The 4th Infantry Division's Field Artillery Intelligence Officer

Leveraging JADOCS to enable Joint Fires

By: CW2 Adam G. Connolly

The Deep Operations Coordination System (JADOCS) combined with the team's dedication to winning contributed to the 4th Infantry Division's success during a Large Scale Combat Operations (LSCO) Warfighter Exercise (WFX). This article highlights two key elements contributing to Division Fires' success in targeting: techniques the Field Artillery Intelligence Officer (FAIO) incorporated into (deliberate and dynamic targets) and the digital architecture developed to enable those efforts.

FAIO Tactics, Techniques and Procedures

The 4th ID used the FAIO to bridge the gap between information collection and the execution of deliberate and dynamic targeting. The targeting officers also conducted Target System Analysis following the Military Decision Making Process within the Analysis Control Element (ACE) and the Division's Intelligence Targeting Cell (G2T). Key elements that enabled the FAIO's procedures are the positioning of the FAIOs in Current Operations (CUOPS), their ability to leverage multiple assets to cross-cue the detection of High Payoff Targets (HPT), the vetting and validation process, and their ability to create a Common Operating Picture (COP) with JADOCS and various stakeholders in the Targeting Enterprise.

Positioning the FAIO in CUOPS

We placed the FAIO on the CUOPS floor embedded with the G2's Strike Cell, contrary to the normal positioning of the FAIO within the Division ACE. Our decision derived from best practices with the Full Motion Video (FMV), Signal Intelligence (SIGINT), and the Ground Moving Target Indicator (GMTI) operators and systems in direct view of the FAIO and Strike Cell Chief for immediate situational awareness. The precarious positioning allowed the face-to-face communication with the Processing, Exploitation, and Dissemination (PED) operators for target development focus, prioritization of confirmed HPTs, and proximity to the Joint Air and Ground Integration Center (JAGIC). The JADOCS compatibility to each internal and external Mission Command System, the on-screen ability to view the GMTI, current air picture, and the Strike Cell Chief's availability provided the ease of dynamic target cross-cueing and target processing. The FAIO quickly became one of the most situationally aware team members on the CUOPS floor.

Cross-Cueing Assets to identify HPTs

The PED teams first provide the targetable information through Distributed Common Ground System-Army (DCGS-A), create a Target Indicator Data (TIDAT), and finally send it to the FAIO's JADOCS for validation. The target is then sent to the JAGIC Advanced Field Artillery Tactical Data System (AFATDS) to clear Fires and execute with DIVARTY. Each AFATDS was configured to receive TIDATs for redundancy.

The immediate acknowledgment and planning against the limited reach of available information collection platforms, specifically Grey Eagles, will save time during LSCO. Our Grey Eagles were restricted to collect along the Division's Coordinated Fire Line (CFL) due to the adversary's Integrated Air Defense Systems capabilities unless layered with Electronic Warfare protection assets. This reality presented a significant obstacle to shaping operations. This threat forces the team to determine what else is available to leverage for proactive engagements.

Assets in orbit receive numerous Overhead Persistent Infrared Signatures that provide locations and times. The non-lethal section should analyze the signatures, time, and terrain to determine a predicted center grid. They will finally decide whether it meets approved targeting priorities and share that information with the FAIO.

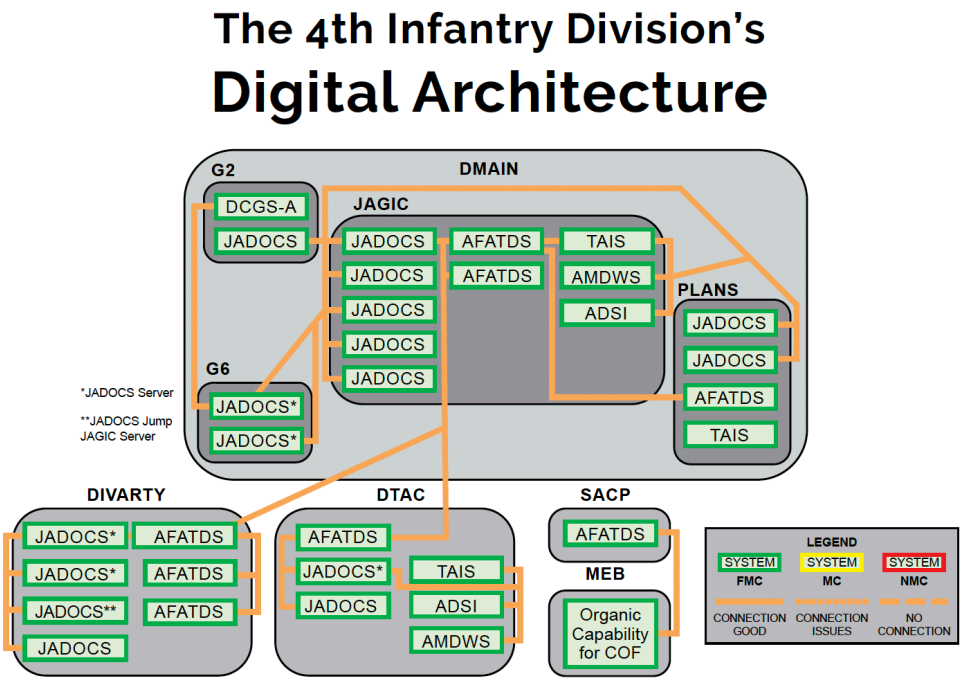
Target development continues as the grid and analysis are received by the FAIO and Strike Cell Chief. The ability to see the FMV, GMTI, and SIGINT screens is optimized due to the FAIO's positioning and the CUOPS floor layout.

