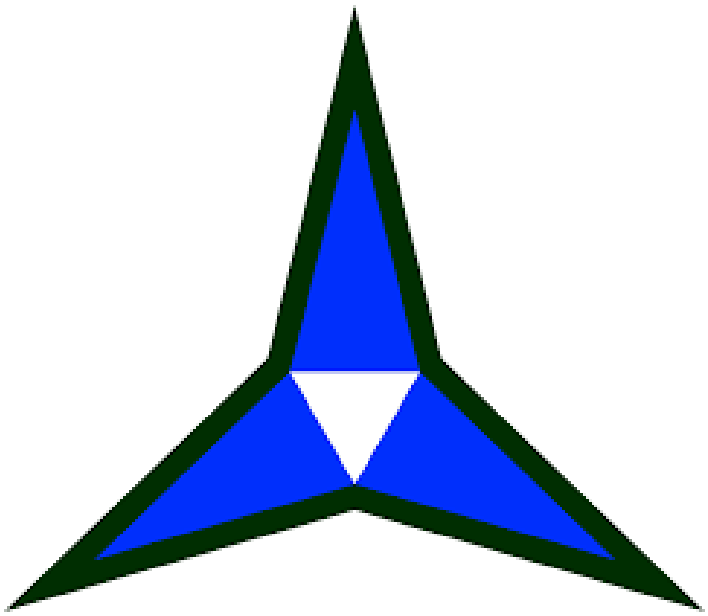
Interoperability: Winning Happens in the Off-Season – The Imperative for Warfighting Success in a Coalition Warfighter Exercise



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As the United States National Security Strategy highlights, "Our alliances and partnerships around the world are our most important strategic asset" and we will not fight alone in future conflicts (2022 NSS, p. 11). Future multi-domain operations require deliberate efforts to foster interoperability across diverse cultures, national systems, and operational doctrines. For nearly two decades, the U.S. military concentrated on counterinsurgency operations, adapting its tactics and equipment to the challenges of asymmetric warfare. In response to emerging threats from near-peer adversaries and a changing geopolitical landscape, the U.S. military is refocusing on large-scale combat operations (LSCO). This shift during competition is essential for deterring aggression and maintaining a competitive edge. It also presents a significant interoperability challenge. Warfighter Exercises (WFXs) offer a unique opportunity to train and evaluate interoperability with international allies. However, the true benefit lies in setting the conditions before the WFX. This article argues that a deliberate focus on interoperability—encompassing technical, procedural, and human dimensions—during the "off-season" between WFXs is crucial for maximizing training effectiveness and ensuring decisive victory against near-peer threats in a coalition WFX environment. The decisive outcome of WFX 25-4, enabled by the III Armored Corps (IIIAC) Fire Support Element's (FSE) focus on interoperability in the off-season, highlights the critical importance of comprehensive interoperability training. Maximizing interoperability development in the off-season enables decisive victory as a coalition during a WFX and, more importantly, prepares warfighters for real-world operations. As many coaches have said, championships are won in the off-season.

Human Dimension

WFXs are vital for preparing for LSCO, and lessons from WFX 23-4 underscored the critical importance of strong interpersonal relationships. That exercise revealed that delaying relationship-building until the exercise's warm-start led to differing assumptions, strained communication, and a fragmented common operational picture (COP), ultimately hindering interoperability with allied forces due to unaddressed warfighting differences and varied approaches to LSCO. This highlighted the need to prioritize relationship-building before future WFXs.

Recognizing the need to train for LSCO against near-peer adversaries and significantly increase interoperability, the approach to WFX 25-4—the largest and most complex WFX to date, involving four globally dispersed divisions from separate nations under a U.S. corps—shifted dramatically. Fires planners deliberately framed the exercise as a valuable training opportunity, not a "no-win" scenario. This meant prioritizing investment in professional relationships between personnel from each division and enabling brigades in the months leading up to the exercise. This proactive relationship-building fostered shared understanding, effective communication, and a cohesive environment essential for seamless combined, joint, and multi-domain operations, ultimately maximizing readiness and lethality. The FSE prioritized building relationships and shared understanding by hosting monthly touchpoints, participating in multilateral interoperability programs, and orchestrating events like Airspace Symposiums and "ASCA Universities" all designed to foster both technical and human interoperability. Investing in these human connections proved a significant return on investment, enhancing interoperability, reducing friction, and building a more robust and responsive fighting force capable of achieving decisive victory.

