For Want of Data, the Kill Chain was Lost

Why Marine Corps AI efforts will continue to struggle and what to do about it

by LtCol Scott Humr

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The Marine Corps' efforts to leverage the power of its vast data resources to enable the use of artificial intelligence (AI) will continue to struggle for the foreseeable future unless root causes are addressed. With no shortage of resources, guidance, and adoption strategies, reports from the Government Accountability Office and others suggest that Marine Corps progress has been minimal.[1] Further backed by the Chief Data and AI Office (CDAO), the organization dedicated to overseeing and assisting the entire DOD to use AI capabilities, efforts toward fueling adoption at scale are still nascent or non-existent. While numerous AI symposiums, summits, hackathons, and executive-level training sessions have demonstrated some marginal benefits, one must ask, why is the Marine Corps still struggling to adopt AI at scale despite these tremendous efforts?[2] The Marine Corps' efforts to leverage AI has as much to do with its data as it does with at least three other factors: enculturated senior leader behaviors, talent management, and a lack of lead measures for marking progress toward its goals. Top-level frameworks and guidance are useless unless behaviors are simultaneously driven from the bottom up. Short of a dual-pronged approach, the Marine Corps' efforts to pursue AI at scale will continue to flounder.

Leaders Get What They Expect

Many senior leader behaviors do not signal the use of data-driven decision making. This is most evidenced by the continued demand for decision making driven by PowerPoint slide decks.

In fact, this was recently cited by the Defense Innovation Board as a "point of data failure."[3] While well-known for being the bane of every staff officer's existence, slide decks built for briefs have an inauspicious history throughout the DOD, and the Marine Corps is no exception. Unfortunately, senior leaders have become accustomed to getting briefs from their staff almost exclusively from slide decks. For instance, entire processes such as information preparation of the battlefield and the military decision-making process are formatted to fit a slide deck. However, the current use of slide deck production provides static artifacts that only give a snapshot in time. Additionally, most slide decks prevent the extraction of data and key insights because they are composed of many abstractions, static pictures, and non-machine-readable formats with little to no information provenance. Moreover, formatting and assembly can take longer than the time used to gather the information and create the slides in the first place to ensure fonts, colors, pitch, alignment, and formats are consistent. These actions can take an enormous amount of time, which is not only a wasteful use of the higher cognitive abilities of the staff but is likely outdated by the time the commander is briefed on the content. While slide decks have a function and purpose within the Marine Corps, inappropriate use inhibits better solutions from being developed.

To drive change in the right direction, leaders must demand briefings from dynamic data sources to foster the necessary changes for treating data as a valuable resource. Rather, senior leaders can help push for these transformations by requiring they be briefed from dynamic data-driven dashboards and real-time common operating pictures. Senior leaders and commanders need to initiate the process of getting their staffs to use real-world common operating pictures that also can use current and projected future force laydowns with simulation capabilities. Paired with a back-end data analytics capabilities that can leverage machine learning and other techniques, commanders can adjust on the fly and receive realtime feedback on their proposed courses of action. Slide decks do not offer this kind of modeling or feedback. Additionally, data from these simulations can be captured, played back, and analyzed against real-world actions as they unfold. Static slide decks allow none of this yet are still the mainstay of much of the current decision making throughout the Marine Corps.

To help correct this, commanders need to send the demand signal to their staffs on what they expect. Part and parcel of this demand is to know what is in the realm of the possible. One way to solve this is to introduce the tools

available to commanders at the Cornerstone course all new battalion commanders attend before taking command. Institutions such as the Operations Analysis Directorate, the Marine Corps Software Factory, and Marine Corps Tactical Systems Support Activity can present the best-of-breed solutions that can help inform a commander's expectations and demands for the latest decision-support tools already available to them. Furthermore, commanders should be made aware of the power of the suite of approved software and data repositories available to them while at Cornerstone. Short of this, such knowledge will remain unequally distributed and siloed. Once in command, such thoughts of improving upon the status quo will be overcome by events and likely languish. Instead, commanders should be able to set the bar when they arrive and communicate to the staff on how decisions will be data-driven with a long-term view of data stewardship in mind.[4] Senior officers who rate commanders may also consider a directed comment on how well their subordinates made progress toward such efforts for their command as a distinguishing feature for those who do well. While commanders can be blamed for not demanding such products from their staff, they are further inhibited by the technical talent necessary to pull such decision aids together. As a result, some onus must be placed on how the Marine Corps creates and distributes its technical talent.

