U.S. Army soldiers from Charlie Battery, 1st Battalion, 41st Field Artillery Regiment, 41st Field Artillery Brigade collaborated with the German Armed Forces from the multinational battle group of Lithuania, while focusing the training on the Artillery Systems Cooperation Activities (ASCA) program. ***(U.S. Army photo by Staff Sgt. Rose Di Trolio)***

A Call to Evolve Our ASCA

COL John "Jay" B. Bradley
CW5 Abel Almanza

I. ASCA, What is it you would say you do here?

Persistent challenges within the Artillery Systems Cooperation Activities (ASCA) protocol continue to impede multinational fires interoperability, a fact starkly highlighted during Warfighter Exercise (WFX) 25-4. Despite significant preparation by III Armored Corps (IIIAC) to interface with one U.S. division, three allied divisions, and a U.S. field artillery brigade, the exercise revealed critical complexities in the ASCA communications architecture. In response to these shortfalls, the IIIAC Fire Support Element (FSE) is spearheading a crucial effort to modernize and expand fires interoperability for both the U.S. Army and its partners.

At its core, the ASCA protocol functions as a digital Rosetta Stone for allied artillery, providing the common message standards needed to communicate between different nations' fire control systems. It standardizes these formats, allowing partners to "speak" the same data language and deliver coordinated fire, even if their native gear and procedures don't match. To borrow from the film *Office Space*, ASCA acts as the "Tom Smykowski" of multinational artillery: It takes the digital "specifications" from one partner and gives them to another. While this intermediary role is vital, its aging architecture forces us to ask the same question posed to Tom: "What is it you'd say you do here?" In an era of rapid technological advancement, is ASCA still a relevant solution or simply a relic of yesterday's technology?

Born from a 1987 effort to bridge language barriers and automate targeting data among allied forces, ASCA took shape in the late 1990s and early 2000s as NATO digitized artillery command-and-control systems. It is not a modern software application written in HTML or Java, but an encrypted, military-grade exchange interface rooted in late-90's architecture. Although it has grown—now used by 15 nations as of March 2026 and integrating advanced systems like Poland's TOPAZ—ASCA remains fundamentally a message protocol. It governs the syntax and transmission of fire missions but does not provide the semantic structure or shared data model needed for broader mission-command interoperability. ASCA is essential, but it is legacy technology, and the real question is whether it is time to accelerate its evolution into an agile, data-layer protocol. III Armored Corps' commitment to continuous modernization demands transforming ASCA into a flexible, plug-in capability—one that lets us fight tonight and win.

II. Legacy: In the Time Before ASCA……

Before ASCA, artillery interoperability among NATO allies depended on manual coordination and standardized procedures rather than automated system exchanges. Coordination methods resembled the game *Battleship* or the traditional swivel chair approach, relying on voice radio, landline, or teletype to transmit NATO-standard call-for-fire formats, often requiring translation by liaison officers at allied headquarters. While fax and paper messages were common, they were slow and error-prone, heavily relying on human interpretation. NATO Standardization Agreements (STANAGs) offered some consistency, such as STANAG 2934 for artillery procedures, but only ensured common formats without facilitating digital interoperability. The exchange of fire data relied on liaison teams and ad hoc technical workarounds during coalition exercises

Figure 1, Movie "Office Space." 1999

like REFORGER. Interoperability prior to ASCA was defined by manual processes and liaison facilitation, lacking automated data exchange.

