better productivity. However, structured training programs are essential for developing comprehensive data science skills. Without adequate training, NCOs struggle to support their leaders effectively, ensuring they have "maximum time to accomplish their duties" (NCO Creed).

The 1st Stryker Brigade Combat Team Raider Analytics, Innovation, and Data (1SBCT-RAID) team is open to individuals with relevant talents in data analysis. However, retaining these specialists is challenging, as they often find the private sector more

appealing than military life; a recurrent issue that started as far back as the Industrial Revolution. The Army must invest in more training opportunities for enlisted personnel to develop data science skills, ensuring they can effectively support their leaders.

Implementing any solution will be challenging. The simplest approach is to exempt a selection of data analytics-related certifications from the Certification Assistance (CA) three-certification-per-10-year limit. This way, enlisted personnel will have more incentive to pursue data analytics proficiency without

sacrificing a certification slot for career-advancing certifications like the CompTIA trifecta of A+, Network+, and Security+. Microsoft already offers a robust data science program with diverse pathways.

Additionally, Microsoft Excel training could be included. However, once these certifications are earned, how will the new skills be utilized? For instance, if a network communication systems specialist (25H) earns the Azure Data Scientist Associate certification, they will be equipped to build machine learning models on Azure. Yet, the 25H career progression remains unchanged. The specialist will eventually become a sergeant with extra knowledge that might be useful in the training room but largely unnecessary otherwise. The specialist is left to manage these skills independently. To truly incentivize data training, there needs to be a way to recognize these efforts, such as creating a data additional skill identifier (ASI). This ensures that when relevant job roles open up, there are already trained personnel ready to fill them.

Alternatively, creating a data-focused military occupation specialty (MOS) presents a more complex solution. This new MOS could be developed from scratch or adapted from existing ones. For instance, the Military Intelligence (MI) field already has analysts specializing in specific areas. One of these specialties could be data analytics. The MI field could model its analyst training after the prime power production specialist (12P) training, where all 12Ps receive the same fundamental electrical education before branching into specialties. Similarly, MI analysts could undergo basic data analytics training before moving on to different specialties.

Another field already has data analytics built into their job responsibilities: human resources specialists (42A). Using the Integrated Personnel and Pay System

-Army, 42As can generate human resources (HR) metrics with Microsoft BI. However, this is a gross underutilization of their potential as data analysts. Creating a new 42 series MOS dedicated to HR data analytics could ensure proper utilization of this specialty. If new data specialty MOSs are created, units should receive educational briefings to understand the full scope of possibilities and use these specialists effectively. The goal is to avoid the situation that occurred with the cyber network defender (25D) MOS, where units misunderstood their scope of practice and underutilized their cyber expertise by assigning them to Communications Security vaults.

Managing the advancing tsunami of data is a critical issue in cybersecurity. Service members need more data analytics training to effectively handle this challenge. Available tools must be fully utilized to maintain operational effectiveness. Leaders and operators need to complement each other within the data science field. Addressing these issues will require a concerted effort from leaders and operators to stay ahead of the data curve and ensure the security and efficiency of military operations.

If the Army fails to invest in comprehensive data training, the consequences will extend beyond inefficiencies – the Army will drown.

References

5 things to know about IBM's new tape storage world Record. (n.d.). IBM Newsroom.

<https://newsroom.ibm.com/5-Things-to-Know-About-IBMs-New-Tape-Storage-World-Record>

Army University Press. (n.d.). *The coming military AI revolution*. <https://www.armyupress.army.mil/Journals/Military-Review/English-Edition-Archives/May-June-2024/MJ-24-Glonek/>

Cloudflare 2024 API security and management data report | Cloudflare. (n.d.).

<https://www.cloudflare.com/2024-api-security-management-report/>

Eppler, Martin J., and Jeanne Mengis. "The Concept of Information Overload: A Review of Literature from Organization Science, Accounting, Marketing, MIS, and Related Disciplines." *The Information Society* 20, no. 5 (2004)

"Fight Information Overload." *Proceedings*, July 2017, Vol. 143/7/1,373.

Forester, B., Forester, B., & Forester, B. (2023, May 17). Toward the Data-Driven Army of 2040: Avoiding analysis paralysis and harnessing the power of analytics. *Modern War Institute* -. <https://mwi.westpoint.edu/toward-the-data-driven-army-of-2040-avoiding-analysis-paralysis-and-harnessing-the-power-of-analytics/>

Imperva's 11th Annual Bad Bot Report 2024. (2024, May 16). Higher Logic, LLC.

<https://community.imperva.com/blogs/percy-smith/2024/05/16/impervas-11th-annual-bad-bot-report-2024>

Knowledge Management Qualification Course – U.S. Army Training and Doctrine Command. (n.d.). U.S. Army Training And Doctrine Command - Victory Starts Here. <https://www.tradoc.army.mil/ocko/training-portal/knowledge-management-qualification-course/>

Major Donald Ingham and Captain Noe Lorona. "Call to Action." *Army Communicator*, Fall/Winter 2024

Major Henry, James and Major Smith, William. *An introduction to uniformed operations research*. (2015, January 6). https://www.army.mil/article/140106_An_introduction_to_uniformed_operations_research

NCO Creed - Army values. (n.d.). <https://www.army.mil/values/nco.html>

Pemberton, J., & Robson, A. (1995). The spreadsheet – just another filing cabinet? *Management Decision*, 33(8), 30–35. <https://doi.org/10.1108/00251749510093914>

Stoltz, R. (2023, July 24). 20ft Container Dimensions - Interior, Exterior, Weight, and more. . . *Container Addict*. <https://www.containeraddict.com/20ft-shipping-container-dimensions/>

Challenges and Lessons Learned in Data Integration

‘Complex but necessary’

Capt. Brian Lee Matias
4th Combat Aviation Brigade

The Army's need for modernization is undeniable, particularly in the Digital Age, where data promises to transform military operations. Leaders across the globe in all types of units are tasked with exploring how to leverage data, integrate it into operations, and fully utilize its potential. However, the path to data integration has not been smooth.

The 4th Combat Aviation Brigade (CAB) has spearheaded efforts to harness data, enabling leaders within the unit to make rapid decisions based on the most accurate and timely information available.

Importance of Data Awareness

At its outset, the Army's journey toward data integration faced a critical issue: misunderstanding the concept of data. Leaders were mandated to implement data-driven solutions without fully grasping what data entails or how it could be effectively used.

According to Cambridge University, data refers to facts or numbers collected to assist decision-making. In the Army, this data empowers leaders to make informed, rapid decisions under pressure. This lack of clarity in defining data across units led to its misuse in many contexts. For example, some leaders referred to routine reports or isolated anecdotes as "data," failing to distinguish between raw information and actionable, collected insights meant for strategic decision-making.

The Army recognized the need for modernization in various areas, including Soldier performance monitoring to equipment maintenance, supply chain optimization, and training enhancement through predictive analytics. However, the leap from recognition to implementation was fraught with difficulties.

Struggles with Data Integration

A significant challenge we faced in integrating data was the Army's reliance on outdated tools, like Excel, which are inadequate for handling large datasets and complex analyses. Our data team within 4th CAB consisted of four members, each with diverse expertise, working together to overcome these obstacles. While more advanced tools such as Power BI offered promise, integrating these tools with existing Army systems was extremely difficult.

One key hurdle was the Army's IT infrastructure, managed by the Regional Network Enterprise Center (RNEC). Due to cybersecurity restrictions and administrative roadblocks, requests for installing essential tools like Python and Open Database Connectivity

drivers were often delayed or denied, stifling our ability to rapidly adopt new tools for data analytics effectively.

Learning from the Ground Up

When 4th CAB established its data team, the team members were selected based on minimal experience or mere interest in the field.

Many had no experience using data analytic tools. This led to a steep learning curve where team members had to teach themselves how to use the tools, often relying on external resources like YouTube tutorials.

Unfortunately, many examples found in these resources did not align with the unique challenges faced within military operations, mainly due to the sensitive nature of military data and a plethora of disparate authoritative sources. To bridge the knowledge gap, we supplemented our learning with Udemy courses on data integrity, connection, and Power BI usage. Additionally, some team members pursued the CompTIA Data+ certification, hoping it would provide further expertise in managing and analyzing military data. As the data team grew in capability, it became evident that managing data systems could not be an additional duty. The time-intensive nature of the work, coupled with the complexity of the systems involved, required a dedicated role. Without full-time personnel responsible for data integrity and maintenance, we often came in early or stayed late to resolve issues.

Overcoming Fragmentation

One of the core struggles of implementing data in the Army was the decentralization of information. Every section, every duty position, and every leader approached data differently. They utilized different systems of record and had their own methods for pulling and analyzing data. This fragmented approach created a lack of synchronization and standardization. For data to be effectively integrated, we had to centralize the information and establish a uniform method for



*Capt. Brian Lee Matias,
4th Combat Aviation Brigade*

data pulls across the entire organization. This process required extensive coordination and a clear visualization standard for presenting data to leadership.

From Chaos to Standardization

The widespread adoption of Power BI was a turning point, but it came with challenges. Without any formal training or guidance, each section was left to figure out how to use the tool on their own. Instead of a coordinated effort, the team relied heavily on one or two self-taught experts to execute critical tasks and guide others through the complexities of the platform. The lack of a clear goal for what we were trying to achieve compounded the problem. Leaders wanted data presented in a way that allowed for rapid decision-making, but no one knew how to get there.

After much trial and error, we finally established data visualization and reporting standards. However, the difficulties didn't stop there. In many cases, we couldn't pull accurate data directly from systems of record and manually compile reports using Excel, which was time-consuming and prone to error. As a result, we had to refine our processes continually to ensure data accuracy and relevance.