Talent Management

Equally important for leaders setting the pace for making decisions with data is having the requisite talented personnel to architect and support the development of these solutions. However, there has been little movement toward employing the Marine Corps' current talent. For instance, the original *Talent Management 2030*, published more than 37 months ago, details a move toward using the unique talents of Marines, but there is still little seen thus far on this front. The solutions the Marine Corps needs to pursue, require teams of individuals with unique skill sets. For instance,

the skills needed for data engineering are not the same as those needed for data scientists or front-end developers. Hence, this is why the entire data and AI supply chain is considered a team sport.[5] *Marine Corps Order 5231.4, Marine Corps Data and Artificial Intelligence*, requires the creation of associate data officers (ADOs), data stewards, data custodians, and command data and analytics officers. The skills to support these billets are likely low-density and currently unidentifiable (if they exist) by primary MOS alone. Moreover, the Marine Corps needs dedicated individuals in key areas who are significantly invested and incentivized to see these efforts through. Yet, the revolving door of personnel lured by better working conditions, attractive compensation, and higher pay will continue to stymie the Marine Corps' efforts in this area.

The Marine Corps can address this shortcoming by experimenting with a few cohorts that initially take volunteers who desire to stay in a particular technical field. Additionally, re-baselining where technical talent resides would allow occupational field managers to restructure the 88XX billet MOS. This change would also help magnify the expanding scope of responsibility these Marines have and architect the appropriate grade structures necessary to ensure promotion opportunities exist. Rearchitecting this structure will require reconceptualizing how the Marine Corps calculates compensation for such growth.[6] Allowing Marines to stay in these fields longer not only increases the return on educational investment but over the long term reduces the number of Marines that need to be sent to school, thereby reducing the overall number of patients, prisoners, training, and transients (P2T2).

Secondly, the Marine Corps needs to better inculcate the use of information and knowledge management (IM/KM) personnel within organizations. Information and knowledge management staff can help develop the processes, policies, and repositories for ensuring data, information, and knowledge are managed well, are accessible, searchable, and meet the standards set forth by the

National Archives and Records Administration. Information and knowledge management personnel should work hand-in-hand with associate data officers, data stewards, data custodians, and command data and analytics officers as well as other internal and external stakeholders to ensure data is both accessible and searchable. With the advent of additional data and analytics officers, IM/KM personnel may become the bridge between how data and analytics are consumed across a variety of command-and-control applications across the enterprise or serve in a more archivist role and research arm of a command. The Marine Corps could consider merging its existing IM/KM personnel with the forthcoming AI task groups (AITG) outlined in the Marine Corps' recent *AI Strategy* to create individual command data and analytics offices.[7] This would provide units a more comprehensive team that must ultimately work together to achieve the Marine Corps' vision for how AI will scale across the enterprise.

While much is left to be worked out with the function of these roles and how they interact with one another, including engaging with external entities, all the right people will amount to little progress if they are not directed by a steady drumbeat of lead measures for success.

Lead Measures

One of the main reasons the Marine Corps sees no progress in many areas for addressing its data woes to support AI is the lack of lead measures that keep organizations accountable for making progress. While the publishing of Marine Corps orders, frameworks, and implementation plans is necessary and helpful, it cannot stop there. A lack of will by organizational leaders to make headway in treating their data as a valuable resource while making it available to the enterprise is currently stifled by a lack of accountability. Part of this hesitancy could be based on higher headquarters or adjacent unit's ability to see one's homework which could reveal hidden flaws or reveal data it may be too embarrassed to share. However, this is exactly why the Marine Corps

needs to overcome this hurdle for appropriately sharing data.

Arguably, most of the Marine Corps' efforts to address its data discipline fail in the actual execution. In their book, *The Four Disciplines of Execution*, the authors lay out a simple but powerful and effective way to see execution through: focus on a wildly important goal, act on lead measures, keep a compelling scoreboard, and create a cadence of accountability.[8] While a thorough inventory of the enterprise data architecture, the creation of talented individuals, and the publication of a Marine Corps orders and strategy are necessary, they are not sufficient for achieving the Marine Corps' data and AI aspirations. Additionally, clear goals need to be set and a publicly available scoreboard created to ensure progress is being made toward those goals. Lead measures such as the number of application program interfaces (APIs) made accessible, and the number of applications refactored, rationalized, eliminated, and consolidated with clear goals are what will drive change. Duty logbooks, NAVMC forms, and check-in/out procedures should all be tallied as ripe for cataloging and replacement by electronic means as well. Standardization across commands will also help reduce the number of applications required to fulfill this effort with the ability to scale. Yet, the key is to also not try boiling the ocean when it comes to these efforts. Rather, the targeted selection of a few organizations and a few programs can create early wins needed to promote progress and engender confidence in the process.

