VERTEX | Robotics

Use Cases

www.vertex.aal.army

Each day, small group breakout sessions will bring problem owners and potential problem solvers together for a live, serious discussion on how to approach these complex robotics challenges.

JULY 19-20, 2023
AUSTIN, TEXAS

VERTEX

SURVIVABILITY
JULY 19, 2023

Resilient Positioning and Navigation

We need assured navigation, position, and timing systems to ensure accurate navigation when signals are jammed or degraded. We'll also talk about how to create false signals or degrade information networks to hide our locations while protecting ourselves from location spoofing.

COMMAND AND CONTROL
JULY 19, 2023

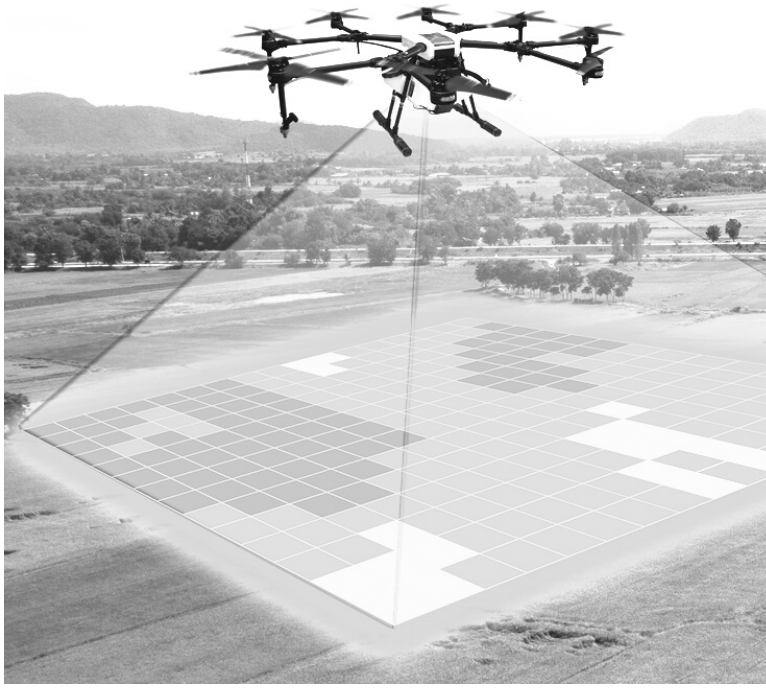
Common Interface and Modularity

To maximize the potential of robotics, we need to consider system modularity, integration, and interface. The Army is looking for the capability to swap and attach multiple payloads on one platform to capitalize on efficiency. We also want to develop intuitive, shared interfaces that reduce the cognitive load and crew size required to operate these robotic systems. We will examine progress being made in modularity and common interface in commercial ground and air systems to reduce the crew required for operation and increase usability in uncrewed platforms.

COMMAND AND CONTROL
JULY 19, 2023

Movement Mapping and Terrain Assessment

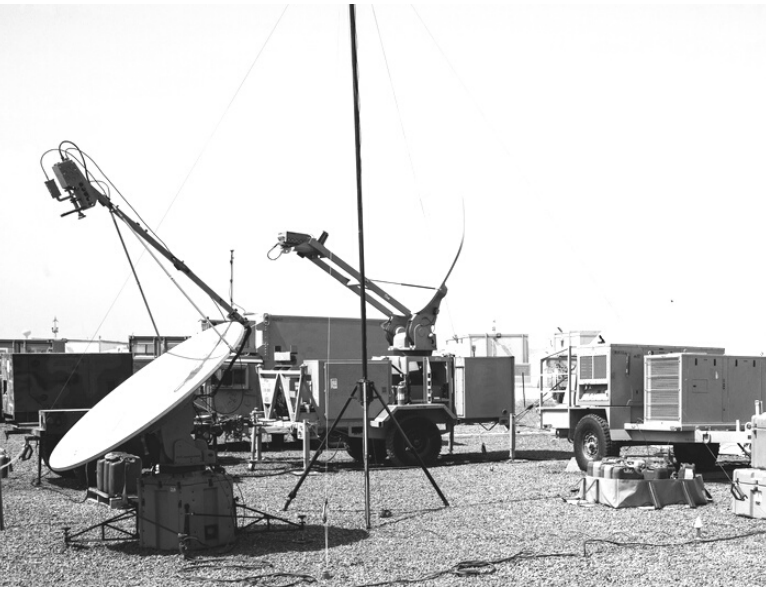
We are seeking to develop an increasingly agile force that can easily and quickly navigate terrain in any environment. Capabilities that we are looking to implement include, but are not limited to, identifying restrictions and obstacles, finding available and easily navigable routes, assessing wet gap crossings, detecting mines, trenches, and wire, and identifying chemical, biological, radiological, and other non-visible hazards. We're seeking to identify the current analysis technology that can address some of the Army's needs and talk through challenges associated with terrain assessment.