This connection allowed credentialed individuals to log in and run JADOCS client software while simultaneously using standard SIPR functions. You must account for the Internet Protocol (IP) addresses for each client and secure additional addresses for possible enablers joining the team later. Be aware of how many clients are operating at once on each server to avoid network latency. The 4th ID's DMAIN server facilitated the use of nine clients with minimal interruption. Network firewalls are essential considerations when dealing with multiple systems. Ensure the Computer Network Defense (CND) personnel enable communication messages to and from the JADOCS and other operating systems for successful interoperability.

Target development continues as the FAIO and Strike Cell Chief receive the OPIR signature coordinates. The FAIO's physical location on the CUOPS floor optimizes situational awareness with the ability

to view the FMV, GMTI, and SIGINT screens in one location. We then provide the GMTI section with the instruction to monitor and extrapolate suspected enemy formations and patterns. Ensure to include this information with the number of wheeled and/or tracked vehicles (Enemy Order of Battle) in the formation for another fragment of your target development.

We marked the locations of where and when the enemy moved positions with a box (you can use any marker) upon indication of a suspected enemy formation. The location is clear once a pattern is established with the time of the march, the direction of the march, and how long they were stationary. By knowing these critical pieces of information, you could begin to anticipate where they will be next and at what time. Snapshot example below:



GMTI Box 1, Box 2, and Box 3 are created and assumed as primary, alternate, and tertiary firing points for an enemy formation. The formation travels in a clockwise direction that takes 30 minutes from Box 1 to Box 2, 25 minutes from Box 2 to Box 3, and 20 minutes from Box 3 to Box 1 after initial movement is detected. The decision is made to engage the suspected target proactively. Create the target in JADOCS or have the Strike Cell Chief create the TIDAT, conduct initial FAIO clearance battle drill (described later), send the target to JAGIC, announce to preclear green and blue air, and hold the specific target number in their box until you inform them to send the mission to the guns for execution. You must account for the munition time of flight and an average shot time. Add them together, and that is how long before you tell the AFATDS operator to send the fire mission to achieve effects at the future location (Box 1, 2, or 3) of the enemy formation. Continue to monitor the GMTI screen. If you notice a large scatter of movement, there was a minimum of suppression effects. If there is none or minimal activity observed, it is safe to assume you have reduced the target or most of the formation from the battlefield. Take note of the target number for the Targeting Working Group (TWG) to identify the need for an available asset to observe in the future for more accurate assessments.

Target Vetting Process

Immediate actions will coincide with the targeting priorities of the TWG and the approved targeting products as the suspected target is identified by the PED operators. When intelligence is assessed as a targetable entity, proceed with target processing.

Once the JADOCS receives the TIDAT, conduct the FAIO's initial clearance battle drill via JADOCS to ensure the location is beyond the CFL and short of the Fire Support Coordination Line (FSCL). Then verify conflicts within the JADOCS so it does not violate a Fire Support Coordination Measure, No-Strike List (NSL), or Restricted Target List. If beyond FSCL or cross-boundary Fires presents themselves, follow the unit respective battle drill, but provide an executable target with "coordination required" to emphasize violations within the JADOCS Land Component Fires manager. Once the target is in the manager's list, look to the "conflict" column. If it is red, it means there is a conflict you must resolve before sending it to the JAGIC. Double click your highlighted target in your managers' list and select the conflict tab. In red print, you will notice a list of every conflict for situational awareness. Coordination measures are mostly avoidable from your position because the JAGIC procedures will clear those. The most noteworthy violation or conflict is the No Strike Entities (NSE) from your already uploaded NSL within the JADOCS databases. An essential responsibility of the FAIO is to provide targets to the JAGIC. The JAGIC Chief has full authority to deny or process the fire mission upon receipt, regardless of how well one vets and validates the target.