Overcoming RNEC Limitations

A significant roadblock we encountered was the limitations set by the RNEC. While we eventually received Power BI Pro licenses, many of the tool's advanced capabilities – such as Python scripting and database integration with systems like SQL servers and Amazon Redshift – remained inaccessible due to strict cybersecurity regulations. These constraints hindered our ability to fully exploit the power of data analytics. For instance, we had to manually capture flight hour tracking data, which was time-consuming and prone to errors. If we could link this data directly to Power BI dashboards, it would significantly enhance operational efficiency within the aviation community. This integration could have enabled real-time pilot data management and more accurate tracking, but these opportunities were blocked by restrictive policies.

Creating a Data Management Role

It became clear that data integration can't be treated as an additional duty. There is a growing need for the Army to establish formal data management roles within its units. Soldiers in these roles would need specialized training with a curriculum tailored to the military's unique data challenges. This would allow them to manage, analyze, and visualize data in a

way that empowers leadership to make well-informed decisions.

Friction Points

One of the major friction points in data integration efforts within the brigade is restrictive cybersecurity protocols imposed by the RNEC. These restrictions prevent the installation of critical tools, hindering the ability to automate and streamline data analysis. This results in labor-intensive, manual processes that delay decision-making and reduce efficiency. Another challenge is the decentralized nature of data management across various sections. Different teams and leaders rely on their systems and methods for collecting and analyzing data, leading to a fragmented approach that creates inefficiencies and complicates the process of centralizing and standardizing data.

Solutions and Recommendations

To overcome some of these challenges, we should pursue a more flexible cybersecurity approach tailored to data analytics needs. Leadership should work with local RNECs to secure waivers for segregated environments, such as sandbox systems, where advanced tools can be used safely without compromising security.

A centralized data management framework needs to be implemented, including standardized data collection and reporting methods across all sections. Designating a brigade-level data officer to oversee this effort would ensure synchronization and data integrity. Offering training sessions for personnel to align with these new standards will further enhance data cohesion and operational effectiveness across the brigade.

A standardized training program should be implemented across the Army to equip leaders with the skills and capabilities to use these systems effectively. As the Army continues to advance in data-driven operations, leaders must be prepared with the knowledge to navigate current and future challenges in this evolving landscape.

Conclusion

Data integration within the Army is a complex but necessary evolution. Through our challenges, we have learned the importance of proper data education, centralized data management, and the need for dedicated personnel to manage these advanced systems.

Moving forward, we must prioritize flexibility in our IT infrastructure, streamline cybersecurity protocols, and provide comprehensive training to ensure that the Army fully capitalizes on the power of data analytics.

Bio

Capt. Brian L. Matias, native of Isabela, Puerto Rico, is currently serving as a data systems engineer with the 4th Combat Aviation Brigade, 4th Infantry Division at Fort Carson, Colorado. Matias holds a master's in cybersecurity from Webster University and a bachelor's in computer science from Interamerican University, Puerto Rico. He also possesses several Computing Technology Industry Association certifications.

Enabling Distributed Operations at the Tactical Level

AFN-OTM

Lt. Col. Marreo Burch, Maj. Adam Black,
Chief Warrant Officer 2 Justin Carrier
1st Infantry Division

In March of 2024, 1st Infantry Division (ID) was tasked by U.S. Army Forces Command (FORSCOM) Headquarters to execute the Armored Formation Network On-The-Move (AFN-OTM) Pilot II with 1st ID (HQs and Division Artillery) and 1st Brigade Combat Team, 1st ID, at Fort Irwin, California, during the National Training Center (NTC) Rotations 25-03 and 25-04. The events that took place after this tasking culminated with the successful completion of 1st ID's Division HQs 25-03 NTC rotation utilizing the AFN-OTM kit.

Commanding General of 1st ID, Maj. Gen. Monté Rone, clearly articulated how integral the AFN-OTM equipment was to the success of the 25-03 rotation.

"AFN-OTM allowed the [Big Red One] to fight dispersed, reduced our [electromagnetic signature], and provided options to me as the commander that I previously would not have had in terms of how to echelon unit command posts, redundancy, and reduce transition time."

This equipment set, combined with the new AFN-OTM-enabled redesign of the division command post structure, has the potential to revolutionize U.S. Army Armored Formations' ability to conduct large-scale combat operations (LSCO).

AFN-OTM's cutting-edge technology possesses the ability to transform the way armored divisions operate by enabling distributed command and control (C2) at the tactical level. The successful integration of AFN-OTM during NTC Rotation 25-03 has far-reaching implications, aligning with the priorities of the chief of staff of the Army, FORSCOM's commander, and 1st ID's commanding general.

This article examines the significance of AFN-OTM in enabling distributed operations and how it supports the priorities of "continuous transformation," "readiness," and "continuous transformation to meet emerging threats."

The Program Executive Office for Command, Control, Communications & Network (PEO-C3N) equipped multiple 1st ID vehicles (mostly High Mobility Multipurpose Wheeled Vehicles and Joint Light Tactical Vehicles) with an Upper Tactical Internet (UTI) suite of transport, a baseband kit, and the Unified Voice Management System (UVMS).

Each vehicle's UTI transport suite consists of a vehicle-mounted Lower Earth Orbit (LEO) satellite

communications (SATCOM) terminal, a "kick out" SATCOM terminal, a commercial cellular wireless router, two line-of-sight (LOS) radios, and a bandwidth diversity solution, which automatically selects the best path of transport.

Each vehicle's UVMS system provides the ability to call Secure voice over Internet Protocol (SvoIP) phones located in the division command and control nodes (DC2N) and Very High Frequency (VHF) over Soft Channel Access Unit (CAU), from inside the vehicles while both OTM and At-The-Quick-Halt (ATQH). 1st ID also received four Variable Height Antenna (VHA) drones. The VHA drones came in both tethered and untethered configurations and were able to extend the LOS signal path across significant distances to create a meshed network between AFN vehicles.

Each vehicle is also equipped with a bandwidth diversity solution that uses the automatic primary, alternate, contingency, and emergency (auto-PACE) functions to ensure communications are working close to 100 percent of the time. Having communication equipment with that type of resiliency is unheard of in 1st ID's current Modified Table of Organization and Equipment (MTOE) program of record for Tactical Network Transport equipment. The robust AFN-OTM UTI communications package enabled 1st ID to become the first division-level rotation to complete an entire rotation without connecting to NTC's fiber infrastructure; truly operating as a "division in the dirt."

1st ID's Lt. Col. Marreo Burch (ACoS G6), Lt. Col. Aaron Adams (ACoS G3), and Lt. Col. Duane Clark (ACoS G5) created an effective plan to utilize the AFN-OTM trucks for maximum dispersion of the division's forward command posts (CP) – namely, the Division Main and Division Tactical Command Post (TAC) - while simultaneously reducing the footprint of the Division Main during the rotation.

Four of the five Division HQ AFN-OTM trucks accompanied a M1087 "expando truck" with an eight-port switch inside, which were allocated to specific division warfighting functions (WFFs)/sections (Intel/Fires, Plans, DIV TAC) and the Mobile Command Group (MCG). The fifth AFN truck supported the Division G2's Analysis and Control Element (ACE), which had a massive bandwidth utilization requirement and was co-located with the rear CP at Marine Corps Logistics Base (Yermo Annex), California. AFN-OTM's capabilities also enabled 1st ID to become the first unit to jump their rear CP during an

NTC rotation, while maintaining situational awareness of combat operations during the movement.

Each AFN-OTM truck/expando combo conducted geographically distributed operations throughout the entire rotation, mostly operating away from Division Main and Division TAC. While dispersed, each AFN-OTM truck/expando combo remained directly tied into the division's current operations on both UTI and Lower TI.

The 1st ID network operation functions allowed continued awareness of the common operating picture. Additionally, this equipment reduced the need for ancillary equipment such as static antenna masts, spools of cable, or multiple generators normally required for significant dispersion. The ability to operate multiple distributed CPs created several dilemmas for NTC's Opposing Forces (OPFOR) and presented opportunities for Maj. Gen. Monte Rone to successfully command the division from his mobile command group (MCG), while the Division TAC or Division Main simultaneously conducted multiple survivability moves throughout the rotation.

The AFN-OTM capabilities demonstrated during 1st ID's NTC rotation directly aligned with the guidance of U.S. Army senior leaders. Chief of Staff of the Army, Gen. Randy A. George, has emphasized the importance of "continuous transformation" as a top priority (George, 2023). This initiative focuses on

developing a more competent, cohesive, and adaptable Army, capable of operating in a rapidly changing environment. The integration of AFN--OTM during NTC Rotation 25-03 demonstrated a significant step towards achieving this goal. By providing real-time situational awareness and enabling seamless communication between units, the AFN-OTM kit enhanced the effectiveness of C2 at the tactical level (TRADOC, 2020). This, in turn, strengthens the profession by fostering a culture of innovation, adaptability, and decentralization, allowing junior leaders to make informed decisions and take initiative (Krepinevich, 2019).

The FORSCOM commander's priority of readiness was also directly supported by the integration of AFN-OTM (FORSCOM, 2022) during 1st ID's NTC rotation. Readiness is critical in today's operational environment, where the ability to respond quickly and effectively to emerging threats is paramount. AFN-OTM enhanced readiness by providing 1st ID's CPs, WFF and integrating cells (Joint Air-Ground Integration Cell [JAGIC], ACE, Current Operations, and Plans) the ability to operate in a distributed manner, leveraging advanced communication and networking capabilities to stay connected and informed (CBO, 2019).