MOBILITY
JULY 19, 2023

Transportation and Deployment of Ground and Air Systems

The Army is leveraging uncrewed systems to help our forces accomplish critical tasks, but we have to think about the implications for transporting, deploying, and recharging without the need for additional vehicles or heavy equipment. We want to address solutions for implementing a fleet of ground and air robotics without increasing the logistical burden



COMMAND AND CONTROL
JULY 19, 2023

Enhance Extended Communications Technology

Communication is a key factor in determining operational success or failure. Commercial industry has made significant progress in extending cellular coverage and wireless connectivity as well as increasing network resiliency. The Army could benefit from the employment of these enhanced communication systems on robotic platforms. We will look at the constraints that both industry and the Army have and explore solutions that could maximize communications while protecting data sharing.

LETHALITY
JULY 20, 2023

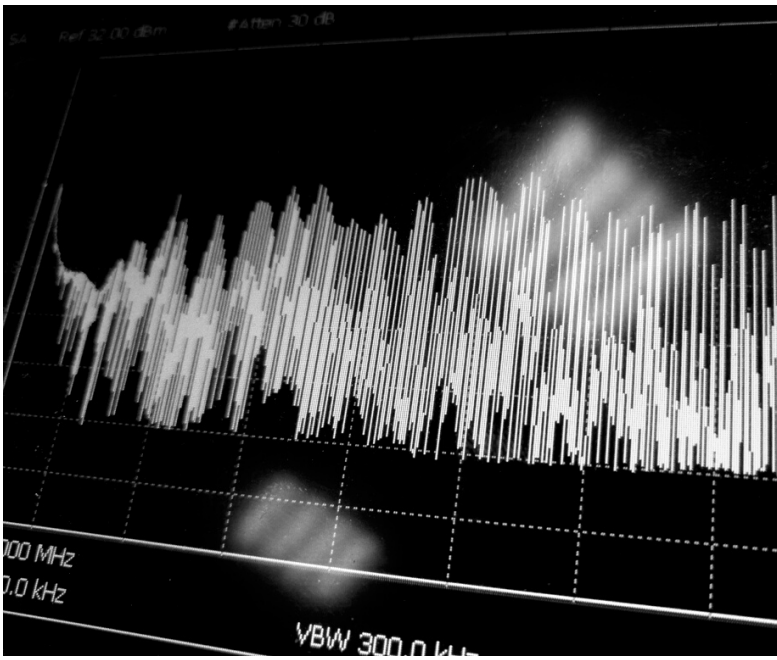
Defeating Armored Vehicles

The Army needs a portable, robotic land or air solution for smaller ground units to defeat armored vehicle threats. The uncrewed system should be effective at short and long ranges and be capable of permanently or temporarily disabling armored vehicles' ability to move, shoot, and communicate. This breakout session will focus on technologies to disable armored vehicles that can be transported by smaller Army elements and are easy to sustain.

SURVIVABILITY
JULY 20, 2023

Electromagnetic Spectrum Operations Using Uncrewed Systems

We want to increase electromagnetic resilience and lower signatures to hide our personnel and assets from enemy forces. We also want to identify or exploit enemy signals to gain intelligence of their operations. We want to hear from you about the current commercially available electromagnetic solutions that can be optimized for use in a variety of uncrewed systems.



SURVIVABILITY
JULY 19, 2023

Defend Against Adversary Uncrewed Systems

This discussion will explore uncrewed payloads that detect and track enemy systems, and can neutralize them at various ranges to protect a moving or stationary friendly force. We want to increase the detection and engagement range beyond the capability of stationary or carried systems. Solutions can include, but are not limited to, the use of energy or physical and electronic protection.

SURVIVABILITY
JULY 20, 2023

Testing and Evaluation of Uncrewed Assets

We want to be able to demonstrate key operations of uncrewed systems, such as reacting to obstacles or other uncrewed systems, firing or avoiding fire, detection and identification of targets, and other realistic scenarios. This breakout will focus on how we can verify and enhance capabilities of payloads, navigation, detection, or other system components through testing in a relevant environment.

