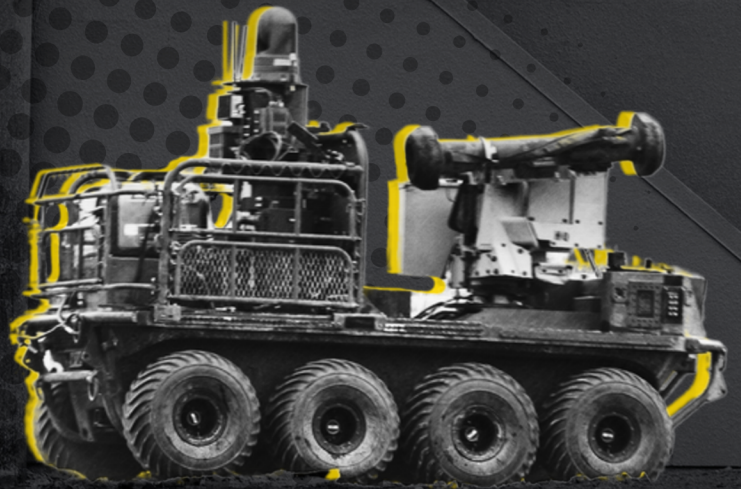


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# VERTEX



## USE CASES

### ADVANCED AUTONOMY

FEB 11-12, 2025 | AUSTIN, TEXAS

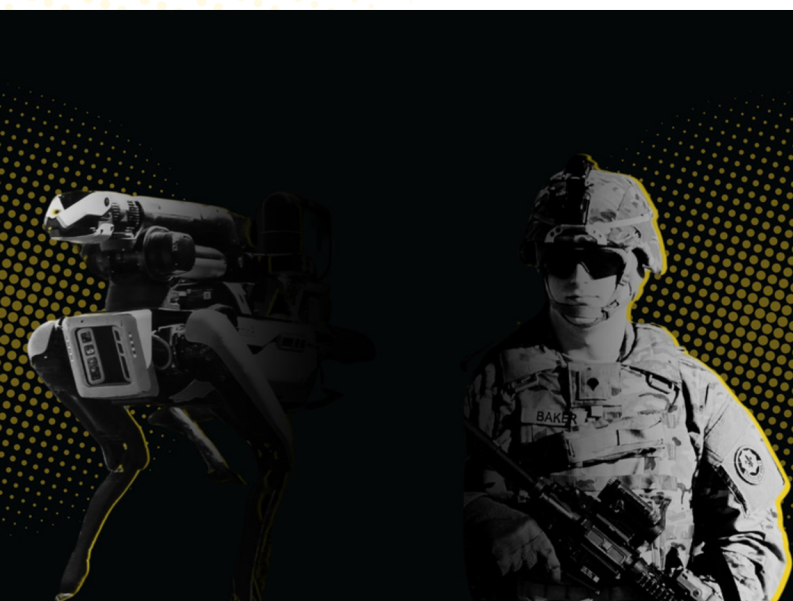
VERTEX | Advanced Autonomy is a two-day symposium that focuses on human-machine integrated Army formations, leaning into full autonomous systems to enhance Soldier effectiveness and reduce vulnerability. This pioneering event brings together commercial innovators and Army experts for a unique face-to-face collaboration, addressing the current state of Army technology challenges and charting a path forward to accelerate the deployment of truly autonomous Human-Machine Interface (HMI) formations.





## DIVISION OF LABOR | OPTIMIZING WORKLOAD IN HUMAN MACHINE INTEGRATED FORMATIONS

Humans are best at value-based decisions, assessing and accepting risk, and practicing the art of command and control. Machines are suited for moving, sensing, and delivering effects to the enemy. How do we better optimize functions in an HMI formation so each performs the tasks they do best?