The capability provided with this pilot allowed the division's chief of Operations (CHOPS) and all subordinate units to use a "Strike Net" tactics, techniques, and procedures (TTP) on a commercial collaboration service. This enabled units to respond rapidly to changing situations, making them more effective and efficient in their operations. Furthermore, the real-time situational awareness provided by AFN-OTM allowed units to anticipate and prepare for potential threats, reducing the risk of surprise and increasing overall readiness (Joint Chiefs of Staff, 2019).

Maj. Gen. Monte Rone's priority of "continuous transformation to meet emerging threats" was also closely aligned with the integration of AFN-OTM during this NTC rotation (1st Infantry Division, 2024). The division's focus on continuous transformation recognizes the rapidly evolving nature of modern warfare, where new technologies and tactics are constantly emerging. AFN-OTM was a key enabler of this transformation, providing units with the ability to adapt and innovate in response to changing circumstances encountered during NTC Rotation 25-03.

By leveraging advanced networking and communication capabilities, units can quickly integrate new technologies and capabilities, staying ahead of emerging threats and maintaining a competitive edge (Gompert, 2019).

The integration of AFN-OTM vehicles and its associated equipment during NTC Rotation 25-03 marked a significant milestone in the development of



*View of a tethered VHA base (front) and an untethered VHA a short distance behind it.
(Photo by Lt. Col. Marrero Burch, 1st ID)*

distributed C2 capabilities at the tactical level. This new equipment set removes the limitation that organic MTOE equipment emplaced on bandwidth intensive WFF tools and Mission Command Information Systems, fully realizing their capability in training and operations. This rotation also demonstrated the potential of this technology to transform the way armored divisions operate in LSCO.

By providing real-time situational awareness with nearly 100% uptime, enabling seamless communication between units, AFN-OTM supports U.S Army senior leaders' priorities of "readiness, strengthening the profession, and continuous transformation to meet emerging threats." As the Army continues to evolve and adapt to emerging challenges, the integration of AFN-OTM will play a critical role in enabling distributed operations and maintaining a competitive edge in LSCO.



*View of a tethered VHA fully deployed.
(Photo by Lt. Col. Marrero Burch, 1st ID)*



References

- 1st Infantry Division. (2024). Continuous Transformation to Meet Emerging Threats. <https://www.1id.army.mil/>
- CBO. (2019). The Army's Network Modernization Strategy. Congressional Budget Office. <https://www.cbo.gov/>
- FORSCOM. (2020). Readiness. Retrieved from <https://www.forscom.army.mil/>
- Gompert, D. C. (2019). The Future of Warfare. RAND Corporation. Retrieved from <https://www.rand.org/>
- Joint Chiefs of Staff. (2019). Joint Publication 3-31: Command and Control for Joint Land Operations. <https://www.jcs.mil/>
- Krepinevich, A. F. (2019). The Future of Land Warfare. Center for Strategic and Budgetary Assessments. <https://www.csbaonline.org/>
- George, R. A. (2023). Army chief of staff outlines service priorities at AUSA. <https://www.army.mil/>
- TRADOC. (2020). The Army Operating Concept: Win in a Complex World. <https://www.tradoc.army.mil/>

Exploring Technology's Risk in Modern Warfare

Double-edged sword

Maj. Michael Herb

2nd Battalion, 5th Security Force Assistance Brigade

Emerging technologies such as drones, robotics, autonomous weapons, artificial intelligence (AI), electronic warfare (EW), cyber capabilities, and space operations are prominent across the military and industrial sectors. New technologies offer improved situational awareness, communication, collection, and effects.

There are many discussions on the future of warfighting to include how robotics and drones will replace the risk to humans, thus changing how future wars are fought. The conflicts in Gaza and Ukraine highlight the persistent presence of small unmanned aerial systems (sUAS) and/or one-way drone or loitering munitions.

Technology has always been a great tool for warfighters. From the wheel to AI, technology has influenced warfare by changing how a relative advantage can be achieved and exploited at a pace the enemy cannot match. Technologies are designed to reduce human involvement in dangerous tasks, create situational awareness for decisions, cause greater effect on the enemy, and prevent the need for war. Inversely, history and current conflicts demonstrate that technological advances do not limit human casualties in war. Technology exponentially increases casualties when humans apply it to warfare without fully understanding its risks and implications. Technology introduces new risks to mitigate in warfare while also offering new opportunities, as demonstrated by both historical examples and conflicts in Gaza and Ukraine.

Risks of Technology

War has – and will always be – a human endeavor, shaped by the ever-changing character of conflict as humans continuously adapt to new risks introduced by technology. In recent history, machine guns and aircraft revolutionized the battlefield of the early 20th century, and now AI and drones are altering the risks in warfare today. The broad dangers of technology are twofold: overconfidence in technology's ability to achieve an effect or mitigate an enemy effect and failure to understand the risk technology brings by being employed by and against humans.

First, there is a risk of overconfidence in technology's ability to achieve an effect or mitigate a threat. Daylight Precision Bombing was introduced as the answer to end World War II, yet the technology could not achieve the promised effect. Heavy bombers were promised to be all that was needed for victory but did not end World War II. Today, the Army is turning to

unmanned sensors to replace human reconnaissance.

I spent two years fighting U.S. Army brigade combat teams at the Joint Readiness Training Center as part of 1st Battalion, 509th Infantry (Airborne) "Geronimo."

The battalion had unique enablers, including sUAS, EW (both collection and offensive), as well as space and cyber capabilities. Though employed in innovative ways and with good results, technology never achieved the end state or replaced Soldier fundamentals. Humans are overconfident in technology and have a false sense of security about what it will realistically achieve. On the battlefield in Ukraine, technology for precision munitions is employed, but the effects have dramatically decreased. Overreliance on technology is dangerous, but it can be mitigated by understanding its strengths and limitations.

The second risk is failing to understand how technology changes risk to force. World War I is an example of the technology used in warfare developing faster than the tactics and mitigation. The risk of not using technology is being outpaced by the enemy, but there is a risk in using it. In ongoing large-scale combat operations (LSCO), technology is being employed to receive and process information enabling commanders to make decisions and achieve effects. Conversely, employing technology often makes it easier for the enemy to collect and deliver effects. Whether telegraph wires or using electronics, there is little on the battlefield of yesterday or today that has not been collected on by an adversary to make an assessment. These are hard problem sets. How do you not expose formations to massed fires, yet mass combat power at the decisive point? How can offensive formations be synchronized while keeping command and control (C2) systems undetectable in the EMS to prevent destruction? How do you conceal the main effort when there is near persistent collection within every domain?

Mitigating Risks

Risks from technology can be mitigated, as many fundamental principles remain applicable and effectively address the new challenges. By enforcing strict



Maj. Michael Herb, 2nd Battalion, 5th Security Force Assistance Brigade

control measures, we gain a better understanding of risks and mitigate them more effectively. For instance, implementing restrictions on the use of Bluetooth or Wi-Fi devices, being cautious about social media posts, and taking measures to remain undetected when stationary are crucial control measures. These are not unfamiliar concepts and can significantly contribute to risk mitigation. Understanding the enemy's sUAS and establishing a Security Zone to contest the employment of sUAS and disruption from enemy systems enables the synchronization of the main effort with greater efficiency.

Another example of risk mitigation is rifle companies moving through severely restricted terrain with EMS discipline to thwart enemy attempts to collect data on them. Moving this way to consolidated attack positions allows forces to mass without exposing them on the approach. Simple actions have potential to mitigate risks across multiple domains. The Army recognizes land, air, maritime, space, and cyberspace as domains that influence Army operations, meaning they must be fully considered for risks to operations.

Mitigating risks from technology requires staff to examine protection across all five domains, which is essential to tactical ground formations. This enables staff to convey risks to the commander so that they have a realistic picture of which risks they want to assume to exploit an opportunity. For example, Bluetooth devices in a mobile C2 platform risk identification in the EMS; however, is it worth the opportunity to rapidly issue guidance and synchronize operations effectively on the objective? If that risk is acknowledged and included in the calculation, then probably.

Dozens of systems provide value to commanders while presenting a risk in the EMS. Determining which systems are always required, how to mitigate constant employment, and when is the ideal time to maximize employment must be included in planning factors. Seeing the formation across the domains and not focusing on a singular domain is important. All the domains influence the tactical echelon and must be considered during planning, or units will fail to mitigate the risks present. For example, a command post not being observed from aerial drones is a positive, but ground reconnaissance, space, and electronic

means are readily available to all. Active and passive defensive mitigations like camouflage, dispersion, displacing rapidly when identified, and hardening systems across the domains help ensure survivability. Simple things, like power generation being concealed and offset; making a battalion command post mirror a combat train command post to make identification harder; or multiple nodes for C2 dispersion. All these contribute to mitigating threats across the domains. Staffs must understand the unit's signature across all five domains to incorporate the risks into their planning. Staffs must enable commanders to deliberately assume risk when the benefit of employing technology allows a relative advantage and not blindly, assume the risk.

Conclusion

By carefully balancing the benefits and risks of technology, we can maximize our operational effectiveness. As military professionals, it is our responsibility to continuously adapt to these technological changes, ensuring that we not only harness their power but also safeguard our forces against the vulnerabilities they create. We also need to recognize that while technology will support the warfighter and always has, it does not remove the risk for the warfighter. In Eastern Europe and the Sinai, technology is not preventing human suffering; only enabling it at scale. LSCO still, and always will, have an unquenchable appetite for material resources and human life. History and ongoing conflicts demonstrate that technological advances change the character and thus, the risks of war.