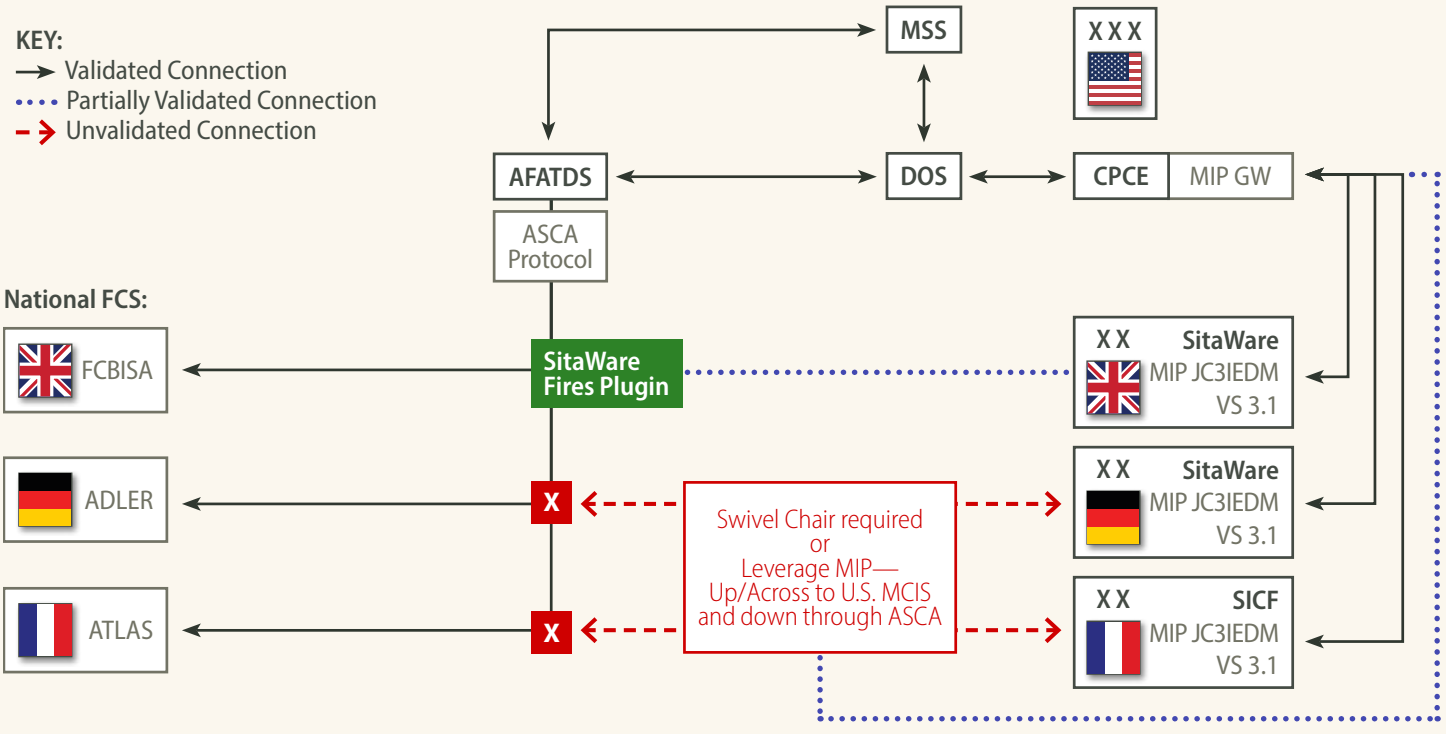
During WFX 25-4, ASCA's fragility was on full display. Allied fire-control systems, restricted to their national networks, required cumbersome and fragile tunneling to connect to the shared multinational network. This brittleness is exacerbated by the common practice of establishing a single national gateway, creating a critical point of failure. For instance, the U.S. gateway, the Advanced Field Artillery Tactical Data System (AFATDS), is known for stability issues that are untenable in a large-scale conflict. Procedurally, the protocol is also error-prone; if the crucial "ANNEX E" is not meticulously completed by each nation beforehand, the system cannot recognize units unless they are pre-built, necessitating manual data exchange for any new forces introduced mid-operation. In our age of rapid technological advancement, these limitations highlight a clear opportunity to modernize ASCA with large language models and AI, creating a more dynamic and resilient system capable of automating data exchange and recognizing new units on the fly.

