PARRY LABS

FIFTH EDITION

DoD Integration Newsletter

Transforming the Integration Market

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Navigating Change in the DoD: Leveraging MOSA for Effective Acquisition Reform

By Matt Sipe, Parry Labs

The first few months of the new administration have been nothing short of dynamic. There is a clear sense that CHANGE is not only desired but actively pursued. The Department of Defense (DoD) has witnessed a new set of political appointees and key staff members emerge, all eager to implement their own vision of reform. There is an evident desire to disrupt traditional structures and practices, and it is apparent that the DoD is embracing change across various organizational sectors. More now than at any time in recent history, there is momentum for reform and modernization, which is creating opportunities to shape the future of DoD acquisition processes.

For leaders within the DoD, particularly those involved in acquisition processes, the key to successfully navigating this shifting landscape is to jump in as an active change agent engaged in shaping this new world. Leaders actively engaged in ongoing reforms are better equipped to guide their organizations through the transformation and take advantage of the opportunity to shape and influence the end result. Change is inevitable, and those organizations who will be at the forefront of the future are those who influence and adapt.

For those specifically working in DoD acquisition, this is a prime moment to capitalize on the momentum generated by the new administration and leverage it to accelerate much-needed reforms. One such initiative that aligns perfectly with the current push for efficiency and effectiveness is the Modular Open Systems Approach (MOSA). MOSA has long been championed as a key reform effort that can streamline acquisition processes, reduce costs, and improve operational flexibilities and interoperability. However, the current climate of change presents a unique opportunity to propel MOSA forward and ensure that its principles are fully integrated into the DoD's acquisition strategy.

MOSA's core objectives—improving government efficiency, increasing speed, and enhancing effectiveness—are in lockstep with the goals of the new administration. Its alignment with these priorities provides a strategic advantage to those looking to implement meaningful change. Unlike many new initiatives that require time to gain traction, MOSA is already well-established, with a proven framework that organizations can tap into immediately. This gives organizations that choose to double down on MOSA a head start, enabling them to achieve tangible results faster than those adopting new, untested reforms.

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One of the most compelling reasons to embrace MOSA during this period of transformation is its potential for significant efficiency gains and cost savings. A concrete example of this is how MOSA can be leveraged to align with Secretary Hegseth's emphasis on Commercial Off-The-Shelf (COTS) products. COTS can often offer an attractive solution for acquiring necessary components quickly and cost-effectively. However, purchasing COTS products without thoroughly considering system architecture can lead to unintended consequences, such as high sustainment costs and vendor lock-in.

This is where MOSA comes into play. By defining Major System Components (MSCs) and establishing Modular System Interfaces (MSIs), programs can purchase COTS products without the negative side effects commonly associated with such acquisitions. MOSA provides the framework for ensuring that these modules are well defined, enabling the DoD to avoid the substantial development costs and lengthy timelines typically required for custom solutions. Additionally, using COTS in a modular system reduces the burden of production costs because they can be shared across multiple programs that would benefit rather than being tailored to a singular government initiative.

The key takeaway is simple: buy COTS, but only after taking the time to carefully define and document your system's modules. By doing so, the DoD can maintain flexibility, accelerate acquisition timelines, and realize cost savings while avoiding the pitfalls that often come with off-the-shelf solutions. Win for DOGE! Win for the new DoD administration! Win for the program and end user!

As the DoD continues to undergo a period of significant transformation, it is important to remember that effective leadership is about embracing and guiding the changes. For those involved in acquisition, now is the time to seize the moment and push forward initiatives like MOSA that can deliver meaningful, long-lasting improvements to the department's operations. The momentum is here, and with the right approach, it can be harnessed to achieve the desired outcomes of the new administration.

Enhancing Content with AI Integration through Digital Engineering Practices

By Rachel Moudy, Principal Technical Advisor at LMI

Leveraging the transformative power of Artificial Intelligence (AI) presents a significant evolution for the engineering community. Adapting to this changing landscape is crucial for maintaining and enhancing the rigor and effectiveness of our engineering practices, particularly in system modeling.

Integrating AI offers unprecedented opportunities for precision and efficiency in modeling endeavors. Realizing this potential necessitates a refined approach to how we interact with the emerging AI capabilities. While AI can readily generate content for systems such as use cases, engineers must move beyond simple prompts and embrace expressive prompting techniques. Better prompts will ensure that the data AI generates aligns accurately with our specific engineering objectives and the intricacies of the systems we are modeling.