Technology is not a coup d'état or an assurance of victory. Technology brings new opportunities and risks. Technology will not end wars or prevent humans from facing risk in war, and it is dangerous to believe technology alone will solve problems in warfare. Technology in warfare punishes unadapted tactics and untrained, undisciplined units. Leaders are charged with understanding the character of war and preparing Soldiers to fight adversaries trying to apply technology against them and mitigate the risks as much as possible. The opportunities to achieve a relative advantage will change with technology, but technology is a tool for the human warfighter, not a substitute for training or eliminating risk for Soldiers.

References

- Marcus, Gary., and Ernest. Davis. *Rebooting AI : Building Artificial Intelligence We Can Trust*. Pantheon Books, 2019
- Singer, Peter. *Wired for War : The Robotics Revolution and Conflict in the 21st Century*. Penguin Press, 2009.
- “Strategic Bombing: Victory Through Air Power.” Accessed September 28, 2024 <https://www.nationalmuseum.af.mil/Visit/Museum-Exhibits/Fact-Sheets/Display/article/195872/strategic-bombing-victory-through-air-power/>
- “The Russian Momentum Is Back” Accessed June 17, 2024. https://www.youtube.com/watch?v=gk7D_TliAuE

AUDS: A New Era in Military Data Integration

Army Global Domain

Article, photo and graphic by Candy C. Knight
2nd Theater Signal Brigade

The 2nd Theater Signal Brigade (TSB) is making significant strides in enhancing its data management capabilities by adopting the Army Unified Directory Services (AUDS). This groundbreaking initiative aims to streamline information sharing, improve operational efficiency and bolster cybersecurity across military installations.

“We have taken on the early adoption to demonstrate our commitment to U.S. Army Network Enterprise Technology Command’s Continuous Improvement Activities Board initiatives,” said Ray Chase, director, Communication and IT Support, 2nd TSB. “Our initiative demonstrates the ability to lead the European Theatre toward the Army’s cloud-driven future.”

What is AUDS?

“AUDS is the Army Global Domain that allows the ability to move throughout the globe without communications disruption seamlessly and having to re-establish domain accounts,” Chase said. “This environment will foster zero-trust/cloud security, allowing for a more secure environment.”

AUDS is a central repository designed to unify various directory services previously scattered across different Army branches and systems. AUDS seamlessly integrates with existing Army applications and systems, ensuring smooth communication and data exchange across platforms. This interoperability facilitates a more cohesive operational environment, enhancing overall effectiveness of the Army.

Furthermore, the brigade’s Communication and IT Support Directorate is working with the Regional Cyber Center-Europe and battalions to collect emerging problems and lessons learned for the AUDS project manager.

“By encouraging our brigade and battalions to migrate, their experiences help the AUDS team identify problems and provide a way forward to help create a seamless transition to the rest of the users across the European Theatre,” Chase said. “Also, we

are sharing our lessons learned with the brigade’s Operations Directorate, who are engaging our theatre partners to help set them up for migration success with a dedicated FAQ site.”

Key Features and Benefits

By creating a unified directory, the Army is able to ensure that all personnel will have access to accurate and up-to-date information, enabling them to make informed decisions and collaborate more effectively.

“AUDS is an improvement to the current system because it gives users flexibility, allowing them to deploy anywhere in the world and remain connected to their devices without any problems,” said Staff Sgt. Ricardo Cabrera Murphy, NCOIC, Communication and IT Support, 2nd TSB.

Furthermore, integrating cybersecurity protocols within AUDS helps protect sensitive personnel data. The system employs advanced encryption and access control measures to safeguard against unauthorized access.

User Experience

One key feature of AUDS is its user-friendly interface. This ensures that users can quickly locate the information they need.

“The AUDS system has proven to be notably faster and more efficient, and the upgrade to Windows 11 has been a major improvement, with far fewer bugs



Ray Chase, lead communications and information technology specialist, discusses AUDS migration progress with Sgt. 1st Class Daniel Watts, systems operations NCO, March 25, at USAG Wiesbaden, Germany. Both gentlemen are with 2nd TSB. (Photo by Candy C. Knight)

and issues than we experienced previously,” said William Houser, program manager, Geographic Combatant Commander Communication Team-Europe. “Along with the new features, I’ve noticed that AUDS has reduced the risk of compatibility issues, improved network performance, and reduced the downtime for upgrades.”

Nevertheless, some users experienced growing pains during their initial AUDS migration.

“My AUDS migration took about one and a half workdays,” said Christine Straus, International Relations advisor, 2nd TSB. “There was a glitch with downloading an application. I called our S6 team, and a team member immediately came to my office and fixed the issue.”

In some instances, certain software and applications are not immediately accessible once a user migrates to AUDS. Users are encouraged to submit their issues to the Global Cyber Center.

“If the GCC doesn’t know about these one-off situations, they can’t provide a solution,” Chase said.

The GCC reviews and approves all allowed software. Once approved, the software and application are made available on demand. The Army Enterprise Service Desk-Europe also supports users experiencing issues during their initial migration, ensuring a smooth transition to AUDS.

Operational Impact

Implementing AUDS is expected to have far-reaching effects on organizational efficiency and on mission execution. Commanders and personnel will benefit from real-time access to pertinent information, reducing the time spent searching for essential data. Moreover, AUDS supports the Army’s broader digital transformation strategy, aligning with initiatives to leverage technology to enhance military readiness and effectiveness.

As the Army increasingly relies on data-driven decision-making, reliable and accessible information becomes paramount.



The 2nd TSB is making significant strides in enhancing its data management capabilities by adopting the AUDS. This groundbreaking initiative aims to streamline information sharing, improve operational efficiency, and bolster cybersecurity across military installations.

Challenges and Future Outlook

Although the launch of AUDS promises numerous benefits, the Army must navigate challenges such as ensuring data accuracy and managing the integration of various legacy systems. Ongoing training will equip personnel with the know-how to effectively utilize the new system. As the Army continues to enhance its technology infrastructure, the AUDS stands as a testament to its commitment to modernizing military operations. With its potential to revolutionize data management and operational efficiency, AUDS’ role is critical in the Army’s future mission success.

“AUDS represents a significant step forward in the Army’s data integration and cybersecurity approach,” Chase said. “As it becomes fully operational, its impact on the effectiveness and efficiency of Army operations will likely be profound, reinforcing the Army’s readiness to meet current and future challenges.”



Legacy of Innovation: Shaping the Future of Cyberspace Defense and Cyberspace Security Critical Task

25D CTSBB

Sgt. Maj. Thomas Lee Jr.
U.S. Army Cyber Command

As a subject matter expert (SME) panel member in 2012 for the newly established 25D military occupational specialty (MOS), cyber network defender, I had the opportunity to contribute to the development and establishment of critical tasks to support cyber network defense efforts. More recently, I served as the chairperson for the 25D Critical Task Site Selection Board (CTSSB) as a sergeant major, leading the evolution of tasks that shape cyber space defense and cyber space security efforts.

The goal was to ensure that the tasks remained relevant and impactful by supporting a steadfast mindset to drive relevant and effective changes. With the help of the Training Development staff and the Office Chief of Signal (OCOS) enlisted staff, clear guidance was provided to the panel members. This guidance played a crucial role in shaping, refining, removing, and adding proper tasks for the 25D.

My primary focus was to ensure that our defense capabilities remain robust, adaptive, and forward-looking. As a leader, I have always been dedicated to enhancing our cyber defense posture and ensuring that the tasks we perform are both relevant and impactful.

By fostering a positive and fair environment, I encouraged panel members to contribute their expertise and ideas, which significantly contributed to the overall success of the 2025 25D CTSSB.

Vital Role of CTSSBs

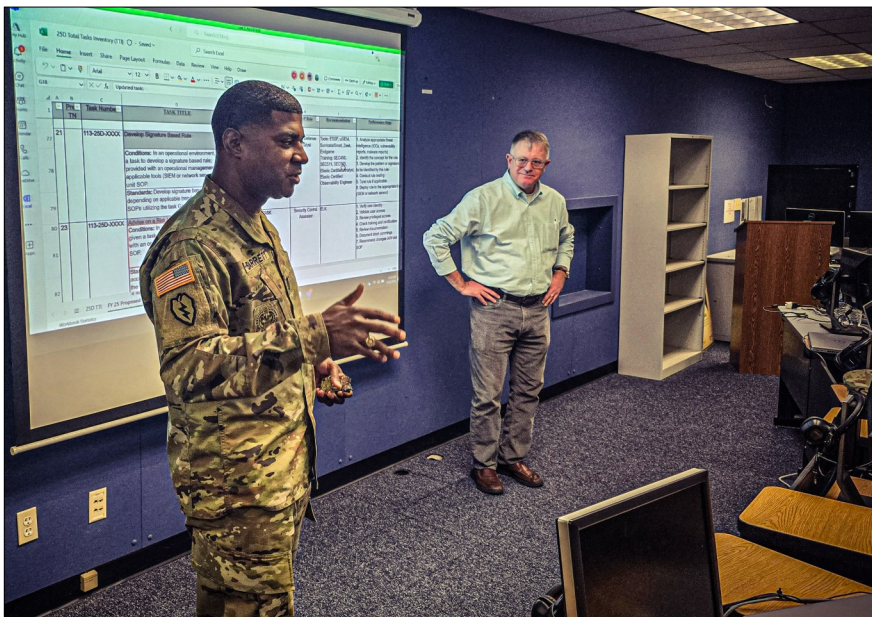
CTSSBs play a crucial role in ensuring effectiveness and relevance of MOSs in response to evolving threats and operational demands. Established to periodically review, refine, and update the critical tasks associated with specific MOSs, these boards ensure that the tasks assigned to military personnel are current, relevant, and in line with the latest strategic objectives.