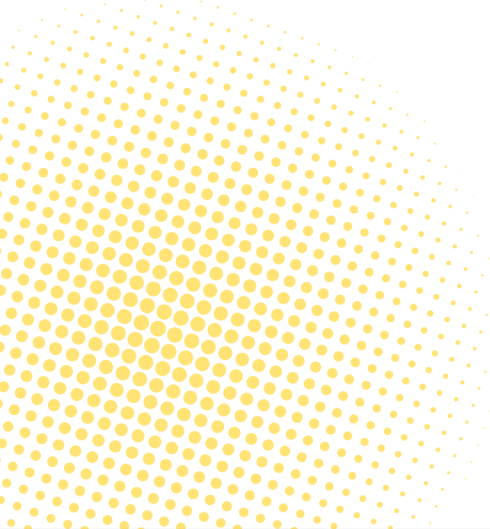
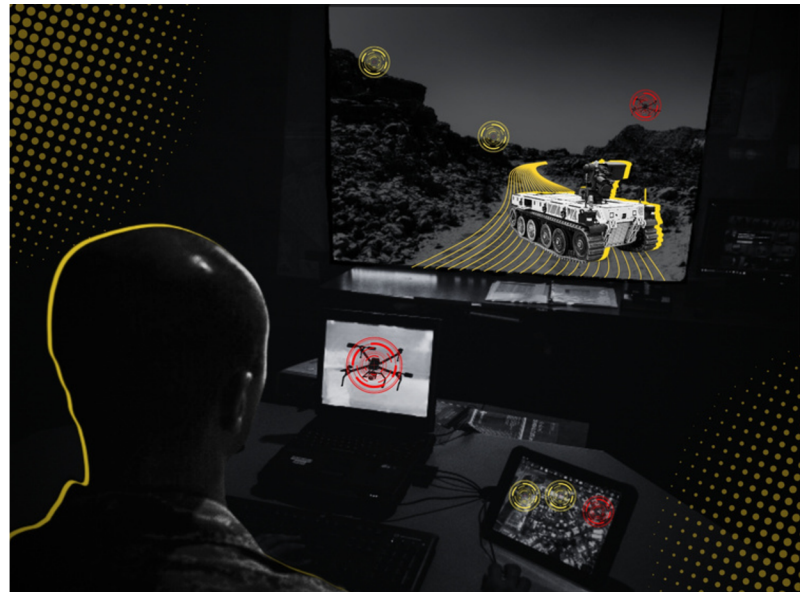
## INTUITIVE INTERACTIONS

How can we close the gap in human and machine interaction through intuitive interfaces, familiar behaviors, and greater sensory awareness?



## MISSION-ORIENTED AUTONOMOUS SYSTEMS

How can autonomous systems operate based on a commander's vision and intent, rather than simply executing directed tasks?



## MORE ROBOTS, LESS OPERATORS

Currently, most robotic assets require multiple operators. The Army must develop systems that enable machine-to-machine cooperative behavior, and reduce the number of humans needed to control robotic systems. How can we achieve a high volume of robotic assets while minimizing the number of operators needed?







## **SURVIVAL OF THE FITTEST | HARDENING ROBOTIC SYSTEMS FOR HARSH ENVIRONMENTS**

Robots don't work well in harsh conditions - rain, nighttime, and heat – and require frequent recharging, refueling and maintenance. What approaches can help maximize the use of available resources in the environment, exploiting resources in the theatre of operations, and provide endurance and resilience to HMI formations?



## **SHOW ME WHERE TO LOOK | AIDED TARGET RECOGNITION**

We've been working on aided target recognition for years. Advancements in decision making tools, sensors, and advanced algorithms leave room for innovation. How do we make a leap in machine-enhanced detection, resource recommendation, and adjudication?





## AUTONOMY OVERRIDE

Future HMI formations will have more robots than humans can control at once. With more autonomy comes a need to understand when intervention is needed and switch from “autonomous” to “manual” mode to make corrections. How do we maximize our ability to intervene with an autonomous asset when needed?



## LET ME USE THE STUFF I HAVE | INTEGRATING AUTONOMY IN LEGACY SYSTEMS

The Army has a lot of equipment that is not autonomous, but performs certain tasks well. How can autonomy improve existing platforms to take advantage of the reliability, familiarity, and trust these legacy systems offer?