Research demonstrates that AI-generated content quality and relevance correlate strongly with prompt sophistication and the AI's access to targeted data. Even with robust underlying AI models, a poorly constructed prompt and limited access to refined data will yield generic results. Conversely, by applying fundamental engineering principals within our prompting strategies and ensuring the AI has access to accurately targeted content, we can produce highly specific and valuable data that can be seamlessly integrated into our models.

This approach has significantly enhanced efficiency by reducing content generation from hours to minutes, once an effective prompt is crafted. This experience can empower our engineers by providing them an accessible, digital Subject Matter Expert (SME) to brainstorm concepts and validate ideas.

When prompts lack a systems engineering foundation, AI will not produce SME caliber content. While this lower quality output might be considered adequate by some, it undervalues the critical role informed instruction plays. Professional systems engineering practitioners require a higher level of rigor and insight, which only well-crafted, systems engineering-based prompts can achieve.

While AI is a powerful tool, it requires intelligent and knowledgeable guidance to produce truly valuable results. Integrating AI into digital engineering practices has the potential to significantly enhance the precision, efficiency, and overall quality of engineering artifacts. However, if our prompting lacks sound engineering principals and we don't provide the AI with explicit data, we risk generating mediocre content that negatively impacts the quality and fidelity of our engineering artifacts. Modern engineers must master the art of expressive and creative engineering prompting to fully leverage AI's potential while maintaining high quality standards.

Integrating the Future – A Vision for Next-Generation Automation

By Jason Rapp, Parry Labs

Integration is the heartbeat of any modern defense software pipeline. It's where security meets functionality, where code becomes capability, and where compliance is no longer a box to check but a standard to embed. For the last 5 months, the JTOSR process (our new Build-From-Scratch process) has served as a proven framework for producing hardened, cyber-compliant images for deployment across a range of defense platforms. It has allowed integrators to meet stringent DoD cybersecurity baselines, delivering on key efforts like MALET GEMMI, EUAS GEMMI, and the EC-Hyper platform under Navy COCO.
But the integration landscape is evolving—and fast. External dependencies, manual interventions, and disjointed toolchains introduce risk, inflate timelines, and limit our ability to scale or adapt. It's no longer enough to integrate well—we must integrate smart, secure, and at the speed of need. Enter Project SPARCD: Security-Driven Production for Automated Release Candidates and Deliverables. SPARCD is more than a toolchain or an automation script; it's a philosophy that treats security and efficiency not as competing priorities, but as core principles of modern integration. SPARCD is built on GitLab's CI/CD engine and represents a transformative shift by migrating the JTOSR model into a fully automated, in-house pipeline that fuses continuous compliance with continuous delivery.

With SPARCD, every software build becomes a secure-by-default asset. From STIG-compliant base layers to hardware-tuned drivers and customer-specific mission packages, the entire integration stack is codified, version-controlled, and reproducible. What once required manual effort and coordination now happens automatically, with traceability, transparency, and trust baked into every stage.

This approach doesn't just reduce friction—it rewrites the playbook. By removing reliance on external processes, SPARCD empowers integration teams to move faster, respond to changing requirements on the fly, and deploy with confidence. Automation both speeds us up and sharpens our edge.

Looking ahead, SPARCD is a catalyst for the future of integration, when compliance is continuous, every build is hardened by design, and integration is no longer a phase in the development lifecycle but a fully integrated discipline driving every mission-critical system we build.

We are integrating the future, not just with lines of code, but with a relentless commitment to automation, agility, and embedded quality in everything we do.

The Importance of Foundational Modular, Open Software in USMC Ground and Maritime Modernization

By Dr. Matt Fogleson, Parry Labs

As the United States Marine Corps advances its Force Design 2030 objectives, the imperative to modernize ground and maritime systems is increasingly centered on digital interoperability, rapid adaptability, and resilient command and control. Foundational, modular, open software architectures (MOSA) play a critical role in achieving this transformation, enabling the Marine Corps to outpace adversaries, maximize investment efficiency, and ensure readiness in contested, multi-domain environments.