A cornerstone of this strategy was monthly multinational touchpoints, designed not just for operational coordination, but to foster a shared understanding of each nation's operational culture. These weren't just briefings; they were opportunities to connect personally. For example, during one session, the German contingent led a discussion on their decentralized command philosophy, openly addressing concerns from the U.S. team about potential delays in decision-making. This transparency sparked productive dialogue and built confidence. Each nation took turns leading discussions and planning efforts, ensuring all voices were heard. Cultivating trust through genuine interpersonal connections was crucial in fostering the collaborative environment needed to advance a corps-level Air Support Operations Center (ASOC) capability. By fostering open communication and mutual respect, the corps created a space where seasoned personnel, long steeped in established doctrines, felt comfortable challenging existing paradigms and embracing new approaches. These relationships facilitated a more nuanced dialogue, positioning doctrinal evolution as a shared opportunity for improvement. The resulting trust enabled the corps to collectively envision and implement a practical and enhanced ASOC capability, effectively bridging the gap above division Joint Air Ground Integration Centers (JAGICs).

"*Airspace Symposium has allowed us to meet face to face and to address the initial topics related to procedures, notably those of the US Air Force. and to meet the JAGIC chiefs of the American, British, and German divisions. This is essential and has allowed us to break down barriers and manage in real-time and in coordination with the other JAGIC chiefs during the Warfighter exercise.*" - *Chef d'escadron (OF-3) Jérémie Kern, Dragoon 34 Combined ASOC*

While participation in the Multilateral Interoperability Program (MIP), the execution of "ASCA University," and the Airspace Symposium were crucial for system and process improvements, the most valuable return on investment came from the informal interactions these engagements sparked. Adjacent events provided opportunities to build rapport—sharing meals and experiences beyond professional duties. For example, a British officer organized an impromptu rugby viewing party after discovering a shared interest, fostering camaraderie and a deeper understanding of each other's backgrounds. These connections humanized colleagues, building empathy and a willingness to collaborate. This proactive approach cultivated a network of trusted partners, leading to more seamless combined arms operations, enhanced interoperability, and a more resilient alliance prepared for success in WFX 25-4. Ultimately, investing in these relationships proved critical to achieving a cohesive and effective fighting force before warfighting training progression events.

Fires and targeting leaders from IIIAC and the 10th Panzer Division met in Salado, Texas, at Johnny's Steaks and Bar-Be-Que to build camaraderie and foster interpersonal relationships, ultimately enhancing interoperability.

Procedural Dimension

Even with meticulous planning, concerns lingered before WFX 25-4. IIIAC had limited experience collaborating with and understanding the operational planning and execution processes of a NATO Multi-Corps Land Component Command (MCLCC). Limited training opportunities between WFX events can lead to friction during the exercise, especially concerning communication protocols, targeting procedures, and the integration of multi-domain assets. The differences in organizational culture, operational doctrine, and command structures between IIIAC and the NATO MCLCC initially presented challenges to achieving seamless interoperability and a unified COP.

