

Making Decisions through Data Overload

It begins with commanders

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An armored battalion commander is ordered to destroy an enemy armored company near a pass to enable brigade maneuver. When the commander arrives at the objective, there are reports over frequency modulation (FM) that the main effort is in direct contact with a platoon of tanks. Then, a report comes from battalion scouts observing a platoon of enemy engineer assets moving toward the pass. The commander's S2 reports a heavy armored company maneuvering north of the battalion's location. At the same time, the battalion observes drone footage from One System® Remote Video Terminal (OSRVT™) showing an anti-tank infantry platoon south of the pass. The electronic warfare platoon leader is reporting over the Joint Battle Command Post (JBCP) that a brigade-sized electronic is identified 20 kilometers away. Tactical Airspace Integration System (TAIS) is shown on the current operations floor, displaying multiple rotatory and fixed air assets in the air. Simultaneously, the fires support officer (FSO) states that a battery received counterfire and is recommending a change to the High-Priority Target List (HPTL).

In today's large-scale combat operations (LSCO) environment, commanders, like in the scenario above, receive more data at a condensed time than ever before. The average person consumes 74 gigabytes (GB) of data daily, and this number is growing by 5% per year (Heim and Keil, 2017). In context, the amount of data used to send astronauts to the moon in 1969 was 0.000076GBs, or 4 kilobytes of random-access memory and 72 KBs of read-only memory (Kurinec, 2023, p. 9). The average data consumption in today's society typically focuses on one streaming system at a time rather than multiple at once (TikTok, YouTube, etc.). Commanders on the modern battlefield do not have that luxury. They will receive reports and information from various sources simultaneously, leading to stalled decision-making due to either data overload or missing key pieces of data due to data saturation.

How can commanders make rapid and accurate decisions in such an environment? The solution to this is three-fold, with two already in Army doctrine.

First, commanders owe their staff a list of essential information, usually published in a Commander's Critical Information Requirement (CCIR), which feeds into the Decision Support Matrix (DSM).

Second, staff officers need to filter data into usable information and, using knowledge to understand what

is important, present this information to the commander to make decisions.

Lastly, the U.S. Army must utilize artificial intelligence (AI) to help limit human error and convert data to information faster. With these three supporting efforts, commanders can focus on the pieces of information they require to make accurate decisions.

As with all operations, the solution to solve data overload starts with commanders.

DSM and CCIR

Without filters to screen out irrelevant information, commanders can quickly become overwhelmed by the amount of data they consume. Commanders dictate the data they wish to receive by determining what decisions they want to make in their DSM. The DSM outlines decisions they need to make based on future events, decision points, and friendly actions (ADP 5-0, 2019, p. 2-6). A prime example is the commander's decision to commit reserve forces. From the DSM, CCIR is designated from likely information needed to make said decisions.

The DSM and CCIR are not new concepts, and they are usually created and approved after war-gaming during the Military Decision-Making Process (MDMP). The issue is that the DSM and CCIR are rarely updated during operations. An example is during Warfighter Exercise (WFX) 24-5 when "several challenges related to tracking the status of CCIRs and aligning them to the scheme of maneuver ... The sheer number of CCIRs resulted in staff desynchronization and a loss of collection focus due to unmanaged data" (Warfighter 24-25 Report, 2024).

Updating and validating CCIRs should occur minimally daily or as new decisions are required. This also means commanders must validate and update their DSM throughout the operation. Updating CCIRs and DSMs is as, if not more, important than establishing them during MDMP. Focusing on minimal CCIRs allows the staff to identify gold nuggets in the stream of data to help commanders make the correct decision. With the updated guidance on the information required to make new decisions, the staff can start filtering the data they receive.

Data versus Information

It is essential to understand the distinction between data and information. Data is factual material used for discussion or calculation (Webster, 2025). Information is knowledge obtained from the study, usually derived from previously gained data (Webster, 2025).