The history of these boards dates to the early 2000s, when rapid advancements in technology and the dynamic nature of global security threats necessitated a more agile and adaptive approach to task management. By gathering subject matter experts and leveraging their insights, these boards help maintain a robust and forward-looking defense posture, ensuring that military personnel are well-equipped to address contemporary challenges and protect national security. Their work not only enhances operational readiness but also drives continuous improvement within the armed forces.

Optimizing Cyber Defense Operations

The 25D CTSSB panel took a very deliberate approach in conducting a gap analysis to clarify the roles and responsibilities between the 25D30, 25D40, 25D50, and the 255S warrant officer MOS. The gap analysis involved a thorough review of past and current task lists to identify overlaps and gaps in responsibilities. This careful process ensured that each role was clearly defined and distinct, aligning with Army doctrine, specifically DoDM 8140.3. DoDM 8140.3, the "Cyberspace Workforce Qualification and Management Program," provides a framework for the qualification and management of the DoD cyberspace workforce.

By aligning the roles with DoDM 8140.3, the gap analysis not only defined clear responsibilities for each position but also reduced redundancy, ensuring that tasks flowed seamlessly with minimal overlap. This comprehensive alignment ensured that the delineation and demarcation points between roles were accurately thought through, fostering a



Regimental Command Sgt. Maj. Linwood Barrett and U.S. Army Signal School Deputy Commandant John Batson express their gratitude to 25D CTSSB members for their dedication to enhancing critical tasks for the 25D. (Photo by Master Sgt. Kimberlyn Burns, U.S. Army Signal School)

clear and effective separation of work between each 25D rank level and the 255S warrant officer. As a result, each position had a distinct and well-defined scope of work, which aligned to operational cyber space defense requirements.

Challenging Outdated Lexicon

Panel members of the 25D CTSSB pushed the boundaries by challenging the outdated lexicon from the U.S. Army Training and Doctrine Command (TRADOC) approved action verb list, which often fell short of addressing the nuanced demands of contemporary cyberspace defense efforts. The existing action verbs failed to capture the specificity and technicality required for cyber operations, thereby hampering the development of precise and relevant tasks. By providing valid justifications from DA PAM 611-25 and FM 3-12, which emphasize the need for updated and context-specific terminology, panel members successfully argued for the inclusion of new action verbs that better aligned with current cyber defense practices and terminology. This pivotal move not only improved task accuracy and relevance but also set a new precedent for future CTSSBs, paving the way for a more adaptive and forward-looking approach to defining military tasks.

Crosswalk Analysis

The 25D CTSSB panel conducted a detailed crosswalk analysis between the roles of system administration and network administration performed by 25Bs, 255As, and 255Ns. This analysis aimed to ensure that the tasks assigned to the 25D cyberspace defenders correlated more appropriately with cyberspace defense responsibilities rather than the traditional tasks of system and network administration.

By meticulously examining the responsibilities and duties of each MOS, panel members identified and resolved any overlaps, ensuring that cyberspace defense tasks were clearly defined and distinguished from those of system and network administrators. Furthermore, the crosswalk was extended to the 17C MOS to ensure that tasks supporting defensive cyberspace operations (DCO) and DCO-internal defensive measures (DCO-IDM) efforts did not infringe upon



Sgt. Maj. Thomas Lee Jr. and Sgt. 1st Class Anthony Vidal served together at the Regional Cyber Center-Europe and were recently reunited as members of the 25D CTSSB panel. (Photo by Sgt. 1st Class Jason Decker, U.S. Army Signal School)

the 17C. This careful delineation ensured the right tasks were assigned to where the 17C was not present in U.S. Army Forces Command units and regional cyber centers, maintaining a coherent and efficient division of labor within the cyber defense community.

Conclusion:

The 25D CTSSB has greatly impacted the evolution of cyberspace defense and security. The board's emphasis on implementing necessary modifications, conducting gap analysis, and performing crosswalk analysis has resulted in resilient, adaptable, and clearly defined cyberspace defense tasks. Furthermore, advocating for modernized action verb lexicon has enhanced task accuracy and relevance, cultivating a more agile and forward-thinking strategy in cyberspace defense. The board's unwavering commitment to preserving a robust and adaptable defense posture has considerably advanced overall success in cyberspace defense and security endeavors, aligning unified network operations within the Department of Defense Information Network – Army.

Bio

Sgt. Maj. Thomas Lee Jr. is the U.S. Army Cyber Command G3/6 sergeant major. previous assignments include senior enlisted advisor at the Regional Cyber Center-Europe, Wiesbaden, Germany; first sergeant and senior incident responder for 304th Expeditionary Signal Battalion, Camp Humphreys, South Korea; current operations cell NCOIC at Joint Force Headquarters-Cyber Army at Fort Eisenhower, Georgia; and information assurance staff NCOIC for 1st Stryker Brigade Combat Team, Fort Wainwright, Alaska.

A Force Multiplier in the Age of Transport Diversity

Military SATCOM

Chief Warrant Officer 2 Tiffany Kitarogers
302nd Signal Battalion

Since its inception, the U.S. Army Signal Corps has been at the forefront of military operations, enabling commanders to communicate, coordinate, and dominate the battlefield. From the early use of the telegraph during the Civil War to the adoption of radio communications in World Wars I and II, the Signal Corps has continually evolved to meet the demands of modern warfare. The Cold War ushered in the era of satellite communications (SATCOM), providing global reach and secure connectivity for military operations.

Today, as emerging reshape the battlespace, the Signal Corps remains critical to warfighting. Ensuring seamless and resilient communication across multiple domains – land, air, sea, space, and cyberspace – is critical to maintaining information superiority and enabling warfighters to execute complex, multi-domain operations.

The Army has shifted its warfighting strategy away from enduring counterinsurgency (COIN) missions to large-scale combat operations (LSCO), emphasizing the need for seamless integration of mobile, reliable, dynamic, and scalable communications. Commercial satellite communications (COMSATCOM) have been the preferred transport vector amongst commanders in recent years. As the battlespace evolves and COMSATCOM solutions expand their role in military operations, military SATCOM (MILSATCOM) remains a critical force multiplier that must not be discarded.

In April 2024, the 302nd Signal Battalion (SB) and 50th Expeditionary Signal Battalion-Enhanced (ESB-E) successfully leveraged a Continental United States (CONUS) Gateway and Global Agile Integrated Transport (GAIT) to pull services from a CONUS Regional Hub Node (RHN). While this frequently occurs overseas, traditionally, the Gateways that fall under 302nd SB have not been used to provide this capability, though it is readily available. This successful exercise highlights the resilience and adaptability of MILSATCOM in an era where proliferated low Earth

orbit (pLEO) constellations are emerging to support LSCO. Leveraging CONUS Army Gateways in this manner offer an increased footprint for landing SATCOM missions previously thought to be limited to RHN Liberty and RHN Roberts.

Transport diversity plays a key role in increasing capacity, alleviating the burden on aging military satellite constellations, and ensuring resilient communications in an era of evolving threats. By integrating MILSATCOM with COMSATCOM, the Department of Defense can enhance bandwidth availability, reduce single points of failure, and provide added redundancy in both contested and congested environments. Though this type of capability is often exercised in theaters Outside the Continental United States, the 302nd SB has the capacity to expand CONUS landing sites, providing greater flexibility and resilience to the warfighter. Despite the rapid advancements in commercial space capabilities, overreliance on COMSATCOM presents operational risks.

While commercial providers offer scalable and cost-effective solutions, most primarily serve civilian and enterprise customers, making them vulnerable to market fluctuations, regulatory changes, and adversarial targeting. In contrast, MILSATCOM provides dedicated, secure, and protected communications, ensuring that the military retains full operational control over its most critical transmissions, especially in high-threat environments.

The 302nd SB remains ready to provide transport diversity and dynamic solutions for the modern-day warfighter through a robust MILSATCOM infrastructure. The recent shift toward hybrid architectures – integrating military and commercial assets – demonstrates the necessity of maintaining a layered and redundant communication strategy. Our successful demonstration reinforces that MILSATCOM is not obsolete; it is indispensable. By leveraging transport diversity and integrating both military and commercial capabilities, we ensure that the joint force remains connected, agile, and mission ready, even in the most challenging operational environments.

Bio

Chief Warrant Officer 2 Tiffany Kitarogers is a native of Norfolk, Virginia. She joined the Army in January 2007 as a signal support systems specialist (25U), and in 2019 was appointed as a network operations warrant officer (255N). Her assignments include 2nd Brigade Combat Team, 101st Airborne Division (Air Assault); 160th Special Operations Aviation Regiment; and 2nd Security Force Assistance Brigade. Kitarogers currently serves as the senior battalion warrant officer for 302nd Signal Battalion, 21st Signal Brigade, Fort Detrick, Maryland.

Fort Eisenhower Receives Comms Technology Upgrade

AN/PRC-160

Article, photos by Sgt. Truxtun Brodhead
U.S. Army Signal School

The United States military continually seeks to enhance its operational capabilities through adoption of advanced technologies. One significant upgrade in communication equipment is the transition from the AN/PRC-150 radio system to the more sophisticated AN/PRC-160. This change is not merely a shift in hardware; it represents a fundamental evolution in how military personnel will communicate, coordinate, and execute missions.

