



# U.S. Army Aviation Cyber Rodeo Redstone Arsenal, AL

October 14<sup>th</sup> – 15<sup>th</sup>, 2025

## AVIATION CYBER INITIATIVE

### ZERO TRUST APPROACHES FOR AVIATION SYSTEMS



Rodeo Director: Veronica Bunn, FAA, [veronica.v.bunn@faa.gov](mailto:veronica.v.bunn@faa.gov)  
Technical Director: Tom Barnett, US Army PEO Aviation, [thomas.c.barnett10.civ@army.mil](mailto:thomas.c.barnett10.civ@army.mil)  
Event POC: Trey Franklin, DESE Research, Inc., [trey.franklin@dese.com](mailto:trey.franklin@dese.com)

Event Sponsor  
and Coordinator

**DESE**  
RESEARCH, INC.

# Agenda – October 14<sup>th</sup>



Time (CT)	Topic/Presenter	Description
Opening Session		
0800 – 0830	<b>Networking, Housekeeping, &amp; Connectivity</b> Jasmine Savage, vFairs Support	Time will be given for attendees to arrive/connect, get settled, and for any issues to be troubleshoot. Coffee and light refreshments will be provided.
0830 – 0900	<b>Opening Remarks</b> Dr. Charles L. Karr, UAH Mr. John Van Houten, Army PEO Aviation	UAH and Army leadership will introduce the event and discuss the significance and impact of the cybersecurity work being done at both UAH and Redstone Arsenal.
0900 – 0915	<b>Agenda and Event Overview</b> Tom Barnett, US Army PEO Aviation	ACI Army leadership will provide an overview of this Army ACI Rodeo event.
0915 – 0945	<b>Zero Trust Overview</b> Tom Barnett, Army PEO Aviation	US Army APEO E&A leadership will give an overview of Zero Trust and its impact to all current and future Army Aviation platforms.
0945 – 1000	<b>Session Break</b>	
1000 – 1040	<b>Open Avionic Platform Security Architecture</b> Will Keegan, Lynx	Platform and data protection features in real-time systems are often intrusive and highly customized, creating significant technical and programmatic risks. Current MOSA standards focus on mission-application functional interfaces, leaving cyber integration challenges underemphasized. This presentation highlights key challenges to cyber integration on avionic systems and promotes technical benefits of platform software architecture properties and features for consideration in future industry standards and platform acquisition requirements.

# Agenda – October 14<sup>th</sup>



Time (CT)	Topic/Presenter	Description
Opening Session (Cont'd)		
1040 – 1130	<b>Zero Trust Threat Monitoring Technologies</b> Trey Franklin, DESE Research, Inc.	The Army’s industry partner, DESE Research, Inc., will present and demonstrate a suite of security capabilities that can monitor, attest, and recover a compromised LRU within an aviation platform.
1130 – 1200	<b>Helios Cyber Secure Processor</b> Andrew Nelson, Idaho Scientific	The Army’s industry partner, Idaho Scientific, will present and demonstrate the Helios Cyber Secure Processor, a groundbreaking secure processor that utilizes novel techniques to prevent 46% of known cyber attacks without requiring software re-architecture. Helios's hardware-based crypto engine provides positive control, confidentiality, and anti-tamper protection through just-in-time decryption and authentication, making it ideal for FPGA and ASIC implementations in high-security environments.
1200 – 1300	Hosted Lunch & Virtual Exhibit Hall Hours	
Device, Applications, and Workloads Session		
1300 – 1305	Session Introduction	Session organizers will introduce the session and provide an overview of what will be shown.
1305 – 1340	<b>Is your Aviation System as Safe as its “Memory Safe” Language?</b> Dr. Jonathan Hood, COLSA	Dr. Hood examines the push for “memory safe” programming languages and highlights their limitations in complex systems like aviation and missile platforms. He also offers guidance on designing custom Zero Trust Architectures (ZTAs) that incorporate memory safety measures, with enforcement policies tailored at the program level.