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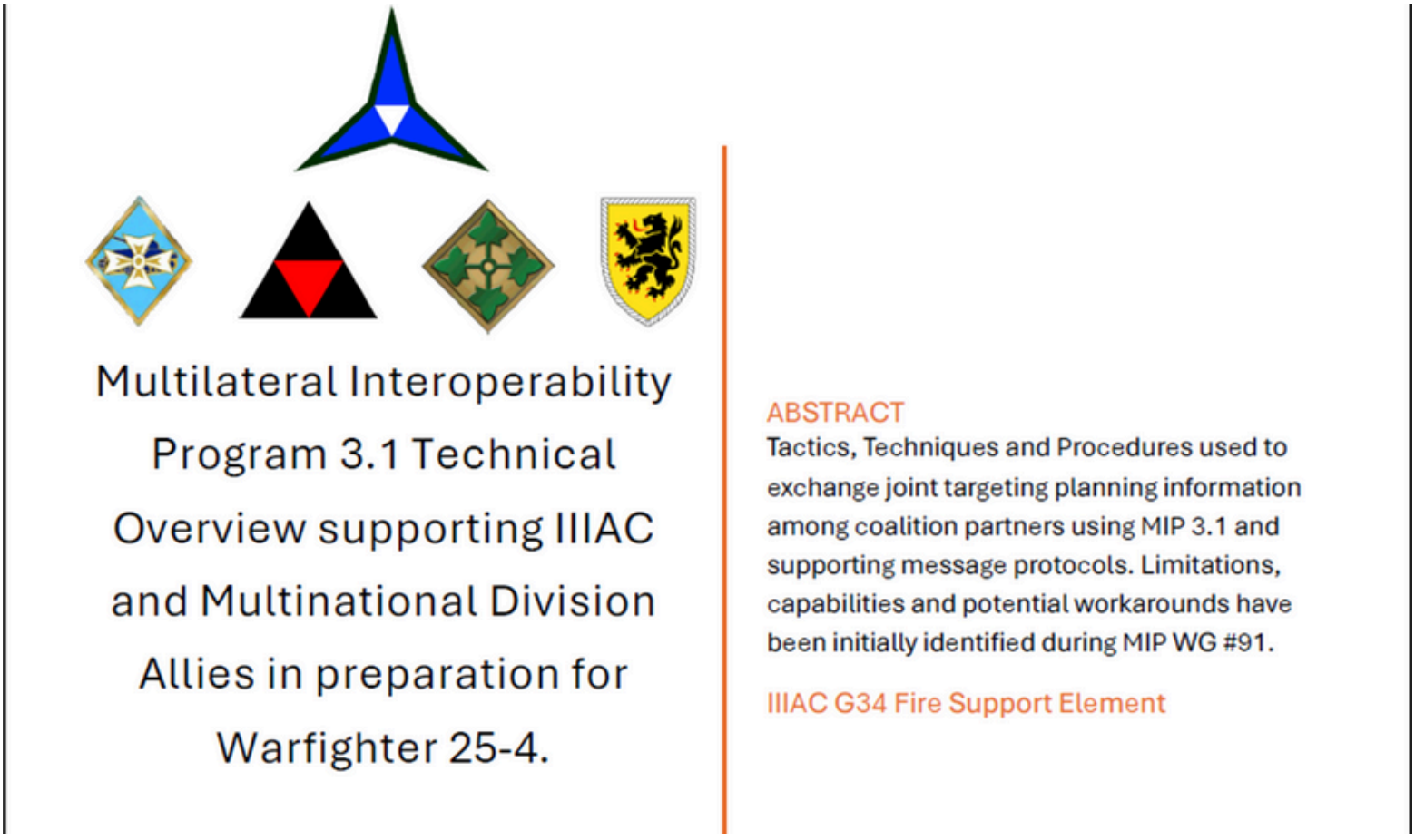
Successfully integrating targeting, airspace control, and management across different units required extensive coordination, primarily facilitated by liaison officers (LNOs). While critical to execution, these LNOs relied on a clear, shared understanding of procedures. This understanding was developed through defined expectations and LNO integration training discussed in monthly meetings and reinforced through training at MIP and "ASCA University." The IIIAC FSE adapted established doctrine to meet the needs of multinational allies and their varying operational capabilities. This continuous refinement, tested during CPX III, resulted in a robust revision of the IIIAC WFX standard operating procedure (SOP) and refined tactics, techniques, and procedures (TTPs) that strengthened the link between echelons executing targeting and synchronizing the fight in the corps and division deep areas. Importantly, these procedures weren't hindered by rigid adherence to doctrine; instead, they evolved through practical application, adaptive iteration during training, and a focus on what worked. These methods of preparation and continuous learning are vital in the modern operational environment.



To address systems interoperability challenges during WFX 25-4, the IIIAC developed and implemented new TTPs.