COMMAND AND CONTROL
JULY 20, 2023

Computing Critical Information at the Edge

Uncrewed systems give us access to mission critical information, but they can also cause cognitive overload for Soldiers. We need systems deployed on the front lines that can process and sort data, reduce data bandwidth, and increase resilience in a network-denied environment. These solutions must be transportable, operational in degraded conditions, and reduce the physical and mental strain on Soldiers in combat. We want to hear from you about low size, weight, cost, and power solutions to process data on the move.

MOBILITY
JULY 20, 2023

Recovering Downed Uncrewed Systems

We need a way to recover our systems when they go down and make it easier to identify the location, status, and resources required when they have been disabled. In this breakout, we want to explore methods to recover our ground and air robotics, such as using additional systems for physical transport, self-recovery, remote assessment, and platforms that can quickly and easily tell us where and why our equipment is disabled.

MOBILITY
JULY 20, 2023

Maintaining Robotics in Combat Environments

In a wartime environment, we need our robotic systems to be reliable, but we also need to plan for maintenance solutions that can fix disabled systems in contingency situations. The Army is looking for innovative and lightweight toolkits, platforms, and systems that can offer field service, diagnostics, assessment, and predictive maintenance. In order to develop a fully encompassing solution, we must close the loop and enable leaders' awareness of equipment status and operational readiness rates. In this discussion, we can explore novel ideas and solutions within industry that address quick yet reliable maintenance using minimal or no equipment.

LETHALITY
JULY 19, 2023

Construct and Deconstruct Physical Barriers and Terrain

The Army wants to leverage uncrewed systems to construct and remove barriers or shape terrain. This could include preventing enemy movement, causing damage to enemy vehicles or equipment, or making certain areas more favorable for movement of friendly forces. In this breakout, we are looking for solutions that can destroy or reconstruct terrain and other physical barriers.

LETHALITY
JULY 20, 2023

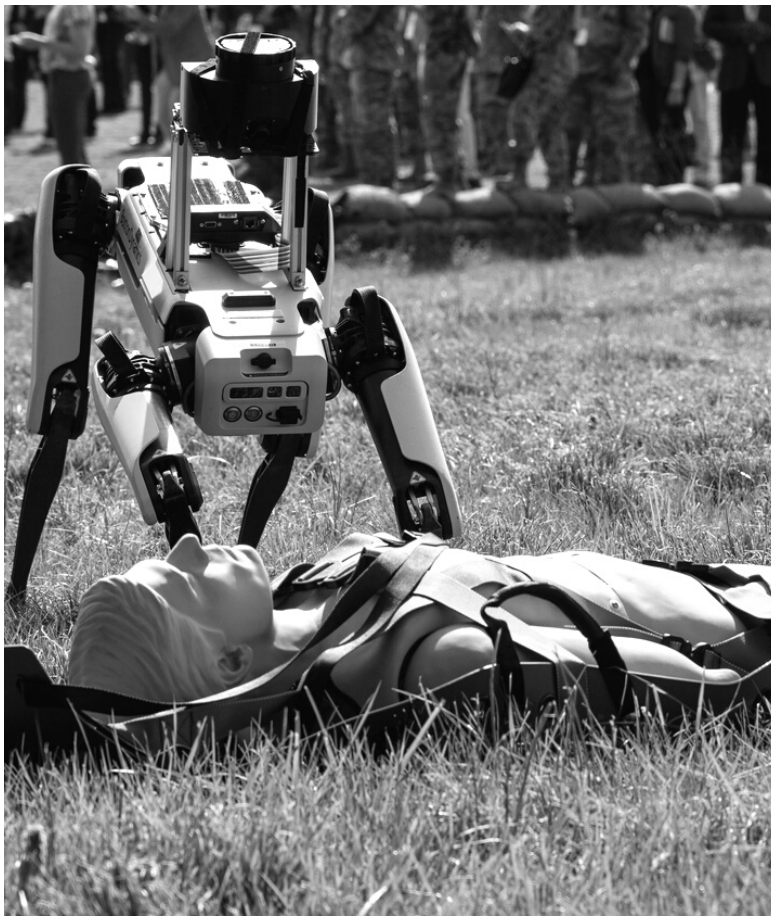
Detection and Identification on the Battlefield

Direct and indirect fire systems must be able to differentiate friend vs foe accurately to avoid catastrophic errors while keeping humans in the loop. In this breakout, we want to hear about different detection and identification methods that have been developed for use in uncrewed systems.

SURVIVABILITY
JULY 19, 2023

Using Uncrewed Systems for Medical Operations and Evacuation

The Army is looking for uncrewed solutions to assist with casualty identification, location, assessment, securement, and transport. New solutions could also include the ability to recommend triage, methods of transportation, or conduct an evacuation. The technology should give leadership the freedom to decide how to handle a medical emergency. This could include keeping Soldiers out of the combat zone while still ensuring they're in the loop, or sending trained individuals onto the battlefield to respond. In this discussion, we will identify the technology requirements to assist with medical assessments and evacuation to reduce Soldier risk.