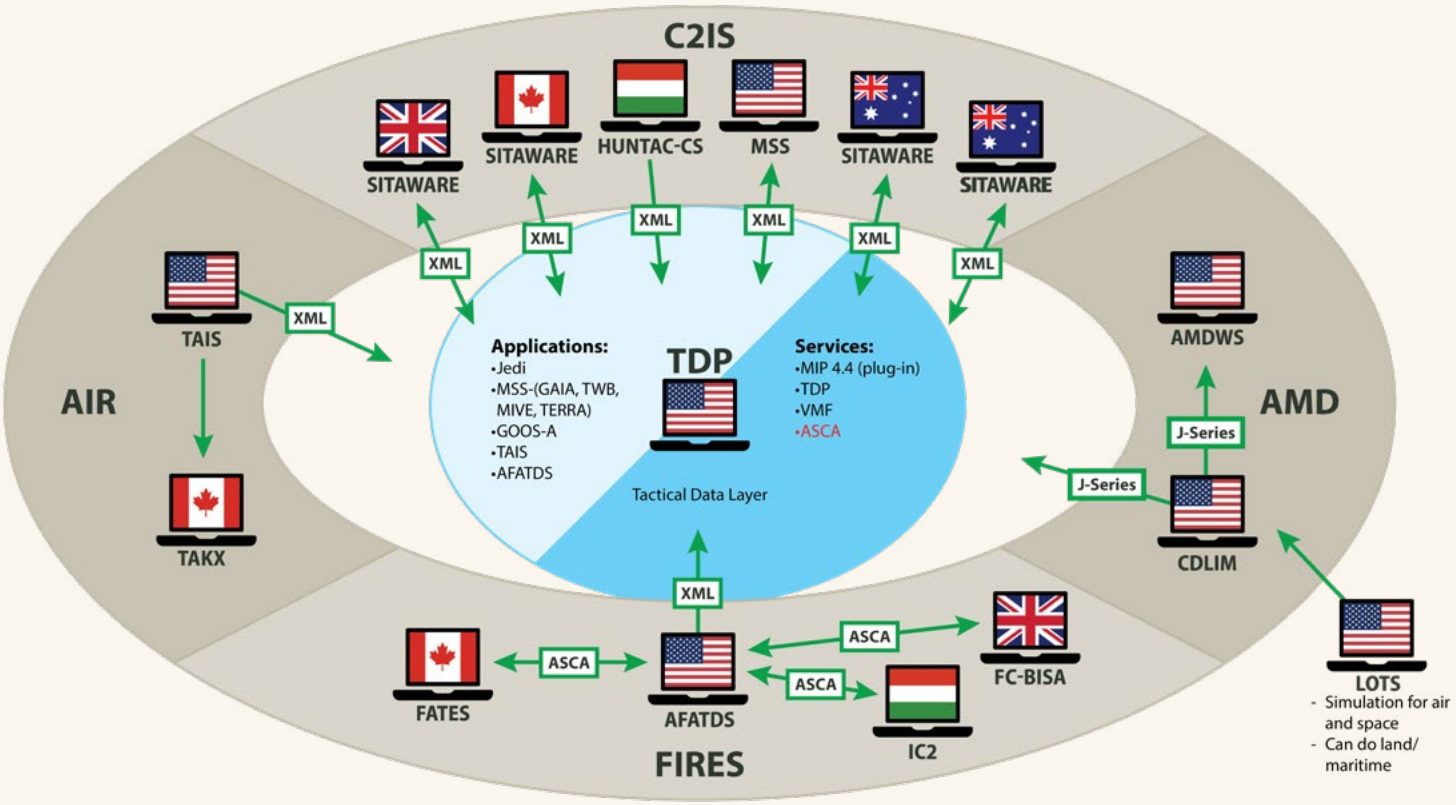
As the Army continues to transform in contact and develop applications for future technical fire directions, risk to mission increases as ASCA remains outdated and insufficient to meet the data demands of 2030. These challenges highlight the necessity for the U.S. Field Artillery to re-evaluate ASCA and advance it into a protocol capable of exchanging data within a unified data layer. The future of coalition fires depends on evolving ASCA from a rigid message protocol into a dynamic, data-driven architecture that ensures interoperability in contested, multi-domain environments. To navigate the complexities of independently procured and disparate systems on the battlefield, our Army and its partners need a secure method for exchanging fire and targeting data to achieve digital interoperability. We must innovate to modernize ASCA.