While predictable challenges with procedural interoperability were proactively mitigated, emergent operational changes often necessitated reactive adjustments requiring procedural agility. During CPX III, the introduction of a new battlefield framework incorporating a Multi-Component Land Combat Capability (MCLCC) deep fight significantly altered the corps' approach to deep operations up to the fire support coordination line (FSCL). This fundamental shift initially caused confusion, particularly regarding the division forward boundary, which was incorrectly interpreted as restrictive. A key misunderstanding emerged between III Armored Corps and higher echelons concerning the corps' role in joint targeting. The Battlefield Coordination Detachment (BCD) initially believed the corps should not utilize air interdiction assets short of the FSCL, a position that contradicted Air Force Special Instructions (SPINS) outlined in the operations order. This discrepancy required III AC to reassess its air support request (ASR) process within WFX. Furthermore, the situation prompted debate about the corps' authority to require subordinate divisions to contribute to the land component's target nomination list (TNL) process, revealing broader ambiguity in understanding roles and responsibilities within joint targeting. At the MCLCC level, confusion also existed regarding the optimal method for requesting and controlling joint resources - whether to prioritize the ASR process or rely solely on the TNL process for air interdiction.

Recognizing this inherent challenge to interoperability, proactive engagement during the "off-season" becomes paramount. Consistent interaction and training with multiple echelons, including allies and partners, can lay a solid foundation for procedural interoperability and enable success when dynamic or rapid operational farmwork changes emerge. This underscores the critical need for enhanced cross-component training and familiarization to bridge these knowledge gaps, faster more effective joint operations in future operations and real-world scenarios, and ultimately ensure a shared understanding of roles, responsibilities, and procedures.

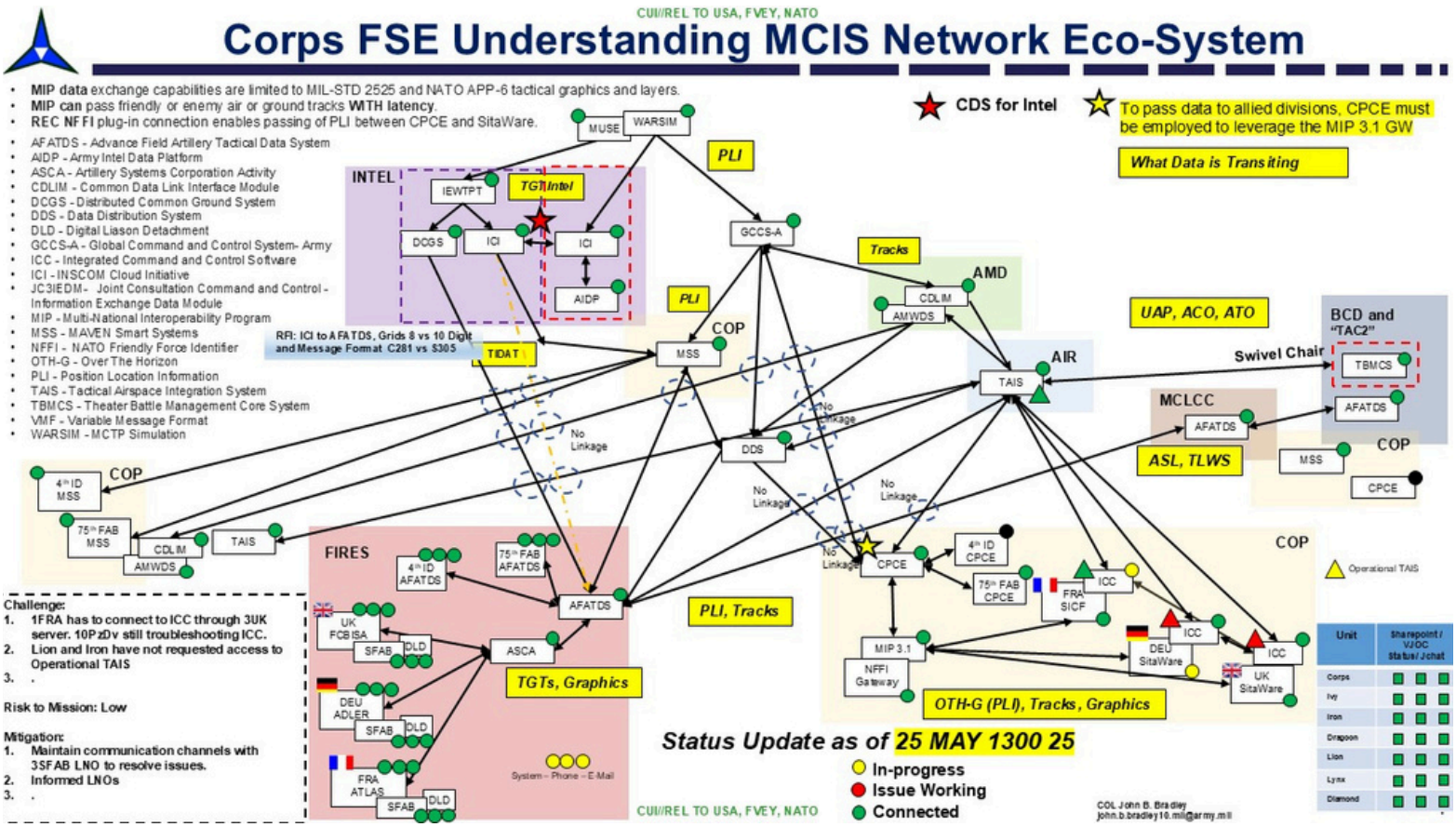
Without dedicated effort to improve cross-component understanding, the challenges experienced during WFX 25-4 and CPX III are likely to be repeated. Therefore, investment in continuous training and familiarization programs before WFX is essential to mitigate these risks, increase readiness, and enhance the overall effectiveness of joint operations.