The JADOCS will provide the distance from your target grid to the identified NSE. If there is no collateral concern to the vetted target, send it to the JAGIC for execution and follow your unit Tactics, Techniques, and Procedures (TTPs) for other predetermined necessary announcements. If the NSE was close (predetermined distance) or deemed a collateral concern, then you must make it known to the JAGIC Chief before executing. Awareness of the delegation authority matrix is

useful at this point. If the JAGIC Chief can make the call to engage, then let them make an informed decision, as it is their overall responsibility.

If the decision is made to engage, the NSE details are added in Transverse chat with the target number. Each workstation is aware of the situation by doing this, followed by the JAGIC Chief's announcement. Use the JADOCS as a primary source of fratricide avoidance since the operator automatically receives alerts of various types of violations.

Common Operating Picture amongst various stakeholders

The interoperability of the JADOCS paid dividends to the Division continuously. The JADOCS fuses information from AFATDS, Tactical Air Integration System, Intelligence Fusion Server (IFS), and Air Defense Systems Integrator to illustrate control measures, GMTI, and air tracks all on one screen. This combination provided the 4th Infantry Division's near-real-time targeting capability and a Joint Fires COP. This integration is what kept the JAGIC lethal throughout the WFX.

The JADOCS also received the Air Tasking Order (ATO), the Airspace Control Order (ACO), the GMTI feed, friendly air tracks, enemy air tracks, and DIVARTY's counterfire picture. This timely receipt allowed JADOCS to drastically contribute to the situational awareness and information sharing across the Division and our adjacent units with minimal effort. The DIVARTY Targeting Officer provided precise guidance, bottom-up refinement, and enemy locations with their Call For Fire Zones and Artillery Target Intelligence Zones overlays. The overlays shared with the Division FAIO and adjacent units' JADOCS accelerated dynamic targeting efforts and extended cross-boundary intelligence sharing.

Once the ATO is accessed through JADOCS, the approved ASRs can be created in the Target Development Manager as a reference, and refinements can be shared with the Tactical Air Control Party (TACP), as they direct sorties. This TTP can assist the TACP in their proactive endeavor to provide fixed-wing assets the most current target data and used as supplemental awareness for the FAIO.

Joint Fires digital architecture

The 4th Infantry Division's digital targeting architecture enabled success during LSCO.

The entire Division's targeting architecture originates in the Battle Command Common Services stack within the G6. The Division Main Headquarters had two JADOCS servers in this stack. The backup server was created as a replica of the primary server after fine-tuning was complete. This redundancy provided confidence there would be no loss of efforts. The FAIO accessed the server through one of G6's virtual machines via a remote terminal. We could run our second server simultaneously with proper configuration file adjustments if the additional server's need was presented. For good practice, ensure to have Compressed ARC Digitized Raster Graphics, Controlled Image Base, and Digital Terrain Elevation Data Map data transferred onto the G6 stacks. Each client should map to them and download them directly to their computer for local client access before operations.

Relationship building and staff collaboration

G6 was the most important relationship for our initial JADOCS starting point. Admin accounts must be created and authorized by server techs to facilitate the ease of access and maintenance of the server and client architecture. The JADOCS program is enabled for use on the unit's Secret Internet Protocol Router (SIPR) domain network. This connection allowed any credentialed individual to log in and start JADOCS as a client while simultaneously using other common SIPR functions. This also accounted for the Internet Protocol addresses for each client, and secured additional addresses for enablers joining the team later. By being aware of how many clients are operating at once on each server, the DMAIN server can facilitate the use of nine clients.

The primary focus should be on the digital interoperability side with G2, even though the relationship between the Field Artillery Intelligence Officers and G2T was a vital part of our WFX's success. The IFS Technician and NCOIC were essential links to determine how to send TIDATs to the JADOCS with a Distributed Common Ground System-Army (DCGS-A) client. TIDAT to JADOCS was a long, challenging endeavor. However, after the IFS messaging parameters were configured correctly, we never had to troubleshoot further because the IFS personnel became just as dedicated to making it work as we were with the JADOCS. Note: our updated Targeting Digital SOP has the "how-to" compatibility procedures for every system in the targeting enterprise (G2, G6, AMD, G3 Aviation, and Fires) to connect to JADOCS.

