

How the Army Is Putting the Commander Back in ‘Command and Control’

NGC2

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The U.S. Army doesn’t have a data problem. But it does have a “data-in-the-right-place-in-a-usable-format” problem. And that matters for decision-making in future war.

Think about all the places we have tactical warfighting information. In some cases, it’s in a stove-piped, warfighting-system-specific program. In other cases, it’s in a green notebook in a platoon sergeant’s cargo pocket or written on a piece of cardboard. We have the data, but it’s not in the hands or on the screen of the commander who needs it. Too often, we have to extract the data from the place that it’s in, translate it, manipulate it in another system, use it, and then retranslate it — just to access the data required for the mission.

This complexity is not what any company would design, and it’s not what our young Soldiers expect from their digital experience. And with today’s technology, it’s not necessary. The Army needed a “clean sheet” approach. So that’s what we set out to do.

The Army’s new framework for operational data, known as [Next Generation Command and Control](#) (NGC2), started from that “clean sheet” design and progressed quickly through experimentation. Now on the verge of fielding at the division scale – and aligned with the [Army Transformation Initiative](#) – this new framework will help get commanders the data they need to make more decisions faster and better than the enemy. As a member of the Army Futures Command team working on NGC2 for the last year, I’d like to explain how this will work, particularly as it scales from experimentation into the force.

Proving the Concept

“I have been a customer of the network for most of my career. Nothing is more frustrating to me in doing this and going out as a brigade commander, as a division commander, or as a corps commander and seeing people struggling more with time to get the network to work than actually fighting the enemy.”
- Gen. Randy George, [Chief of Staff of the Army](#)

Most Army commanders have experienced some version of what Gen. George describes. Our current command and control systems were designed for specific functions they perform well, but they are not well-integrated or intuitive to use. And with AI and machine learning providing new opportunities to synthesize huge amounts of warfighting data at speeds we have not seen before, the Army was ready to take some risk for big change. Gen. George directed the creation of NGC2 as an experimentation effort under Futures Command. It was first demonstrated in March 2024 at Project Convergence Capstone 4, which is the Army’s annual modernization experiment where units use emerging technologies in realistic scenarios and provide the Army with insights and feedback. For NGC2, that event initially focused on the design of the user interface and the types of data to deliver, which then set the stage to further develop the infrastructure behind it.

Over the next 12 months, the Army worked with industry to improve the system’s capability in order to complete a larger experiment at [Capstone 5](#), the next iteration of Project Convergence, in March 2025. This was significant because the new architecture was fielded to a combined arms battalion of Abrams tanks and Bradley infantry fighting vehicles. They used the systems in realistic operational scenarios at the National Training Center. Along with their higher headquarters at three echelons, the battalion was able to use the system to speed up decision cycles and prevail against another Army unit acting as a realistic opposing force. We identified some challenges and areas to improve with industry and our Army acquisition partners. But in short, the system worked. Soldiers and commanders were focused on the data needed for their missions and were tailoring their views and apps to execute decisions – they were not consumed with [making the network work](#). They were faster, more successful, and more lethal.

Operational Design

Part of what makes NGC2 different from Army systems of the past is the “technology stack” approach – a concept borrowed from the commercial sector. The full technology stack is everything from data ingestion, data movement, data organization, and data-enabled applications to cloud-based data storage across all of our different warfighting areas. The old

structure was segmented by function – a total system for fires, a total system for logistics, etc. These separate components were clunky to integrate. Instead of building new stove-piped systems with complex interdependencies to be reverse compatible with old architecture, the NGC2 started with a clean sheet, bringing all of the functions together.

The framework has four layers: The transport layer moves data across the battlefield, giving commanders flexible, threat-informed communication options. The integration layer uses AI and machine learning to triage and organize massive dataflows, enabling timely, relevant, and predictive insights for commanders. The data layer creates a shared, accessible data environment across warfighting systems, enabling synchronized decisions and reducing redundant data processing. Lastly, the application layer delivers tailored, intuitive software apps for all echelons, replacing hardware stovepipes and allowing rapid updates and innovation akin to the commercial tech ecosystem.

Transport Layer

When maneuver units talk about communications, this is normally what comes to mind. This is the layer that moves the data, the 1s and 0s, around the battlefield so units can stay connected over distance and terrain.