## SUSTAINING ROBOTIC SYSTEMS

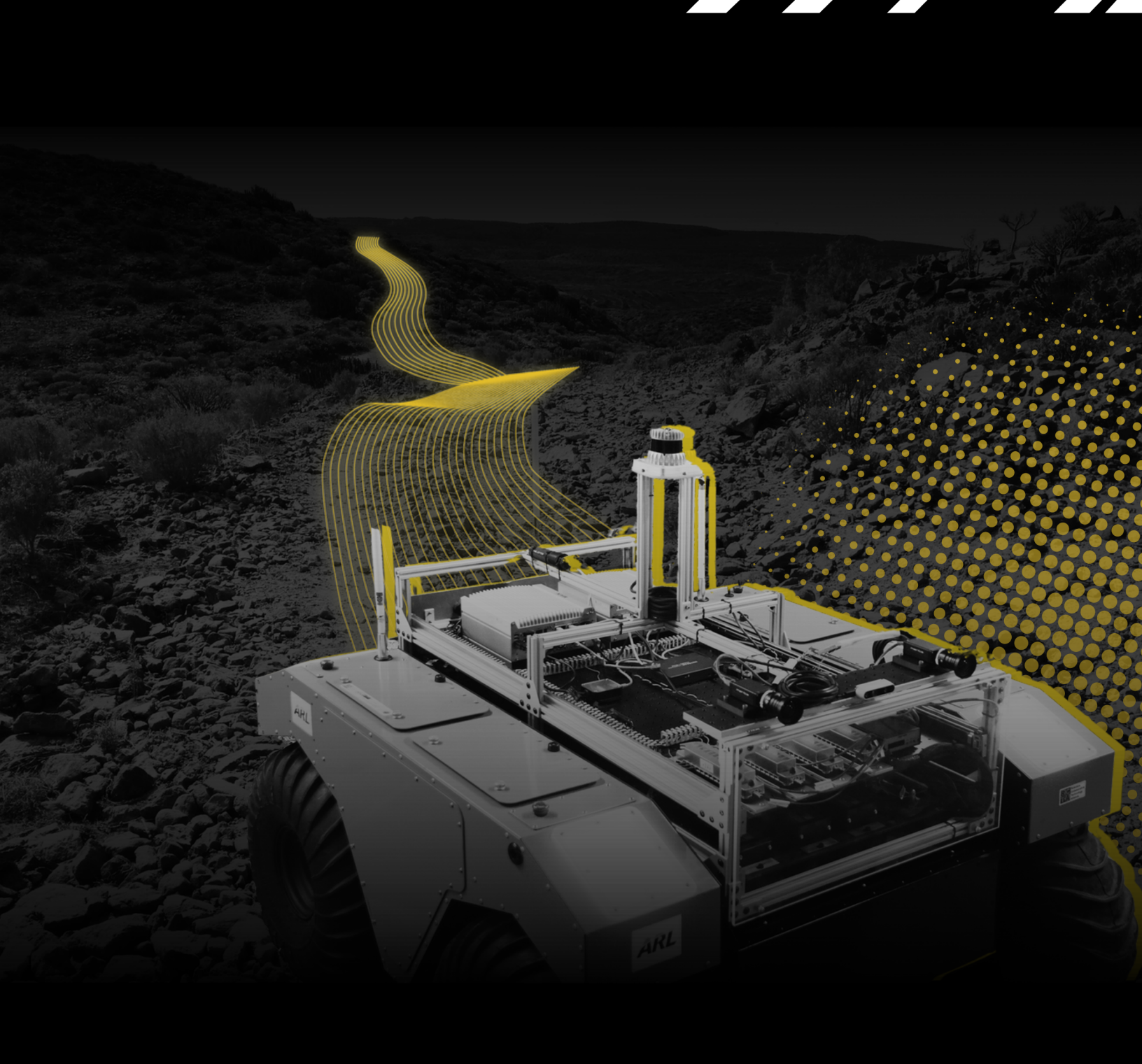
More HMI formations increase the demand on Soldiers to maintain them. How do we care for and keep HMI formations in the fight when there are far more machines than humans to care for them?



## ADVANCED AUTONOMY WITHIN ETHICAL BOUNDARIES

The Army must apply advanced autonomy in a way that maximizes advancements in technology while upholding our legal and ethical boundaries. How will we enable formations to act decisively within the DOD Directive 3000.9: Autonomy in Weapons Systems? What new innovations can give us an advantage while still operating within our legal framework?





**Request an invite to attend**  
**VERTEX | ADVANCED AUTONOMY**  
**by applying online.**

[vertex.aal.mil](http://vertex.aal.mil)