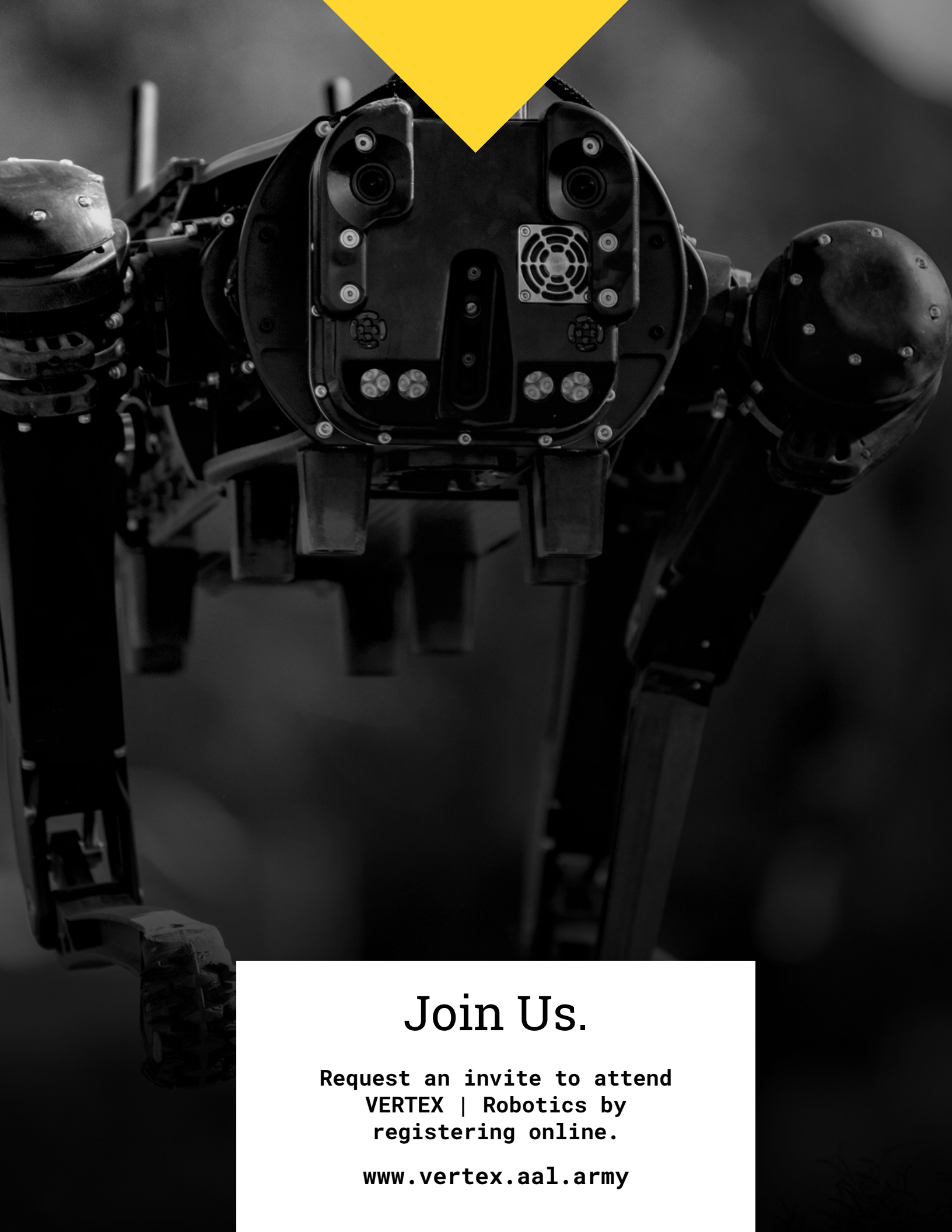


How to Attend?

While anyone can request an invitation, attendance at VERTEX | Robotics is limited to 150 people. Individuals will be reviewed and vetted to ensure alignment with the use cases AFC seeks to address at this event before they are formally invited to attend.

If your area of expertise is a good fit, we'll let you know within approximately three weeks if you are selected to participate. Please do not book your travel arrangements until you have received an invitation to attend.

To allow ample time for in-person selection and travel planning, the deadline to register is June 23, 2023.



Join Us.

Request an invite to attend VERTEX | Robotics by registering online.

www.vertex.aal.army