By adopting modular and open software at the foundation of its ground and maritime platforms, the Marine Corps can break free from rigid, vendor-locked systems and enable true plug-and-play capability across sensors, effectors, autonomy modules, and control nodes. These software foundations abstract proprietary hardware and legacy stovepipes, allowing mission systems to evolve rapidly without full system redesigns. This approach ensures that the Corps can incorporate emerging technologies—AI/ML, EW, and autonomous maneuver—on a faster timeline with reduced integration risk.

Open, modular software also provides the technical substrate for common command-and-control across domains. Ground vehicles, littoral vessels, and unmanned systems can be unified under a shared messaging framework, harmonizing operator workflows and reducing training and sustainment burdens. This digital backbone supports expeditionary operations, distributed maritime logistics, and the kill web connectivity needed for operations in the Indo-Pacific and other dynamic theaters.

Crucially, these software frameworks also accelerate cyber and safety certification. Containerized services, partitioned interfaces, and transparent APIs support robust risk management frameworks and pave the way for third-party tool integration without compromising mission assurance.

As the Marine Corps continues to transition toward smaller, more agile, and autonomous-capable units, modular open software is not just an enabler—it is a force multiplier. It provides the connective tissue necessary to maintain flexibility, survivability, and decision advantage across every domain, from the tactical edge to the enterprise cloud.

6th Dimension INCORPORATED

By John Stough, 6 Dimension's CEO

6th Dimension is a U.S.-based technology company pioneering digital engineering solutions for defense, aerospace, and critical infrastructure modernization. Our flagship platform, Ceres, is a next-generation Digital Twin Software Development Kit (SDK) that enables immersive, real-time modeling and simulation for complex system-of-systems environments. Purpose-built to support mission-driven applications, Ceres integrates environment, system, and data modeling in a unified architecture, delivering high-fidelity visualization, fast-time execution, scripting, and dynamic human-machine interface capabilities. Originally developed to support advanced flight simulation and mission engineering applications, Ceres has evolved into a scalable, distributed toolkit for real-time system design, component integration, CONOPS, training, test analysis, and operations. 6th Dimension's tools are ideal for domains requiring adaptable, interoperable solutions aligned with the Modular Open Systems Approach (MOSA) and digital engineering mandates, complete with rapid Plug-in architecture for SysML and Data Science integration. With a unique ability to integrate sensors, platforms, physical assets, and AI-driven analytics, Ceres empowers engineers, operators, and decision-makers to plan, test, and execute with confidence—bridging the digital and physical worlds.

Who's Who?

Matt Sipe

Mr. Matt Sipe is the Vice President of Strategy, Open Systems at Parry Labs, where he leads the implementation of a Modular Open Systems Approach (MOSA) to deliver cost-effective solutions for government partners. He has held key leadership roles in Army Aviation, including Chief Engineer and Director of MOSA Transformation, advancing digital engineering and MOSA strategies. A former U.S. Air Force officer, Matt is also the founder of the DoD Industry Newsletter, a key resource for defense integration and open systems.

Rachel Moudy

Rachel D. Moudy is a Senior Software Architect at John H. Northrop & Associates, Inc. (JHNA), where she supports the U.S. Army Program Executive Office Aviation as the Architecture and Integration Subject Matter Expert. She brings deep expertise in MOSA, architecture, software, model-based systems engineering (MBSE), and digital engineering. With extensive experience in leading software and MBSE teams, she has contributed to the design and integration of advanced solutions in missile defense and avionics. Her skills span product development, acquisitions, and science and technology, and she is dedicated to innovation through user-centered design. Rachel holds a Master of Science in Human Factors with a specialization in Aerospace, graduating with Distinction from Embry-Riddle Aeronautical University.

Jason Rapp

Jason Rapp is a highly experienced Systems Integration Engineer at Parry Labs, specializing in integrating complex technical systems for mission-critical operations. He also serves as Battalion Commander for the Nevada Army National Guard, where he leads the 422nd Signal Battalion in providing strategic and tactical communication support. Jason's extensive experience in both systems engineering and military leadership allows him to drive operational efficiency and ensure seamless integration across advanced platforms.

Matt Foglesong

Dr. Matthew Foglesong is a Marine Corps veteran with 14 years of service as a Reconnaissance Marine, culminating his military career as Chief of the Ground Combat Element and Robotics Branch at the Marine Corps Warfighting Laboratory. He advised the Secretary of the Navy on autonomous systems and their integration. Currently, he serves as Director of Ground | Maritime C2 at Parry Labs, where he leads efforts to develop and integrate advanced command and control solutions for multi-domain operations.