Strategic Insight

Operational AI
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RMX

Operational AI: Turning Real-Time Data into Real-World Impact

An RMX perspective on the rise of Operational AI, the hidden challenges in data flow, and how VAST™ bridges the gap for faster, life-saving decisions.

Introduction: The Promise of Operational AI

In today's dynamic defense and security environments, Operational AI represents a fundamental paradigm shift. Rather than relying on static dashboards or retrospective analysis, it integrates AI directly into live operations where split-second decisions determine mission outcomes. By fusing real-time sensor and video streams into reliable insights, it empowers teams to act swiftly under pressure. The U.S. Department of War (DoW) highlights this as "accelerating decision advantage," prioritizing high-quality data for immediate, results-oriented actions. As Palantir CEO Alex Karp notes, in order to enhance battlefield outcomes, and for "real AI" to work, specific and efficient infrastructure is "crazy important".

The Growing Need and Real-World Hurdles

Operational AI's value shines brightest in defense, security, and crisis response, where it compresses the timeline from detection to action, reducing risks, enhancing coordination, and potentially saving lives. Leading frameworks underscore this urgency. The DoW's AI guidelines emphasize rapid, informed choices through continuous data loops, while NATO's 2025 Data Strategy calls for a data-centric approach to support multi-domain operations. The imperative is clear, modern conflicts and missions depend on demonstrating superior decision-making speed and accuracy, and AI demonstrates operational value only when fully integrated into the decision-action cycle.

However, a critical bottleneck persists: the data continuum, the seamless flow of information from collection to analysis to action. Real time battle operations produce vast volumes of video and sensor data from far-edge environments: remote locations characterized by limited bandwidth, intermittent connectivity, and diverse links, such as fiber optics, LEO satellite links, or legacy radio systems. When data stalls due to dropped signals, reduced speeds, or lost metadata, AI pipelines falter, turning potential advantages into missed opportunities. As NVIDIA's Jensen Huang observes, "investing in AI models alone isn't enough; the underlying infrastructure, akin to essential utilities like electricity, must enable seamless data movement".

Overcoming the Challenge: The Role of Compression and VAST™

Advanced data compression emerges not merely as an efficiency enhancement, but as a strategic enabler that makes Operational AI viable in contested environments. Compression allows more streams over limited connections, preserves essential quality and details for AI processing, reduces latency on degraded networks, and adapts to varied transport protocols such as radio frequencies, mobile ad-hoc networks (MANET) and satellites. In essence, compression transforms constrained setups into reliable channels, ensuring operations remain connected even in adversity.

RMX's VAST™ directly addresses these challenges through a software-defined platform that conditions and compresses data at the source, delivering clean, trusted streams with predictable timing while minimizing bandwidth, storage, and power needs. Designed for harsh realities, VAST™ has earned real-world validation. In November 2025, The Apollo Group selected VAST™ for a program to channel high-value data from remote edges to core AI systems, with their COO praising its ability to make low-bandwidth networks dependable.

Field tests further demonstrate its operational strength. At Tough Stump Rodeo 2025, VAST™ handled multiple HD streams over radio-based MANET and beyond-line-of-sight relays, integrating smoothly with TAK workflows across contested bands like HF and UHF satellite links. Earlier in the

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year, during USSOCOM's Arctic Warrior exercise in Norway, VAST™ maintained live video over severely restricted connections, outperforming conventional tools. A follow-up U.S. Army order (PEO Soldier) reinforces its deployment readiness, enabling HD delivery at ultra-low bitrates on lightweight devices without additional hardware.

Operational AI at scale demands seamless integration. RMX addresses this through native support in platforms like TAK 5.5, which directly incorporates VAST™ AV1 streams, enabling multiple high-definition feeds over constrained radio frequencies without additional hardware or complexity.

From Insight to Lasting Advantage

Major General (Ret.) Michael S. Repass, who commanded at every level of Special Forces from captain to major general and led the Combined Joint Special Operations Task Force-Arabian Peninsula during two combat tours in Operation Iraqi Freedom, offers this perspective:

"Integrating VAST™ into communications systems and analytical tools solves multiple technical problems that previously limited the warfighter's decision quality and timeliness. This is a critical step towards operationalizing AI at the leading edge".

In conclusion, Operational AI will fundamentally reshape defense and security capabilities for those who successfully navigate data flow challenges in complex operational environments. RMX's VAST™ solution provides the critical foundation for this transformation, a field-proven, adaptable platform that accelerates the delivery of actionable intelligence while maximizing existing infrastructure investments. By optimizing the entire data pipeline, VAST™ converts potential into operational performance, delivering the clarity, continuity, and decisive advantages that matter most in mission-critical scenarios.

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