The AN/PRC-150 is a legacy radio system that has served various branches of the U.S. military for years. It operates primarily in the high-frequency (HF) band and is known for its reliability in long-range communications. However, as technology has advanced, so too have the requirements for modern military operations. The need for secure, reliable, and versatile communication systems has led to the development of the AN/PRC-160.

The AN/PRC-160 offers several enhancements over its predecessor. It supports multiple frequency bands, including HF and very high frequency (VHF), allowing for greater flexibility in communication. Additionally, it incorporates advanced encryption capabilities to ensure secure transmissions, which is critical in today's information warfare environment. To facilitate this transition, military personnel will undergo Advanced Individual Training (AIT) specifically designed to equip them with the necessary skills to operate the AN/PRC-160 effectively. This training

will cover various aspects of radio operation, including setup, maintenance, troubleshooting, and tactical deployment.

During AIT, Fort Eisenhower Soldiers will learn about the technical specifications of the new equipment and how these features can be leveraged in real-world scenarios.

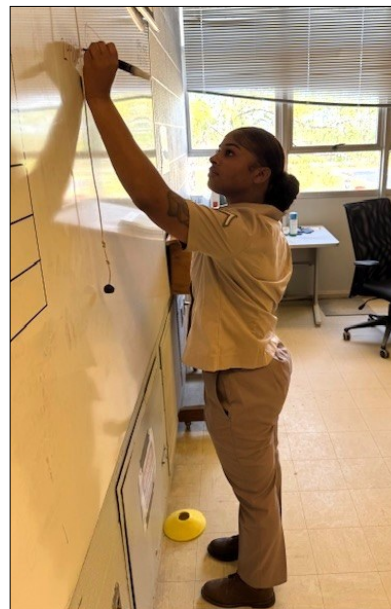
They will engage in hands-on exercises that simulate combat conditions where effective communication is crucial for mission success. This practical

experience will help solidify the Soldiers' understanding of both basic and advanced functionalities of the AN/PRC-160.

The transition from the AN/PRC-150 to the AN/PRC-160 is expected to have a profound impact on military operations. With enhanced communication capabilities, units will be able to share information more rapidly and securely across different platforms and environments. This improved connectivity can lead to better situational awareness among troops on the ground and command centers alike.

Training initial entry Soldiers on new equipment is crucial for several reasons that directly impact their readiness for the battlefield. First, modern warfare increasingly relies on advanced technology, communication systems, and surveillance tools. Familiarity with this equipment ensures that Soldiers can operate effectively under pressure, minimizing the risk of errors that could compromise missions or endanger lives.

In conclusion, transitioning from the AN/PRC-150 to the AN/PRC-160 represents a significant advancement in U.S. military communications technology. Through comprehensive training programs like AIT, Soldiers will acquire essential skills that enhance operational effectiveness and adaptability on modern battlefields. As these advancements are implemented across various units within the armed forces, they signify a progressive step toward ensuring that U.S. military personnel remain at the forefront of signal technology.



Pvt. Zahara Shropshire, AIT student, completes a practical exercise during class.



Pvt. Brandon Giardina (left) and Spc. Alexander Shub, AIT students, display their knowledge on the AN/PRC-150.

Tips and Techniques for Accelerating Your Writing

Professional development

Capt. Noe Lorona

Army Software Factory





Writing is an essential skill for communication, influence, and professional growth. However, many people struggle with getting started, maintaining momentum, or overcoming writer's block. Whether you are crafting a technical report, a blog post, or a journal article, accelerating your writing process requires a combination of structure, strategy, and motivation. Below are some key steps to help you write faster, more effectively, and with greater confidence.

Set Writing Targets and Deadlines

Deadlines create urgency, which helps overcome procrastination. Without clear goals, writing projects can linger indefinitely. To stay on track, set word count goals by breaking your writing into manageable word count targets per session. Use timers, such as the Pomodoro technique, to write for 25-30 minutes with short breaks to maintain momentum. Commit to a publishing date, even if self-imposed, as having a target completion date adds accountability. Writing with intent makes a difference, so align ideas with the format and audience.

Self-imposed deadlines create urgency. Writing communities provide motivation.

Pairing up with someone who checks in on your progress can be a game changer.

	Low Motivation	High Motivation
High Urgency	 Panic Mode You feel the pressure to write, but the motivation just isn't there. You have a deadline, but you're not prioritizing the work. The focus isn't there, and the whole process feels stressful.	 Creative Flow This is where everything clicks. Writing comes naturally. The urgency matches your enthusiasm, and ideas turn into action. You're on fire, and the words just flow.
Low Urgency	 Stuck in Limbo You have neither the desire nor the drive to write. No clear idea, no inspiration, and little to no urgency. You're just not in the mood, and that blank page seems overwhelming.	 Perpetual Daydream You're excited about writing, and the ideas are flowing in your mind, but something always gets in the way of actual writing. You're waiting for the "perfect moment," but that moment never arrives.

Take a Stroll in the Idea Phase

Before you start drafting, invest time in generating and refining your ideas. Rushing into writing without a clear direction often leads to disorganized thoughts and multiple rounds of heavy revisions. Do not rush into drafting; instead, stay in the idea phase longer. Use mind mapping to create a visual representation of your ideas and their connections to ensure logical progression. Brainstorm by jotting down all your thoughts, no matter how scattered they may seem, and categorize them later. Backward planning is useful. Begin with the final goal in mind to make it easier to structure the supporting arguments or sections leading up to it. Sticky notes or index cards help by allowing you to write key points down and arrange them physically to sort and prioritize content.

Sometimes there's a fear of lacking structure that holds people back from writing.

But by spending more time in the idea phase, you create a framework to guide your writing.

Write First, Edit Later

One of the biggest roadblocks in writing is self-editing too soon. If you obsess over perfecting each sentence as you go, you may find yourself stuck in an endless loop of minor revisions without significant progress. Focus on getting words onto the page without worrying about grammar or structure initially. Once your ideas are fully formed, you can refine and polish them during the editing phase. Write first, edit later, and do not worry about small mistakes.

*When I was writing for my degree, I was drafting over eight pages per week..
I learned that words on paper are better than a blank page. Write now, edit later.*

Leverage AI Tools

Technology can be a powerful asset in streamlining your writing process. AI-driven tools such as generative AI chatbots, grammar tools, and speech-to-text software can enhance efficiency. AI can help generate additional content, suggest different perspectives, or provide related concepts to enrich your writing. Grammar and style checks allow you to catch typos, improve sentence flow, and ensure grammatical accuracy without spending excessive time on manual proofreading. Text-to-speech tools let you listen to your writing being read aloud to detect awkward phrasing or unclear sentences. Voice dictation can be beneficial if typing slows you down, as speech-to-text tools can transcribe spoken ideas, allowing you to capture your thoughts quickly and structure them later.

*AI won't and shouldn't write your paper for you, but it can refine your words
and make them more professional. Use AI as an enabler, not a crutch.*

Find Your Flow

Just as a software developer experiences a "flow state" in coding, writers can achieve a similar deep focus when writing. Optimize your environment to encourage this state. Eliminate distractions by closing unnecessary tabs, putting your phone on silent, and setting specific time blocks for writing. Set a routine by dedicating time each day to help train your brain into a writing mindset. Using background noise, such as white noise or ambient sounds, can help maintain focus and drown out distractions. Experiment with different writing locations, as some people work best in a quiet home office, while others thrive in a coffee shop or library.

*I've walked on a treadmill while dictating ideas and ended up with
several pages of content without typing a single word.*

Embrace Collaboration and Accountability

Writing does not have to be a solo endeavor. Working with others can provide accountability, feedback, and motivation. Pair writing is like pair programming (an extreme programming practice), where a partner keeps you on track and gives feedback. Join writing groups to gain community support that encourages productivity and provides valuable critiques. Leveraging peer reviews ensures that another set of eyes can review your work to catch mistakes and improve clarity. A partner keeps you on track and gives feedback.

Overcome Writer's Block

If you find yourself struggling to write, try different methods to break through the block. Take a walk. Physical movement can clear your mind and spark new ideas. Talk it out by dictating your thoughts using a speech-to-text tool. Write the worst version first and refine it later. Getting something on paper, even if it's rough, is easier to fix than starting from scratch. Use writing prompts to trigger new ideas if you feel stuck.

Iterate and Refine

Like Agile development, writing benefits from continuous iteration. Plan your writing by outlining your main points before drafting. Write freely without excessive self-editing. Review and revise by refining structure, improving clarity, and adjusting for tone. Get feedback by sharing your draft with others or by running it through some AI for constructive input. An outline is an MVP (minimum viable product) and should not be seen as final but as a guide to shaping your work. By treating writing as an iterative process, you reduce the pressure of perfection and gradually improve the quality of your work over time.

Final Thoughts

Writing faster is not about rushing; it's about optimizing your process. By planning your content, leveraging AI tools, setting clear goals, and embracing a flow state, you can accelerate your writing while maintaining impact and clarity. The more you write, the more natural and effortless it becomes. Start today and watch your writing speed and confidence grow!

AI Disclaimer

Although AI was used to help with rewriting style and formatting, it did not generate the content. All content was the original thoughts of this author, and AI was only leveraged as a writing assistant.

Signal Instructors Connect with Industry Partners

Train the trainer

Article, photos by Laura Levering
U.S. Army Signal School

About a dozen leaders from the Signal Operations Support Specialist (25U) course received upper-level training on Integrated Tactical Network (ITN) radios from Sev1Tec, one of the military's many industry partners.

Held at Sev1Tec's Augusta location Feb. 10-21, the training was the first of future collaborations that follow a "train the trainer" model.