Although the data movement problem is not completely solved, it is very solvable. With the emergence of proliferated low Earth orbit satellite communications as a viable military capability, units will soon be able to move 10 to 15 times the volume of data they did just two years ago. Radio technology has also improved to the point where radios are not just for voice – they are data transmission devices that happen to have voice as a feature. The NGC2 prototype effort will explore the use of proliferated low earth orbit satellites, private 5G networks, and existing and new radios. The goal is to give commanders diverse transport options to allow them to make threat-informed, risk-based decisions about which tool they will use to move their data at which point in the fight.

The next conversation and experimentation focus will be about how much computing power and storage will be needed to process data “at the edge.” Instead of a prebuilt system or command post vehicle, the NGC2 prototype components will be modular “building blocks” that enable commanders at echelon to take apart the command post and put it in a vehicle, move it into a building, or disperse it in a tree line based on their mission and threat environments.

Integration Layer

The integration layer is the “secret sauce” of NGC2. The Army has worked toward data-centric solutions

over the past few years, but in many cases, those solutions serve to display disparate datasets on one visualization or common operating picture tool. It looks integrated on the surface, but the complexity is still there behind the scenes.

The next step incorporated in NGC2’s integration layer is to use machine learning and artificial intelligence (AI) to triage, organize, verify, and sort the huge amount of data that a division generates internally as well as the data the division consumes from external sources. This layer is key to triaging and curating the data to make sure it becomes useful to the commander in time to be relevant. The organized data can also be accessed by other AI tools to provide real-time operational models and predictions of potential outcomes as decisions are made.

Data Layer

“Modern warfare requires our people to be able to talk to each other over the horizon, synced with our [systems] and our sensors. And that data layer, once it is active and live – and you can do it in near real time – there’s all sorts of things like generative artificial intelligence that you can start to layer in to help with decision-making for fires and air and missile defense.”

–[Secretary of the Army Dan Driscoll](#)

Once the information is ingested into the coherent data layer, it becomes available for any warfighter to use. The challenge today is that, frequently, the data exists inside of a warfighting system stovepipe, only able to be used inside of that program. The NGC2 data layer places the data in a location that can be used by any of the warfighting systems. For example, a red “X” placed by the intelligence warfighting system application to depict an enemy location on the ground is the same location the fires warfighting systems application would see as it targets the enemy formation. The logistics warfighting system application will see the fires interaction, enabling predictive logistics decisions based on the decreasing round count as the enemy formation is targeted. This synchronized data layer will enable the warfighting functions to decrease their focus on ingesting, transporting, and organizing data – and instead allow them to focus on how they will interact with the data to better enable their commanders to make decisions.

Application Layer

Once sorted, the data can be accessed by all warfighting functions – now represented in software applications instead of individual system boxes with their own hardware. The information and apps are reflected in a common operating picture on multiple

form factors, from command post systems to combat vehicles to handheld devices, reaching from corps to platoon. Even with this technical sophistication on the back end, for the capability to be useful in the field, the front-end user interface has to be as intuitive as Soldiers are used to in their daily lives.

Commanders will be able to tailor their applications and views by what is valuable to them in order to augment decision-making and increase lethality. Once warfighting functions stop focusing on data ingestion, they can turn more energy to building applications that suit user needs. Some applications will be Army-wide, and some will be unit-level grassroots efforts, but all will have a place in the application layer and will be available for anyone to use.

Because the apps are not tied to stove-piped systems, they can be updated or even discarded as new, better options come online, just as they would in the commercial marketplace. This lack of a long-term vendor lock-in will [foster competition](#) and continual improvement of our warfighting tools – something that

has been lacking in past command and control systems.

Faster and Better Decisions

Technology will never replace a commander's judgment, but we can absolutely use it to help them get the data they actually need at the times when and in the places and formats where they can use it to make more decisions faster and better. After seeing what the commanders and Soldiers were able to do at Project Convergence, it is clear that we are headed in the right direction. Now, as the Army starts to scale the effort and deliver prototypes to operational units, we can use their feedback to continue to improve. Taking it to a full division will increase the volume of data and the number of vehicles and aircraft we can connect. It will also bring enabling units into the architecture to pass different types of information. We know it won't be perfect. But commanders are eager to get involved and get their hands on it. They recognize the Army is finally designing a command and control system for them.

About the author

Maj. Gen. Patrick Ellis is currently serving as commanding general of 4th Infantry Division and Fort Carson, the prototype division for NGC2. He recently completed his assignment as the director for the Command and Control Cross-Functional Team at Army Futures Command. He previously served as the deputy chief of staff for operations at U.S. Army Europe and Africa.

