Soldiers assigned to the XVIII Airborne Corps board a C-130 Hercules before an Airborne operation. (U.S. Army photo, modified by MIPB staff)

INTELLIGENCE AT THE SPEED OF MODERN WARFARE: XVIII AIRBORNE CORPS EXPERIMENTATION WITH THE ARMY INTELLIGENCE DATA PLATFORM

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On a future battlefield a U.S. Army corps executes a joint forcible entry operation into terrain currently occupied and defended by an adversary nation state. This fictional enemy enjoys numerical superiority and a dense antiaccess, area-denial system of systems, including formidable sensing capabilities, integrated air defenses, and an integrated surface-to-surface fires complex employing tube artillery, rockets, and longer-range missiles. The corps must rapidly gain an information advantage–gains realized from a comprehensive understanding of the battlefield while denying the threat any ability to achieve its information goals–to defeat this bristling, lethal, and entrenched enemy force. To accomplish this, the future corps must leverage the latest available technology to obtain, aggregate, interpret, and disseminate large amounts of data at speed to enable the commander's desired approach. Gaining and maintaining this data advantage enables the corps to converge the right effects at the right time in order to address key adversary capabilities and create opportunities for maneuver forces to close with and destroy the enemy.

Introduction

XVIII Airborne Corps G-2 leveraged an emerging data management technology, the Army Intelligence Data Platform (AIDP),[1] to fight and win in a scenario much like the preceding vignette during a recent corps warfighter exercise. In such an environment, the intelligence enterprise must employ technology to maintain pace with the increasing speed of war. The Army must progress beyond 12- or 24-hour reporting cycles, PDF files attached to emails, reviewed and published intelligence information reports, and significant activity storyboards. The intelligence community is a data-centric, data-driven profession responsible for informing decision makers by providing the latest and most accurate information at the speed of now. Having an information advantage supports situational understanding and enables decision advantage. To achieve that information advantage, XVIII Airborne Corps employed AIDP during Warfighter Exercise 24-05 (WFX 24-05) as the primary intelligence warfighting system to execute the following key G-2 tasks:

- ✦ Federate AIDP across echelons.
- ✦ Achieve shared understanding.
- ✦ Execute intelligence support to targeting.
- ✦ Perform battle damage assessments (BDAs).
- ✦ Conduct collection management.

The foundational framework of AIDP forms a collaborative platform providing the capability to conduct intelligence preparation of the operational environment in support of mission analysis at the corps level and below. The tools in AIDP provide an intelligence-specific, discipline-agnostic collaborative environment in which tactical echelons communicate in near real time. AIDP can depict the common intelligence picture (CIP) graphically, in conjunction with other staff overlays and estimates. WFX 24-05 provided an environment of speed and complexity, challenging the XVIII Airborne Corps G-2 to adapt while in contact and to meet planning and operational requirements. While AIDP's framework and user interface enabled the G-2 to achieve shared understanding across echelons in near real time, three key areas presented challenges: knowledge management, intelligence support to targeting execution, and single-source intelligence integration.

Working within AIDP's cloud environment presented both advantages and disadvantages. The collaborative tool suite in AIDP provided the primary advantage by enabling synchronization and integration both internally and externally across the battlefield in near real time. This feature was a critical factor to achieving shared understanding across echelons. During WFX 24-05, the XVIII Airborne Corps intelligence process centered around the G-2's "Big 5" production: the CIP, intelligence running estimate, event template, intelligence collection synchronization matrix, and BDA. The G-2 planned to develop and maintain these production outputs within AIDP using live data. AIDP's design enabled "the integration of intelligence and information from all relevant sources in order to analyze situations or conditions that impact operations."[2] AIDP's foundational toolsets, Gaia and Dossier,[3] enabled the XVIII Airborne Corps G-2 to maintain these products in real time while simultaneously sharing data and analysis across the formation; however, there were still technological, capability, and knowledge management limitations.

When using AIDP as the primary production toolsuite, analysis did not stop for production; instead, analysis *became* production. Within AIDP, real-time analysis and the ability to modify battlespace geometry rapidly proved remarkably successful. Analysts could modify tactical graphics, manipulate visual analytical tools (e.g., range rings/fans, modified combined obstacle overlays), and rapidly share data, which outpaced the previous production cycles utilizing legacy systems. Creating shared understanding at the pace of operations facilitated flexible commander prioritization. It truncated the decision-making cycle, relying on orders or dedicated battle rhythm events to publish enemy situation and graphic overlays through the Defense Digital Service.