By teaming up with industry partners such as Sev1Tec, signal Soldiers are equipped with the latest in technology and take the skills they learned back to their classrooms.

"They will train each other so when the equipment is implemented in the 25U course, our instructors will be more prepared to educate the Soldiers on the equipment," explained Terry Moore, chief of Satellite Communications and Network Communications Branch, Training and Education Development Directorate, U.S. Army Signal School.

The 10-day course is a combination of classroom instruction and practical exercises. Chris Young, Training Development team lead for Sev1Tec, said they "are



Staff Sgt. Jamel Baldwin, 15th Signal Brigade, participates in an exercise on Day 4 of ITN training hosted by Sev1Tec.

fortunate to have the resources – everything from personnel support to equipment and everything in-between." Like many employed by industry partners, Young retired from the military and wanted to continue serving in some capacity. As a former radio operator-maintainer, he knows firsthand



Sgt. 1st Class Christopher Melton, 369th Signal Battalion, participates in ITN training Feb. 13.

how quickly technology changes and understands the value in equipping today's trainers with what they need to execute their mission. And the support doesn't necessarily stop when Soldiers complete the training.

"Soldiers can call in if they have an issue out in the field with their radio, they can call [us] regardless of where they are in the world," said Lawanda Boswell, Project Manager Tactical Radios Help Desk lead and former information technology specialist (25B). Boswell, who retired from the Army last year, said if she is unable to personally assist when called, she will seek someone who can. Soldiers also have access to a website equipped with product support, tutorials, and other resources.

"Our work with the [Signal School] is to make sure that they are integrating these new tactical radios into their curriculum and to ensure that their instructors are trained in order to execute properly," Young said.

"As the Army rapidly and iteratively fields the latest technologies across the force, we need to maintain pace and currency in order to best prepare the signal Soldier to provide critical communications capabilities to their command," said the 43rd Chief of Signal and U.S. Army Signal School Commandant, Col. Julia Donley. "Having Sev1Tec update us on ITN equipment really brings the instructors here at the schoolhouse up to speed with some of the latest C2 Fix capabilities."

Future iterations of ITN training are planned and will cover Mobile User Objective System, Field Level Maintenance, and Ruggedized Applications Platform-Tactical Radios/Atom.

Sev1Tec has 11 locations throughout the United States and provides services to the military worldwide.

An Assessment of the ITN's Viability for C2 in LSCO

Up to code

Maj. Tony Formica, Capt. Andrew Ciserano
Department of Army

The way that Army doctrine characterizes modern conflict is stark in terms of both scale and speed. Brigade combat teams (BCTs), the cornerstone of Army forces, must grapple with areas of operation (AOs) that are 5-25 kilometers in depth (Department of the Army, 2022). Meanwhile, the Army's premier tactical echelon, divisions, face AOs spanning 20-40 kilometers, which incorporate multiple BCTs (Department of the Army, 2022).

Doctrine tells us that brigades must be able to plan operations 12-24 hours into the future, while their division headquarters deal with time horizons spanning 24-48 hours (Department of the Army, 2022). These vast distances and short time windows impose a requirement for BCTs and their division headquarters to share a robust command and control (C2) architecture.

The Integrated Tactical Network (ITN) is the Army's answer to this requirement. ITN represents a significant investment by the Army to not only ensure that its tactical units can talk to each other, but that they can also perform the data ingestion and information transmission tasks that are essential to both survive on and dominate the modern battlefield.

At its best, ITN theoretically goes beyond enabling *communication* to materially altering the way that units *operate*. It does this by facilitating an increase in the pace and volume of information exchange between echelons operating across the distances and under the time constraints described above. This makes the integration of ITN into BCT operations a task that must be shared by both signal professionals and their maneuverist peers. It is neither "just another piece of kit" nor something for the S6 to "figure out" in isolation, but instead an essential tool for modern warfighting.

Both of us recently served in an ITN-fielded BCT and had the opportunity to assess the technology's capabilities across two rotations at the Joint Readiness Training Center (JRTC). We will argue that the most current iteration of ITN enables organic BCTs to significantly speed up their planning and operational timelines in simulated large-scale combat operation (LSCO) environments - but only if these units achieve a high level of technical skill, staff training, and maintenance at multiple levels across the formation. Similarly, we will argue that ITN falls short of reaching its full potential because of technological inefficiencies and shortcomings that are built into the network.

An Unqualified Win for ITN: Faster Planning

Our brigade's greatest successes with ITN came from leveraging its data transport capabilities. This capacity allowed us to dramatically shorten the amount of time it took our staff to run a cycle of the Military Decision-Making Process (MDMP) and enabled us to increase our overall operational tempo. Specifically, ITN's data transport facilitated our staff's preference for analog planning in a deployed environment.

The benefit of analog planning is speed and intrinsic synchronization. It is faster for brigade planners to collaboratively draw a concept sketch or synchronization matrix on the back of a laminated map than it is for them to huddle around a computer and try to get the zoom settings and formatting correct. The downside to analog planning is dissemination of orders and fighting products, which if not generated on a computer, have to be manually duplicated and then delivered. This drawback tends to negate any efficiencies the staff might have gained from analog planning in the first place.

We nullified the dissemination problem once we established our brigade's ITN network at full capacity. We extended the reach of the TrellisWare Scalable Mobile Ad Hoc Network with our Variable-Height Antennas (VHAs), and enhanced the data throughput capacity of the network with Tampa Scout-provided Upper Tactical Internet. Doing this now allowed our analog planners to take photos of their hard copy draft orders and fighting products on an Android Team Awareness Kit (ATAK) and push those photos in real time across the brigade's network.

Meanwhile, one designated planner was tasked with typing up analog products on a Windows TAK (WinTAK) so that, as a rule, the brigade published warning orders in analog format as photos and finalized orders and fighting products in digital format. This approach allowed us to push our planning windows from the 12-24 hours described by doctrine to 48-72 hours. The windfall from this shift was better parallel planning, more time for rehearsals, and an overall faster tempo. The brigade had to train methodically to get to this level of proficiency.

It takes time to configure the right number of WinTAK computers with the suite of applications and licenses necessary to enable this kind of distributed planning, and staff officers need to understand how to batch data files to prevent them from clogging up bandwidth. We spent seven months executing a series of staff exercises, command post exercises, leader training period, and field training exercises to ensure that our staff had the requisite level of technical proficiency

to maximize its use of ITN-enabled planning. ITN's sophistication requires an unfortunately high degree of such technical proficiency, as illustrated by our brigade's experiences in controlling geographically-distributed forces.

Controlling Forces: A Draw

Our brigade entered the training area (The Box) via Joint Forcible Entry-Airborne (JFE-A), more commonly known as an airborne assault. We focused most of our combat power on Geronimo Drop Zone (DZ) in the northern portion of The Box, while allocating a battalion task force to Barry DZ in the south. ITN's TSM – its line of sight (LoS) functionality – facilitated excellent information flow on each DZ. Nowhere was this more pronounced than on Geronimo DZ, where TSM allowed crosstalk between leaders at all echelons in different battalions and had an inherently acceleratory effect on the overall brigade ability to achieve and sustain momentum. But the brigade struggled to achieve communications *between* the DZs. Barry's 10-kilometer separation from Geronimo forced the lone battalion task force on that DZ to rely on the Mobile User Objective System (MUOS), a satellite-based waveform that is ITN's answer to the outmoded TACSAT system, to send reports to the brigade from the outset of the JFE-A. This was a risk, but one we deemed acceptable. We believed that we could airland a sufficient number of VHAs to extend the TSM network from Geronimo DZ to our southern battalion by the time they had occupied their initial march objectives. That expansion did happen, but 48 hours later than planned.

Talented and well-intentioned as they were, the southern battalion's communications personnel lacked the proficiency to put their VHAs in operation to sufficiently expand the TSM bubble. Maintenance issues on the battalion's VHAs further decreased their reliability, necessitating the dispatching of a brigade-level VHA team to plug the gap in the mesh network.

In the interim, the southern battalion had relied almost entirely on MUOS and its liaison officer to maintain communications with the brigade headquarters, and because of the MUOS radio's high battery consumption rate, the battalion resorted to infrequent comms windows to send reports and receive information from the brigade. This combination of events threatened the brigade's ability to command its forces as it prepared to execute a defense. Events that were happening in real time in the southern battalion's AO were not being reported to the brigade headquarters with the frequency or level of detail that events that were happening to the brigade's other well-connected battalions.

The brigade staff and commander consequently made decisions about the allocation of scarce resources and capabilities – Class IV allocations, dig assets and

blade hours, resupply of anti-armor munitions, allocation of priority targets, and fires – that were informed by only partially complete information.

Slow Links and Popped Bubbles

The previous episodes underscored that ITN can be a highly effective tool for increasing the tempo and scope of BCT operations – assuming a very high level of collective training on the maintenance, employment, and troubleshooting of ITN's component systems. However, even when BCTs manage to get all of these considerations right, technical shortcomings that are baked into ITN's hardware will still limit its utility to units that field it.

Our brigade had a combined arms company consisting of two platoons of Abrams tanks and one platoon of Bradley Fighting Vehicles attached to it for the duration of our most recent rotation. This company came from a division that had not been fielded with ITN capabilities. While ITN is compatible with legacy waveforms, such as the FM radios and Joint Battle Command-Platform (JBC-P) employed by this specific combined arms company, tank commanders could not look at an ATAK device and know that the units to their front were friendly or that the enemy slowed down the speed at which they could employ their formations. This in turn slowed down the speed at which the combined arms company could mass its armored assets, thereby reducing its ability to capitalize on its hallmark strengths of shock and firepower. The net result was that the brigade's tempo was significantly decreased. The battalion and brigade anticipated this problem. We did everything we could to mitigate it, to include providing key leaders in the combined arms company with ATAK devices, but these measures did not materially alter the fact that our brigade's speed in controlling operations was slower with its non-ITN-equipped enablers than with its organic forces.