Figure 2. ASCA GATEWAY WFX 25-4

Key Considerations:

- MP GW facilities exchange of MIL STD tactical graphics
- Exchange of joint targeting data validated at CPX II
- FRA and DEU national C2IS and FCS are not interoperable
- GBR will employ SitaWare Fires plugin to achieve C2IS and FCS interoperability





III. Innovate but Mired by the Exchange Protocol

As the Army rapidly modernizes its network of command systems leveraging artificial intelligence and advanced data architectures, the ASCA protocol risks becoming the weakest link in coalition fires interoperability. The U.S. military's Next Generation Command and Control (NGC2) initiative is fielding advanced, data-centric platforms like the Advanced Execution and Management System (AXS) and the Joint Tactical Information Communication System (JTICS) to replace legacy systems. However, simply embedding the antiquated ASCA protocol into this modern framework is like trying to run a sophisticated application on an Atari 2600—it will cripple the very systems designed to make forces more lethal and agile, leading to delayed decisions and a decisive loss of operational advantage.

The current ASCA framework is not a "plug-and-play" solution fit for modern warfare, but a "plug-and-pray" system requiring extensive pre-deployment validation. Its architecture is rigid, suffering from technical fragmentation, non-backward-compatible software versions, and disparate national security classifications that hinder seamless data exchange. This forces cumbersome workarounds and prevents the rapid, API-driven integration that defines modern systems. As military strategy shifts toward multi-domain operations and embraces autonomous solutions, ASCA's narrow focus on specific artillery functions renders it increasingly obsolete, creating a dangerous bottleneck to achieving true digital interoperability on the battlefield.

With the transition to AXS and JTICS, the Army is adopting an integrated approach to fire support that enables real-time

Figure 3. Data Layer MIP 96 - "Darkhorse"

Issues encountered at MIP

- ✗ Partners lacking the ability to share MFPs
- ✗ AMDWS Data Classification
- ✗ Closed Network Limitations (GAIA is a cloud-based app)
- ✓ Data parsing from GAIA to SitaWare (Grid Locations)
- ✓ Different gateways required static routes to achieve connectivity

> *Legacy routing of data through Corps systems was validated as well. (Ex. FATES to AFATDS to MSS)*

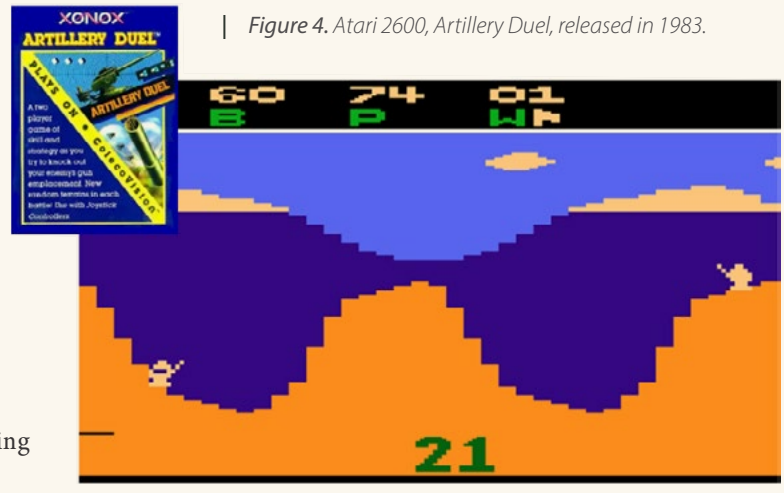


Figure 4. Atari 2600, Artillery Duel, released in 1983.