Technical Dimension

Achieving systems interoperability—the seamless exchange of data—is a significant challenge within the Mission Command information systems (MCIS) ecosystem. Even a single misconfigured IP address or firewall can disrupt shared understanding and hinder operations. Prioritizing early and frequent system connections and leveraging established data exchange protocols transforms potential training frustrations into valuable opportunities for enhancement.

After WFX 23-4, IIIAC G34 Fires identified a significant deficiency in existing interoperability capabilities. The assessment revealed minimal effective support for joint targeting data exchange between U.S. and allied systems. Furthermore, the utilization of the Artillery Systems Cooperation Activities (ASCA) protocol was limited primarily to specific field artillery functions, hindering its broader application in a multi-domain, combined arms environment. This limited interoperability posed a substantial risk to coordinated joint fires and overall mission effectiveness.

Validating Level II interoperability during WFX 25-4 was a key training objective for IIIAC and FORSCOM. This requirement stipulated the exchange of data between MCIS of U.S. and allied nations. Specifically, for Fires, the goal was to eliminate "swivel chair" integration between all fire control systems (AFATDS, ATLAS, ADLER, and FC-BISA).



IIIAC's network architecture visualization depicts the flow of data between diverse MCIS across the corps, spanning multiple warfighting functions.

Data exchange ensures effective and coordinated joint fires during LSCO by enabling the timely and accurate transmission of targeting data, fire support requests, and command directives across disparate systems.

Recognizing the critical need for full allied participation in the joint targeting process, IIIAC prioritized the seamless sharing of essential targeting data with the allied division. This encompassed providing the No-Strike List (NSL), Joint Target List (JTL), and Restricted Target List (RTL), effectively equipping the allied division with the comprehensive information and constraints necessary for collaborative targeting and adherence to established rules of engagement.

To overcome this interoperability gap, IIIAC leveraged existing Command and Control Information Systems (C2IS) in novel ways to facilitate joint targeting data exchange. This involved adapting their functionalities to transmit targeting information in a manner that transcended established protocols.

This unconventional approach prioritized rapid data sharing and collaborative targeting, enhancing joint fires coordination despite the limitations of legacy systems.