Staff officers produce information by filtering data and, with their knowledge and experience, provide the

The KM Cognitive Pyramid

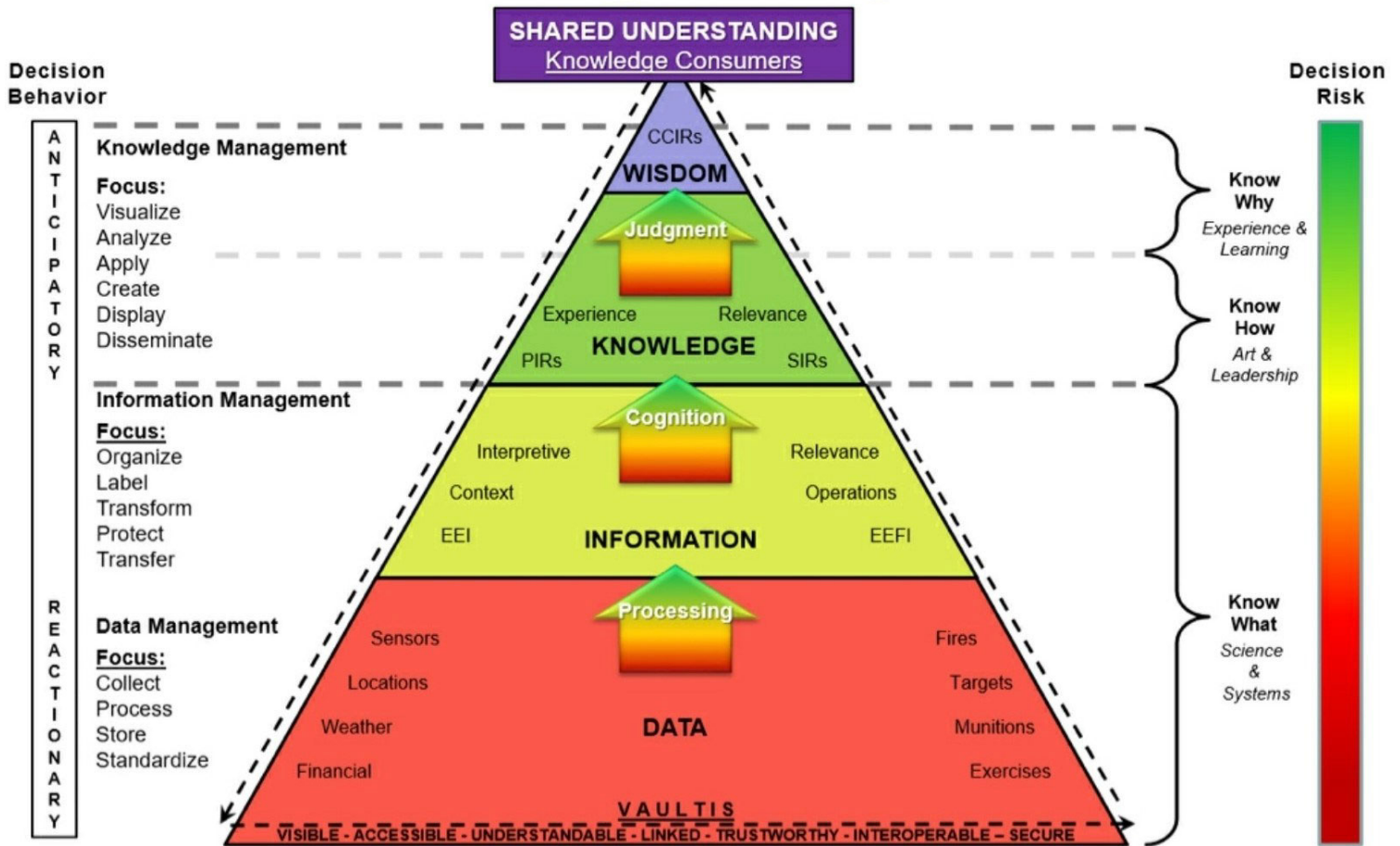


Figure of the Knowledge Management Cognitive Pyramid. (Matthew Viel)

information to commanders to enable decision-making (see Figure). With their wisdom and insight, they will take this information and make decisions.

Commanders have little use for data, as it lacks analysis and structure. Army staff officers must endeavor to provide commanders with information that has been thoroughly analyzed and vetted.

An example of briefing data is the S6 stating the status of retransmission, showing a line-of-site (LOS) slide, and detailing why the 'C' in the Primary, Alternate, Contingency, and Emergency (PACE) plan is down. While these are facts, little analysis has been conducted to provide commanders with quantitative information to make decisions. Instead, the S6 should identify why a loss of a key terrain will hinder lines of communication, leading to commanders changing their CCIR. Each warfighting function (Wff) has information the commander needs to know to succeed on the battlefield.