All of our skill in utilizing TSM to control even our organic formation counted for little once the brigade transitioned to executing live fires at the Peason Ridge range complex. Here, civilian cell phone towers operating in the same ultra high frequency (UHF) range as our TSM waveform completely broke the mesh network, in spite of the fact that the distances we were operating and retransmitting across were shorter than they had been during our force-on-force module in The Box. This is a math problem that cannot be solved through training or technical ingenuity. A waveform in the same frequency range as TSM with more power amplification – e.g., a cell phone tower – will always pollute, degrade, or deny TSM transmissions.

Recommendations and Way Forward

ITN can significantly increase a brigade's operational tempo, specifically by increasing the rapid exchange of large amounts of information between echelons. However, this will only happen if there is a very high

level of technical skills, staff training, and maintenance across the formation. Even then, ITN will slow BCTs down when they work with units that are not ITN-equipped, and ITN will outright fail in some environments that units are likely to face in LSCO. These conclusions imply that ITN-equipped units have a responsibility to set conditions for themselves to ensure they maximize use of their equipment.

The first of these is training, both of staff as well as signal professionals. Our brigade's success in using ITN to rapidly plan, prepare, and rehearse operations did not happen by accident; it was the end result of a seven-month training progression focused on refining our standard operating procedures and rehearsing our methodology for disseminating orders and fighting products. Similarly, ITN's failure at Peason Ridge suggests another training objective for ITN-equipped BCT staffs: how they think about and construct their Primary, Alternate, Contingency, and Emergency (PACE) plans.

The root cause of the Peason failure was electromagnetic interference (EMI) from a local cell phone tower. This problem is not going away. There are few, if any places, on the planet where cell towers or similar technologies will not cause EMI problems for units entrusted with 5-25 kilometer frontages. Similarly, our likely adversaries have the capability, capacity, and skill to use electronic attacks to deny, degrade, and disrupt friendly communications (The Economist, 2024). Tactical units must start falling back on PACE plans that will stand up to EMI; not just against specific platforms but specific bands. BCTs should develop a PACE for LoS, beyond line of sight (BLoS), and UTI respectively. This would have looked like our brigade shifting from TSM's UHF-reliant waveforms to FM communications before resorting to MUOS's slower BLoS capabilities at Peason. There would've been costs associated with doing this; that is what Course of Action analysis exists to evaluate. The main point is that staffs must be trained to think about robust PACE plans in terms of bands, not just platforms.

ITN-enabled BCTs must take ownership of training their signal professionals, the radio-telephone operators (RTOs) and S6 personnel who design, run, and repair the communications architecture. Our combined experience over three years and two JRTC rotations suggests that this requires a minimum six months' investment of time to get these junior leaders to the level of proficiency that enabled our brigade's operations. Even with that investment – multiple RTO academies, communications exercises, and field exercises designed to strain the mesh network – we still encountered training and maintenance shortfalls with our southern battalion during our most recent iteration in The Box. This is not a reflection on that battalion;

they were just the most geographically isolated unit in our formation. Instead, it speaks to an institutional issue that the Army should fix.

Communications Soldiers do not learn how to employ ITN and its associated end items during their Initial Entry Training or Advanced Individual Training. These Soldiers arrive to units like ours able to operate and maintain legacy equipment, and unable to design a battalion talk group, maintain a TSM network, or advise staff where it should put a VHA to achieve optimal battlefield coverage. Army signals training can address this gap by incorporating ITN into its program of instruction and embracing a more strenuous focus on theory for entry-level Soldiers. The current Army model, with its heavy emphasis on hands-on training, does not generate professionals who can construct a C2 system appropriate to the breadth, depth, and EMI of their units' AOs. This training deficit ultimately produces situations such as the one our southern battalion found itself in: dependent on a brigade asset with more expertise and knowledge to reestablish reliable communications with higher headquarters.

The Army must also assess ITN's materiel composition. ITN's end items contain a plethora of functionally useless basic issue items (BII) and shortage of essential BII. For example, the ATAK is fielded with 15 total components, of which only about six are useful to the individual paratrooper. Our brigade experienced a marked decrease in physical communications capabilities over the course of our rotation because those six components, or their analogs in other ITN hardware, broke too often and easily to be reliable in LSCO. We were aware of this problem before deploying to the JRTC, but to date, our formation has had middling success in addressing it. The supply system has not caught up with the demand for those elements of ITN supporting hardware that are the most used and therefore are frequently the first to wear out and break.

All of this makes training personnel on the use and maintenance of ITN components much more difficult than it needs to be. We have described how many months it takes to train personnel to a basic level of proficiency on ITN. The combined arms company commander who is handed an ATAK a few days before the brigade assaults into the JRTC training area with a box of 15 cables he or she has never seen before is unlikely to make even minimal use of the system over the course of the rotation. The Army must reassess the user-friendliness of ITN's components and eliminate superfluous BII that does not materially make the BCT and its subordinate headquarters better off in the fight for information.

Up to Code But Some Upgrades Required

We believe that ITN is a sound step forward in the Army's effort to build communications systems that are up to the requirements of the modern battlefield.

Our brigade's proficiency in employing ITN allowed us to exercise C2 of our forces within both a brigade and replicated division battlespace as large as those presaged by contemporary Army doctrine. ITN's signal contribution to our BCT's effectiveness was its ability to allow our planners to outrun the time horizons anticipated in FM 3-0. We were consistently 24-48 hours ahead of where doctrine thinks brigades will be able to be because of the ability ITN gave us to ingest, analyze, and distribute information.

Cybersecurity professionals often joke that there's no such thing as a perfect system, and we share this perspective in evaluating technologies the Army develops to provide C2 on the battlefield (Schneier, 2018). ITN is not perfect, and it is never going to be. Adversary capabilities will evolve, technological innovations will render entire categories of communications platforms irrelevant, and force structure modifications

will carry second-and-third-order effects for the ways future BCTs conceptualize their C2 requirements. However, the need for information to inform decisions will remain permanent.

The recommendations we have made here should be taken as achievable milestones the Army can set to improve its current system. We think ITN is still in its nascency. It provides the minimum requirements imposed by what the Army thinks future combat looks like. We believe that incremental adjustments such as those we have proposed will bring it to maturity.

We are excited to see the results that BCTs can achieve as ITN becomes more widely proliferated, as our communications professionals become more proficient in its application, and as Army commanders and their staff become more aware of just how much capacity ITN gives them to quickly find and destroy their enemies in combat.



Maj. Tony Formica is a career infantryman with experience in Stryker and airborne formations. He has deployed to the U.S. European Command and Central Command areas of responsibility. Formica holds a Bachelor of Science from the U.S. Military Academy and a Master of Arts from Yale University's Jackson School of Global Affairs, which he obtained through the Downing Scholars Program.

Capt. Andrew Ciserano is a signal officer with eight years of tactical and airborne communications experience. He has deployed to the U.S. European Command, African Command, and Central Command areas of responsibility. Ciserano holds a Bachelor of Science from the University of South Carolina and a Master of Science from Webster University



References

- Department of the Army. (2022). *Operations* (FM 3-0). https://armypubs.army.mil/epubs/DR_pubs/DR_a/ARN36290-FM_3-0-000-WEB-2.pdf
- The Economist*. (2024, 30 April). "Who is jamming airliners' GPS in the Baltic?" <https://www.economist.com/the-economist-explains/2024/04/30/who-is-jamming-airliners-gps-in-the-baltic>.
- Schneier, Bruce. (2018). *Click Here to Kill Everybody: Security and Survival in a Hyper-connected World*. W.W. Norton & Company.

Up next ...

The **Summer 2025** themes are:

Stewarding the Profession, the ***250th Army Birthday***; the ***165th Signal Corps Anniversary***.

Why did you join the Army? Why the Signal Corps? How has the Army changed the world for the better? Who are some of the greatest heroes of the Army and why? What opportunities has the Army afforded you? Who or what inspires you to “be the best you can be?” What does “stewarding the profession” mean to you, and why is it important? What goals have you set for yourself and what actions are you taking to achieve them?

Everyone has a story to share. We want to hear yours!



Did you know Army Emergency Relief is a tax-exempt 501(c)(3) nonprofit organization, and donations to AER are tax deductible? AER has provided financial support to Soldiers for more than 80 years. The 2025 Campaign is underway and runs through June 14. Learn more [here](#) or by scanning the QR code to the left!

Want to be on the next cover?

There are some incredibly talented Signaleer-photographers. We know because we've seen some of your work! Send us your best shots!

Photographs should be at least 1MB (higher is better) and feature at least one Signaleer. Full name, rank, and unit of Soldier(s) in photo must be included along with a sentence or two explaining the photograph.

Send to:

Laura.M.Levering.civ@army.mil

On the Cover:

Staff Sgt. Jaron Hohertz, assigned to 11th Signal Brigade, conducts voiceover during the QRPX (low-power, high-frequency communications exercise/competition) March 22, on Fort Cavazos, Texas. QRPX is an annual, Army-wide radio event sponsored by the U.S. Army's Network Enterprise Technology Command where competing units attempt to successfully establish high-frequency communications across the globe. (Photo by Pfc. Patrick M. Connery, 7th Mobile Public Affairs Detachment)