The XVIII Airborne Corps G-2 created links and data feeds, constantly pushing and pulling data, to ensure the CIP remained current and shared with the common operational picture within the Maven Smart System (MSS).[4] MSS is the XVIII Airborne Corps primary mission command system, supporting plans, operations, and fires. This deviation from historical production cycles enabled the G-2 to support deep operations by maintaining a CIP of enemy forces throughout the area of interest.[5] It also enabled the G-2 to provide accurate and timely input into the friendly decision support matrix. While these benefits are clear game changers, the current architecture and interoperability between AIDP and MSS are imperfect. However, AIDP is consistently improving. To address technical issues related to interoperability between MSS and AIDP, field service representatives are working directly with units through Soldier touchpoints to capture and resolve problems, build data link connections, and assist in developing software tools to support the analyst.

Knowledge Management

Developing a knowledge management plan, utilizing the primary, alternate, contingency, and emergency (known as PACE) communications plan, and reinforcing digital discipline is key when working in a live data cloud environment. Prior to XVIII Airborne Corps G-2 implementing a knowledge management plan, analysts found knowledge management cumbersome because AIDP allows real-time access and information flow with constant inputs, edits, and refinements from 100-plus users. The XVIII Airborne Corps G-2 quickly identified maintaining quality assurance, quality control, and version control as critical to ensuring the continued accuracy of the G-2's "Big 5" production. The G-2 discovered that the absence of permissions, quality assurance, and quality control capabilities to manage AIDP objects at echelon significantly affected current operations, future operations, and fusion workflows. Subordinate echelons could not refine objects from the bottom-up without impacting the corps picture, and any update to an object in the system impacted every unit and user utilizing AIDP. Leveraging AIDP's chat service enabled the quick dissemination of guidance across the formation to reinforce digital discipline, establish new tactics, techniques, and procedures (TTPs), and confirm acknowledgment from subordinates. Knowledge management is naturally difficult, especially when dealing with live data. AIDP enabled the rapid identification of solutions and dissemination of TTPs all within the platform, showcasing the system's flexibility and allowing the G-2 to transform in contact.

Intelligence Support to Targeting

Regarding systems and their interoperability, passing objects between AIDP and MSS, specifically within the Target Workbench tool,[6] was significantly limited during WFX 24-05. The bifurcation of observation and object-based production created a significant time gap (typically 10 minutes) before the data populated into Gaia. This time gap caused a cascading effect that restricted the XVIII Airborne Corps ability to conduct dynamic targeting, especially in the fast-paced large-scale combat operations environment.

Analyzing and disseminating a near real-time indication of target activity is essential for enabling the intelligence warfighting function to feed the targeting process.

Conducting deliberate targeting using objects created in AIDP also had its limits. The XVIII Airborne Corps G-2 produced the enemy order of battle using AIDP's Graph tool, creating objects and associating key pieces of equipment for each unit. There were two reasons for this: first, these objects would feed BDA, and second, this would allow analysts and targeteers to gain efficiencies by associating information and intelligence to the objects to build the "target packet" in AIDP instead of the previously used PowerPoint slide deck.

Unfortunately, the target information could not be passed to MSS. This limitation forced XVIII Airborne Corps G-2's targeting team to operate on MSS almost exclusively to support fires and to use the Target Workbench residing on MSS. Once targets were actioned and the collection had confirmed or denied effects on the target, AIDP ingested the observation reports. Analysts in the BDA cell then manually sorted and filtered those reports to associate them with the specific target. This is an instance where XVIII Airborne Corps identified slow, inefficient processes but could not implement a quick-fix solution during WFX 24-05. Nevertheless, it provided a key opportunity for the G-2 to provide feedback on the issue and work directly with AIDP representatives to begin investigating a solution—a practical demonstration of how AIDP supports transformation in the intelligence enterprise, allowing it to fight at the speed of data in conflict.

Obstacles to Single-Source Integration

Integrating single-source intelligence analysis into AIDP is crucial for intelligence to support both targeting and situational awareness during large-scale combat operations. Intelligence professionals work from the assumption that the enemy utilizes fast emplacement, engagement, and displacement of systems to bolster survivability. As a rule, a well-trained crew can displace within 10 to 15 minutes, making targeting timelines exceptionally tight. Analyzing and disseminating a near real-time indication of target activity is essential for enabling the intelligence warfighting function to feed the targeting process. Moreover, intelligence analysts must provide as much time as possible for the targeting and fires cells to do their jobs, meaning that intelligence should be disseminated no more than 10 minutes from discovery. Integrating single-source analysis tools into AIDP would shorten production timelines and (assuming AIDP will be able to communicate directly with systems used by the fires cell) could allow for targeting and engagement of enemy systems before their displacement.

Before continuing, it is important to note that AIDP was initially designed for military intelligence brigades-theater to "set the theater" and conduct intelligence preparation of the operational environment. It is a tool still under development. AIDP does not currently host organic capabilities or tools to support single-source disciplines. Because of this, single-source analysts encountered many challenges using AIDP to its full potential in command post exercises before and during WFX 24-05, primarily because the tools were still in development or otherwise not yet released. The next evolution of AIDP will include All Source II/Intel Apps, which will address some of the gaps.