Staff officers must use CCIR to focus on the data that will provide the information required to make decisions. However, even the most competent staff officers make mistakes and either miss a critical piece of information or flood the commander with information that is not required. To mitigate this, using AI

increase the probability that commanders always have the necessary information available to make decisions.

AI Analysis in the Fight

AI systems have already been established at a minimal scale to help staff officers quickly provide information to commanders. An example is Camo-GPT, which can tell S4 how many kilometers a tank can maneuver if followed by a full M978A4. The issue is that Current Mission Command Information Systems (MCIS) do not yet harness modern AI systems' full power and benefits.

AI can help staff officers who are tired, cold, and hungry make fewer mistakes when pulling information from data. We can see examples of this in the game of chess. Stockfish is an AI that helps players plan future moves. The best chess grandmasters in the world can only calculate up to three to four moves ahead. Stockfish can calculate up to 15. That is a difference of 70 trillion possible moves that AI can calculate compared to the best players in the world (Allis, 1994). Each Wff can benefit from using AI to help analysis data.

S6 can use AI to help update the PACE plan by pulling friendly locations off the common operating picture (COP) and deconflicting with the enemy situational template (SITTEMP). S2 and S3 can use AI to

conduct better battlefield simulations allowing AI to calculate causalities in the Correlation of Forces Model, allowing a more accurate assessment during wargaming. Commanders can use AI to provide predictive actions and information required to win on the battlefield. Additionally, AI has been used to respond to tendencies and provide recommendations based on prior actions (Carli, 2011, p. 26-35). AI may offer aggressive recommendations to commanders who tend to be more aggressive and vice versa. AI can also recommend changes to the DSM and CCIR or make real-time recommendations on when to commit to the reserve.

Commanders will always have the final approval, but AI can help staff officers and commanders provide recommendations while making fewer mistakes.

In modern-day LSCO, commanders will be overloaded with data and require pertinent information to make critical decisions to win on the battlefield. The Army can achieve this through three methods: commanders provide a descriptive and updated DSM, which feeds into a defined CCIR; ensure staff can filter data into usable information and use their knowledge to provide the commander with insight to make decisions; and lastly, the next generation of AI should be integrated to support staff and commanders in prioritizing and minimizing human error when providing information to commanders. LSCO will be inundated with data, both relevant and irrelevant. We must be prepared to obtain the information needed to make decisions and win against our adversaries.

Bio

Maj. Christopher M. Dirks is currently the brigade S6 for 1st Armored Brigade Combat Team, 1st Armored Division, at Fort Bliss, Texas. He holds a Bachelor of Arts in history from Kansas State University, a Master of Arts in military history from Norwich University, and a Master of Arts in operational studies from Command and General Staff College. During his career, Dirks has served with 1st Infantry Division, 1st Cavalry Division, 11th Signal Brigade, 89th Military Police Brigade, and 1st Armored Division.

References

- Matthew.viel, CC BY-SA 4.0 <<https://creativecommons.org/licenses/by-sa/4.0/>>, via Wikimedia Commons
- D. M. D. Carli, F. Bevilacqua, C. Tadeu Pozzer and M. C. 'Ornellas, "A Survey of Procedural Content Generation Techniques Suitable to Game Development," *2011 Brazilian Symposium on Games and Digital Entertainment*, Salvador, Brazil, 2011, pp. 26-35.
- Sabine Heim and Andreas Keil "Too Much Information, Too Little Time: How the Brain Separates Important from Unimportant Things in Our Fast-Paced Media World." *Young Minds*. (2017)
- Santosh K. Kurinec, Mark Indovina, Karl McNulty, Matthew Seitz "Recreating History: Making the Chip that went on the Moon in 1969 on Apollo 11". *Rochester Institute of Technology*. p. 9. Retrieved Aug. 29, 2023.
- U.S. Army Center for Army Lessons Learned, U.S. Army "Warfighter 24-5 Report." WFX 24-5 occurred July 31-Aug. 10. 2024.
- U.S. Army, "The Operations Process", ADP 5-0, July 2019, 2-6
- Victor Allis, *Searching for Solutions in Games and Artificial Intelligence*. Maastricht, The Netherlands: Ph.D. Thesis, University of Limburg. (1994) ISBN 978-90-900748-8-7.
- Webster Dictionary, MAR 2025, <https://www.merriam-webster.com/dictionary/data>
- Webster Dictionary, MAR 2025, <https://www.merriam-webster.com/dictionary/information>