Division Fires incorporated the Staff Judge Advocate (SJA) into target processing and installed the JADOCS software on their computers. They could access NSEs in the Division's area of operation. The SJA officers were able to view the targeting products via TWG and focused on which Named Areas of Interest (NAIs) were active by ATO day. This capability allowed them to utilize JADOCS and search for NSEs within those specified NAIs to build a briefing tool depicting the NSEs for the commander's awareness.

Sections/Units involved

Our JADOCS server maintained successful communications with many different units and echelons at various locations including III Corps (Fort Hood, Texas), 505th Air Operations Center Combat Training Center (Hurlburt, Florida), 28th Infantry Division (Pennsylvania National Guard), 3rd Infantry Division (Fort Stewart, Georgia), 65th FAB (III Corps), 4th ID DIVARTY, and 4th ID DTAC. Aside from the communication requirements across the Division and adjacent units, Hurlburt's connection was most rewarding.

The JADOCS is essential for the United States Air Force to access the ATO so the Division can manage fixed air support and be successful.

U.S. Army 1st Lt. Sierra Brower, left, a field artillery officer with 1st Battalion, 201st Field Artillery Regiment, West Virginia Army National Guard, and her team of fire support specialists process M109A6 Paladin howitzer artillery targets during the Northern Strike 21-2 exercise at Camp Grayling Joint Maneuver Training Center, Grayling, Michigan, Aug. 9, 2021. Northern Strike is a National Guard Bureau-sponsored exercise that is a tailored readiness producer that has brought together 5,100 participants from various states and countries at the National All-Domain Warfighting Center. (U.S. Air National Guard photo by Master Sgt. Lealan Buehrer)

The JADOCS was the only platform that had access to the ATO because the AF had connectivity issues. So without JADOCS and USAF connectivity, the Division would have no knowledge of the ATO which would severely degrade Division operations.

Units must be involved in the establishment of the JAGIC in the DIVARTY Tactical Operations Center during the DMAIN displacement. We only transferred the systems deemed essential and offered specific permissions while ensuring the configuration file was complete and installed on a predetermined server stack or server box in DIVARTY.

A major selling point to any unit commander is the JADOCS is a complementary system of systems within the network's reach. The pertinent orders and the NSL were disseminated to the 4th Infantry Division, Division Tactical; 4th Infantry Division, Division Artillery; 28th Infantry Division; 65th Field Artillery Brigade; and III Corps daily with all published changes through our JADOCS. This capability carried on as the primary means until Air Force links were sufficiently established.

Specific issues and special considerations

The intricacies of JADOCS are even more desirable to learn as future software updates have been approved and are currently being facilitated by system engineers. As Division Fires personnel implement solutions, some concerns require collaboration with the Fires and Intelligence system engineers to be fully resolved.

The TIDAT received from the DCGS-A is not 100% parsed once ingested by the JADOCS and typically requires careful editing. This inefficiency may seem like a lot of wasted time, but it is habitual after performing multiple repetitions. The received target grids round up, down, or both – it is sent as a 10-digit grid but received as an 8-digit grid (for example 12X XX 12354 09876 will be received as 12X XX 12350 09880). An incident investigation traced from the DCGS-A logs of sent TIDATs with a 10-digit grid, the JADOCS logs of an 8-digit grid were sent to the AFATDS and executed. This outcome will result in a bad day for the FAIO.

The elevation is also missing (possibly need Digital Terrain Elevation Data in our IFS) and must be added to the target data before sending it to the AFATDS. The timing of the TIDAT is adjusted by approximately six hours – all systems were set to Zulu time zone and verified. Target types and target descriptions do not always parse. You will have to use AFATDS target types when adjusting in the JADOCS for best practices. When the JADOCS sends targets to the AFATDS, the target strength does not transfer, so it must be announced to the AFATDS operator. I have reached out to multiple JADOCS experts with these concerns, and they are aware of them.

Conclusion

The FAIOs inherit the responsibility of developing the Fires enterprise's digital architecture. The Commander expects the Fires digital functionality to be the primary source of communication between the JAGIC, Division Tactical, Support Area Command Post, adjacent units, and higher headquarters for the Fires Warfighting Function.
Our confidence in JADOCS progressively increased during our training glide-path, allowing us to utilize its capabilities with maximum effectiveness. JADOCS pro-vides a unique capability by fusing multiple data sources into the COP to view and collaborate on target prosecution.

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