Nevertheless, despite unavailable capabilities and toolsets, single-source analysts worked with field service representatives during the exercise to develop workarounds. This allowed the quick development of data paths, building tools for data correlation, and ingesting analysis from other platforms into AIDP. Additionally, the coding foundation in AIDP allows units to innovate and develop their own tools to aid in analysis, something previous military intelligence programs of record did not allow. This transformation in contact enabled all-source intelligence to provide a timely and accurate CIP.

From a single-source perspective, the first challenge for the signals intelligence (SIGINT) section centered around training. Single-source intelligence analysts did not participate in AIDP's fielding training because the system was released as an all-source-specific suite of tools. XVIII Airborne Corps SIGINT analysts first utilized AIDP during the command post exercise immediately preceding WFX 24-05. This lack of training and experience meant SIGINT analysts learned the

capabilities and limitations of AIDP in real time while participating in the exercise. SIGINT analysts overcame the initial knowledge gap and achieved basic proficiency with AIDP by the end of the command post exercise before the beginning of the warfighter exercise.

A second issue is that AIDP does not possess a SIGINT analysis toolset. SIGINT analysts must accomplish very specific information processing tasks. Although SIGINT reports ingested into AIDP constitute "finished" reporting, SIGINT analysts need certain second-order analysis tools to provide value to the all-source CIP. These tools are not yet present in AIDP. XVIII Airborne Corps SIGINT analysts could not convolve multiple ellipses to provide better targets for deliberate and dynamic targeting efforts. They could not process geolocational lines of bearing to pinpoint signals of interest. Additionally, AIDP could not determine how a signal would propagate across varying terrain or environmental conditions.

For SIGINT analysts to process and analyze the sheer volume of data expected during large-scale combat operations, manipulating the metadata of reports quickly and efficiently to provide greater situational understanding is necessary. AIDP can parse, filter, and cross-reference data and metadata from reports reasonably well; however, the learning curve for achieving this function used time SIGINT analysts could not easily spare during the exercise. To address this, the SIGINT analysts adjusted their TTPs, exporting the datasets from AIDP and importing them into FADE/MIST, a National Reconnaissance Office-sponsored toolset capable of processing metadata in a useful way.[7] Efforts to reintegrate this data into AIDP to support situational understanding and all-source analytics were unsuccessful.

Finally, the timeliness of data integration also created issues. The exercise data path created significant latency between the time of intercept and the time of analysis. As the exercise progressed, AIDP programmers attempted to address that latency but could not mitigate it enough for SIGINT analysts to use the collection to support the dynamic targeting process. As a result, SIGINT analysts supporting the dynamic targeting process moved "upstream" to the U.S. Army Intelligence and Security Command Cloud Initiative instance, which allowed them to submit targets fast enough for the fires section to prosecute them.

Implementing a suite of SIGINT-specific analysis tools in AIDP could address many of the issues experienced by the XVIII Airborne Corps SIGINT section. This suite could include an ellipse convolving tool, a line-of-bearing generator, and a line-of-sight/radio horizon tool. Improving the metadata analysis capability in AIDP to accommodate the types of analysis used by SIGINT analysts or enabling data exported from AIDP for analysis using another tool to reintegrate after analysis could greatly enhance situational understanding. Enabling AIDP to interface as directly with exercise dataflows as with its real-world counterparts would allow intelligence analysts to train more effectively and operate as they would in real-world situations.

Conclusion

If the intelligence enterprise is to innovate, adapt, and transform in contact, intelligence professionals must understand both the doctrine and the coding foundation upon which AIDP is built. AIDP's foundational tools, Gaia and Dossier, enabled the XVIII Airborne Corps G-2 to maintain necessary products in real time while simultaneously sharing data and analysis across the formation. This sharing is essential to gain and sustain decision advantage over our adversaries on the modern battlefield. Throughout WFX 24-05, XVIII Airborne Corps encountered and overcame significant technological, capability, and knowledge management limitations. The end user is key to identifying AIDP's limitations, and recognizing this allows intelligence professionals to demonstrate creativity and exploration in developing new tools and tradecrafts. Given this autonomy, intelligence professionals, collaborating with expert coders and software engineers, can quickly adjust, modify, enhance, and improve AIDP. The current iteration of AIDP does not service all requirements for each intelligence discipline, does not include intuitive workflows to create doctrinal products for which the intelligence enterprise is responsible, and does not ingest all required data feeds. Nevertheless, AIDP does provide a solid foundation, enabling the Army intelligence community to transform at speed to overcome the increasing national security challenges of today, as well as those of tomorrow and beyond.

Endnotes

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