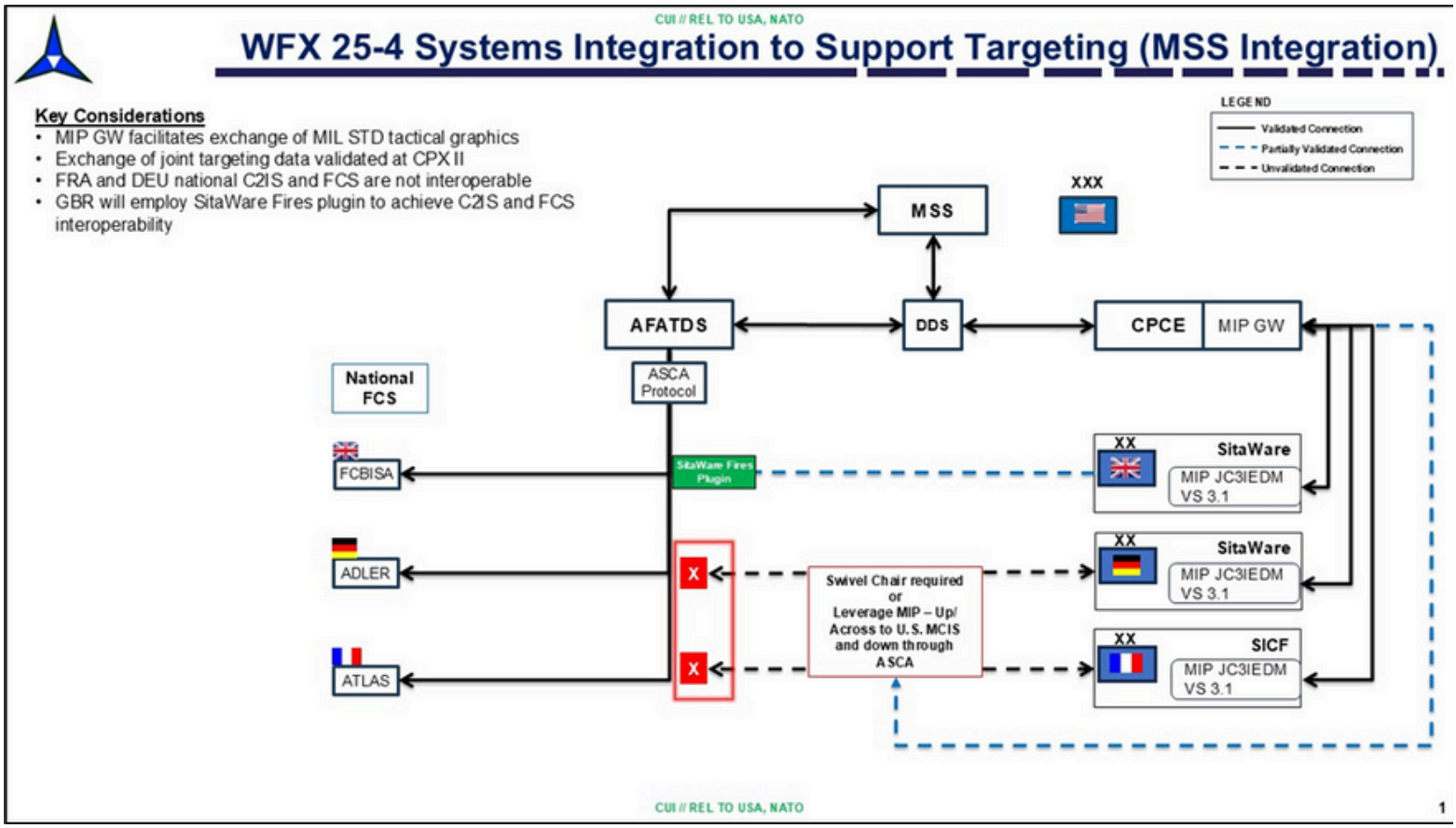
IIIAC also targeted effective employment of the ASCA protocol, underutilized during WFX 23-4. Recognizing the relationship between ASCA and MIP, IIIAC hosted an "ASCA University" during a MIP working group in Greding, Germany. This initiative demonstrated how MIP and ASCA could mutually support each other in multinational operations. However, this exposed gaps where some nations' C2IS couldn't seamlessly pass data to their national Fire Control Systems (FCS). IIIAC used U.S. systems to bridge this divide, utilizing ASCA and MIP protocols to facilitate data transfer from allied C2IS through U.S. systems and then down to the respective nations' FCS. This reduced reliance on "swivel chair" operations during the WFX, streamlining the fire support process.