data sharing and enhanced situational awareness. These platforms are meant to streamline operations and enhance effectiveness in complex environments. To realize this vision, ASCA must be fundamentally overhauled. It must be re-engineered into a resilient, data-driven architecture capable of sustaining interoperability across diverse communication pathways. Without this critical modernization, the promise of a responsive, interconnected fighting force will remain unrealized, leaving coalition commanders with a fragmented view of the battlefield when rapid, data-driven integration is most essential. Without a fundamental overhaul, ASCA will remain a bottleneck to achieving true digital interoperability on future battlefields; relying on it while developing applications like AXS is akin to trying to run a modern app through a retro Atari 2600 system. It will resemble the Atari game *Artillery Duel*.

IV. Evolve, Update, Fight Tonight: Win.

To modernize the ASCA language protocol, we must evolve it into a more agile and efficient data model capable of distributing fires and mission command data across systems. This effort is complicated by the requirement for unanimous signatory approval for any version update—an approval process that is voluntary and has led to multiple versions and persistent compatibility challenges. While the current Memorandum of Understanding (MOU) permits research to improve collaboration and efficiency, it does not explicitly authorize prototyping. Even so, the Multilateral Interoperability Program 96 (MIP 96) event in December 2025 demonstrated what is technically possible: using the Tactical Data Platform (TDP), participants successfully established a shared data layer that enabled a multinational common operating picture. This proof of concept shows that ASCA modernization is not only necessary but achievable.

To advance this initiative, III Armored Corps should begin rapid prototyping of an ASCA plugin for testing and validation, aiming for a demonstration at MIP 98 in April 2026 and a follow-on presentation to the ASCA committee. This prototype would enable more efficient data exchange among ASCA members and reduce dependence on the single U.S. Corps AFATDS hosted gateway. The IIIAC Fire Support Element and Software Operations Section are prepared to support development, with results to be briefed to the Interoperability Committee and ASCA governance to inform broader interoperability discussions. Incorporating Large Language Models could further accelerate modernization by translating legacy ASCA formats into current interoperable structures. Embedding the ASCA model within the Tactical Data Platform would streamline fires command and control across partner systems and enable advanced visualization tools, such as operational heatmaps, to enhance operational effectiveness. As IIIAC continues to drive innovation, sourcing solutions for validation and integration at PCC6 will ensure ASCA modernization aligns with multinational interoperability objectives.

Chief Warrant Officer Five Abel Almanza Jr. *is the Senior Field Artillery Targeting Technician for III Armored Corps, bringing more than 30 years of dedicated service to the field artillery and Joint Fires community. Throughout his distinguished career, CW5 Almanza has held a multitude of Targeting Officer positions at both the tactical and operational levels, providing critical support to garrison and combat operations. His expertise is further enhanced by a Master of Science in Strategic Leadership from Charleston University and his completion of the Warrant Officer Senior Staff Education Course.*

Colonel John "Jay" Bradley *is a field artillery officer currently serving as the III Armored Corps Fire Support Coordinator (FSCOORD). He has previously served in numerous field artillery tactical level leadership positions to include Commanding 3rd Battalion, 27th Field Artillery Regiment, and 18th Field Artillery Brigade. He has served several tours in support of Operation Iraqi Freedom and Spartan Shield and holds a Masters of International Relations from Websters University and a Masters of Strategic Leadership from the U.S. Army War College.*

References

Dynamic Front 22: Artillery Systems Cooperation Activities (ASCA) - United States Field Artillery Association. (2025). Fieldartillery.org. https://www.fieldartillery.org/news/dynamic-front-22-artillery-systems-cooperation-activities-asca.

Video Player. (2024). Army.mil. https://www.europeafrica.army.mil/videoplayer/videoid/942924/.