Lastly, the Deputy Commandant for Information needs to drive the cadence of accountability for these efforts. Deputy Commandant for Information should develop an interactive dashboard that will allow all stakeholders the ability to drill down into each command with clear measures and metrics. Platforms such as Advana allow for a more enterprise-wide ability to host such metrics. Nothing will move the needle like one commander seeing their unit in the red and their peer's as green. Furthermore, these behaviors should be incentivized with new unit awards and recognition on a quarterly and yearly basis. While not all units will receive their full complement of data stewards, AI engineers, ADOs, CDAOs, or IM/KM personnel at the same time, such a scoreboard and cadence of accountability should not be placed on hold. The Marine Corps needs to move out on such efforts if it is to see genuine progress toward leveraging AI to solve problems that warrant it.

New Direction?

When it comes to Service-level guidance, clarity and a clear process can be extremely helpful. Therefore, one could argue that the Marine Corps is in fact making significant progress with the release of *Marine Corps Order 5231.4, Marine Corps Data, and Artificial Intelligence*. While the order does lay out some important definitions, roles, and lines of authority, it falls short in several significant ways that will hinder its aspirations. First, the order provides high-level tasking to adjacent commands to work out the many concepts the order hopes to achieve. For instance, it assigns several Deputy Commandant (DC) organizations to create and develop new billets, roadmaps, concepts, and organizations such as data stewards, CDAOs, ADO, and AI data engineers without a thorough doctrine, organization, training and education, materiel, leadership and communication synchronization, personnel, facilities, and cost worked out, properly funded, nor resourced. In another instance, it assigns Marine Corps Systems Command to "Conduct Marine Corps Operational Test and Evaluation activity for data and AI." However, the Marine Corps Operational Test and Evaluation Activity is not a subordinate function of Marine Corps Systems Command but rather reports directly to the Assistant Commandant of the Marine Corps to avoid conflicts of interest in their evaluations and test processes. Furthermore, it is unclear how these efforts will be resourced and where they rank in order of priority, funding, and levels of effort. The order is also unclear on how all the events assigned to individual DCs will be synchronized with other ongoing data and AI efforts. If the order needs to be updated to reflect new changes, the staffing process across all stakeholders will likely be too slow, resulting in the order being ignored or outright violated. Regrettably, this order is overly ambitious with no clear path forward for how additional manpower, new organizations, and structures will be resourced through execution. However, the Marine Corps's new *AI Strategy* and forthcoming implementation plan provide additional clarifications and direction where the order leaves off. Nevertheless, the Marine Corps will need to keep up the positive momentum to see these and follow-on efforts succeed.

Conclusion

Data and information are the lifeblood of the organizational decision process. Yet, the Marine Corps has yet to truly exhibit the habits and behaviors that demonstrate that it treats its data and information as such. Therefore, the Marine Corps, as an organization, needs to get serious and see itself as an information processing system.[9] Such an organizational view will only be possible if its leaders treat it as such while instilling the correct behaviors for emphasizing the importance of data to support any of its AI efforts.

The Marine Corps must take the same bold actions that inaugurated its *Force Design* efforts. From making back-office decisions to closing kill chains, data is foundational to all such successful processes. While failures for AI projects are reported as high as 80 percent, this should not deter the Marine Corps from moving out with a small set of achievable projects to help create the short wins necessary to invigorate this progress.[10] Yet, the absence of commander expectations for realtime data-driven decision-making capabilities and the lack of effectual talent management efforts, both coupled with no cadence of accountability have delivered exactly what the Marine Corps should expect: little forward movement toward improving the enterprise's data and AI efforts.

The below proverb is a play on "For Want of a Nail the Kingdom was Lost" adapted for today's data-centric warfighting aspirations:
For want of data the algorithm was lost.

For want of an algorithm the GPU was lost.
For want of a GPU the cloud was lost.
For want of a cloud the API was lost.
For want of an API the AI was lost.
For want of an AI the application was lost.
For want of an application the kill chain was lost.
For the want of a kill chain the strategy was lost.
All for the want of data.[11]

Notes

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3. Defense Innovation Board, *Building a DoD Data Economy*, (Washington, DC: January 2024).

4. Scott Humr, *A Data-Driven Organization, Marine Corps Gazette,* March 2019, https://www.mca-marines.org/wp-content/uploads/16-A-Data-Driven-Organization.pdf.

5. Julia Weber, "AI is a Team Sport," *Proceedings*, June 2023, https://www.usni.org/magazines/proceedings/2023/june/ai-team-sport.

6. Scott Humr and Emily Hastings, "Old Wine in New Wine Skins," *Marine Corps Gazette* 108, No. 6 (2024).

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11. Book Browse, "For Want of a Nail the Kingdom Was Lost," *Book Browse*, n.d., https://www.bookbrowse.com/expressions/detail/index.cfm/expression_number/558/for-want-of-a-nail-the-kingdom-was-lost.

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