Personnel from III Armored Corps, supported by U.S. Army Coalition Interoperability Assurance & Verification (CIAV) and PM-Mission Command experts, guide French, British, German, and Hungarian fires and targeting personnel at MIP WG#92 in Greding, Germany, enhancing interoperability and establishing vital TTPs for WFX 25-4.

IIIAC leveraged MIP to understand national systems interoperability efforts. They actively engaged with MIP experts, using it to identify interoperability gaps, refine data standards, and enhance readiness for the WFX. The MIP provided a closed testing network to refine interoperability TTPs. This yielded valuable feedback for the MIP governing body to inform future iterations of the MIP Information Exchange Model.

During planning, IIIAC inadvertently hindered data exchange by not enforcing strict adherence to operating guidelines (developed at MIP working group #92) when creating battlefield geometries in C2 systems. This prevented seamless data transfer via ASCA, forcing manual replication of the battlefield framework. This highlighted the impact of non-compliance and underscored the need for data standardization and adherence to data exchange protocols.

To bridge the airspace interoperability gap between the NATO Integrated Command and Control (ICC) system and the U.S. Tactical Airspace Integration System (TAIS), IIIAC developed solutions. These focused on providing allied divisions with client-based Operational TAIS (facilitated through the Digital Liaison Detachment) to enhance airspace coordination and create a more comprehensive airspace COP. This improved interoperability, supporting effective targeting and fires by enabling meticulous airspace planning and mitigating fratricide risks. Utilizing events like MIP and ASCA University during the off-season enabled the team to resolve system interoperability issues and develop Tactics, Techniques, and Procedures (TTPs) that contributed to success during WFX 25-4.



IIIAC's conceptual data exchange architecture for WFX 25-4 aimed at linking national C2IS and FCS, enabling interoperability through a standardized framework facilitating battlefield geometry and fire support data transfer.

Recommendations

Warfighters must deliberately set conditions to enable interoperability in advance of a WFX. This framework outlines key steps units can take to maximize interoperability with multinational allies and partners.

(Framework for Enhancing Interoperability in Preparation for WFXs)

I. Cultivate Relationships Through Periodic Multinational Touchpoints:

Purpose: Foster trust, understanding, and open communication.

Activities: Monthly/Bi-Monthly Meetings, Social Events, Joint Planning Sessions, Site Visits.

II. Leverage International Military Programs for Innovation and TTP Development:

Purpose: Capitalize on existing forums for knowledge sharing and TTP development.

Activities: Multilateral Interoperability Engagement (MIP, CWIX, BOLD QUEST), ASCA University, Cross-Functional Teams.

IIII. Engage Joint Programs Early to Equip Allies for Success:

Purpose: Ensure allies have the necessary tools and training.

Activities: Data Sharing (NSL, JTL, RTL), Training and Education, Resource Allocation.

Key Considerations: Early Planning, Continuous Improvement, Focus on Human Dimension.

Conclusion

WFX 25-4 demonstrated operational success, validating the IIIAC Targeting Team's efforts. Their effective employment of joint fires created dilemmas for the World Class Opposing Force (WCOPFOR). The data demonstrates a decisive outcome: the WCOPFOR suffered substantial combat power losses and were unable to withstand III Armored Corps' targeting and operations. The results included the destruction of over 1,200 tanks, 108 9A52 Smerch rocket launchers, and over 600 artillery pieces. Additionally, the WCOPFOR lost more than 500 systems – including Air Defense Artillery assets, jammers, Ground Control Stations, Target Acquisition radars, and Fire Control radars – and sustained nearly 100,000 casualties. III AC achieved operational success in the WFX 25-4 simulation. However, the true value lies in organizational learning and enhanced interoperability with partners. Focused development during the "off-season" strengthens interoperability across the competition continuum and ensures a heightened state of readiness. The IIIAC FSE's approach has fostered momentum and cohesion. Prioritizing interoperability cultivates unity of command, shared understanding, and trust—critical elements for successful multinational operations.

Author Biographies

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, 18th Field Artillery Brigade. He has served several tours in support of OPERATION IRAQI FREEDOM and SPARTAN SHEILD and holds a Masters of International Relations from Websters University and a Masters of Strategic Leadership from the U.S. Army War College.*

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