# Agenda – October 14<sup>th</sup>



Time (CT)	Topic/Presenter	Description
Device, Applications, and Workloads Session (Cont'd)		
1340 – 1415	<b>Secure Compiler Extension for C/C++</b> Martin Cox, DESE Research, Inc.	Martin Cox is a Senior DevSecOps Scientist with a background in cyber security and security compliance. They will present how prevalent memory errors are in C/C++, how current tooling is insufficient to prevent these errors, and how SCE is currently solving these issues.
1415 – 1450	<b>Automated Vulnerability Prediction</b> Cameron White, DESE Research, Inc.	The Army's industry partner, DESE Research, Inc., will present and demonstrate Automated Vulnerability Prediction (AVP), a Machine Learning-based static analysis tool that aims to automatically detect vulnerabilities in source code. This technology massively expedites code analysis by identifying code smells, reducing manpower requirements and analysis time for large source code directories.
1450 – 1505	<b>Session Break</b>	
1505 – 1540	<b>Hardware Introspection Methodologies</b> Corwin Warner, DESE Research, Inc.	The Army's industry partner, DESE Research, Inc., will present applications, developments, and discoveries behind introspection of system memory by hardware logic, and how such an implementation differs in contrast to software/virtual memory introspection methodologies
1540 – 1615	<b>Zero Trust Supply Chain for Critical Electronics</b> Sebastian Fischmeister, Palitronica	Global chip shortages and opaque supply chains have heightened safety and security risks in electronics, as vulnerabilities can be introduced by upstream suppliers beyond immediate oversight. This presentation introduces a novel approach to cybersecurity supply chain management using RF-based characterization to implement Zero Trust principles for electronic components and assemblies to enhance the integrity of electronic systems.

# Agenda – October 14<sup>th</sup>



Time (CT)	Topic/Presenter	Description
Device, Applications, and Workloads Session (Cont'd)		
1615 – 1650	<b>MITRE Resilient Cyber Aerospace Testbed Capabilities Overview</b> Keith E. Miller, MITRE	MITRE's Resilient Cyber Aerospace Testbed (RCAT) Lab provides a collaborative cyber/avionics testbed for platform research shared across government agencies, industry, and academia. Hosting several capabilities including configurable cockpit simulators, subsystem test-benches, and a light sport commercial aircraft for testing, the RCAT lab provides an environment for developing and testing mission resilience capabilities.
1700 – 1730 (Room 114)	<b>Zero Trust Transceivers: Zero Trust Reference Architecture for Weapon Systems</b> Keith E. Miller, MITRE	MITRE's Zero Trust Transceivers (ZTX) architecture is a Zero Trust Reference Architecture designed for Operational Technology (OT) systems and in particular Weapon Systems (WS). ZTX improves mission resiliency through adoption Zero Trust principles and provides methodology for enforcing policies that balance mission, safety, and risk. This briefing will cover an overview of ZTX and a live demonstration of MITRE's latest ZTX prototype components.

# Agenda – October 15<sup>th</sup>



Time (CT)	Topic/Presenter	Description
Network and Environment / Data Session		
0800 – 0830	<b>Networking, Housekeeping, &amp; Connectivity</b> Jasmine Savage, vFairs Support	Time will be given for attendees to arrive/connect, get settled, and for any issues to be troubleshoot. Coffee and light refreshments will be provided.
0830 – 0840	<b>Session Introduction</b> Tom Barnett, US Army PEO Aviation	Session organizers will introduce the session and provide an overview of what will be shown.
0840 – 0915	<b>FORCE Environment</b> Drew Stephenson, Applied Research Solutions LaTasha Johnson, CROWS	The Army's industry partner, Applied Research Solutions, will provide an introduction to the FORCE platform and discuss how it both implements zero-trust and can support programs in zero-trust evaluation.
0915 – 0950	<b>TAPO/SIMO Cybersecurity Posture &amp; Strategic Roadmap</b> Chris Abbott (TAPO) Alan Fiorello (TAPO) Joe Morra (SIMO)	This session provides an update on TAPO/SIMO's cybersecurity efforts, including recent accomplishments and a strategic path forward. We'll discuss challenges, proposed solutions, and opportunities for program office collaboration in order to protect critical warfighter capabilities.



# Agenda – October 15<sup>th</sup>



Time (CT)	Topic/Presenter	Description
Network and Environment / Data Session (Cont'd)		
0950 – 1005	Session Break	
1005 – 1040	<b>SBOM Generation and Attack Surface Reduction</b> Erik MacIntyre, DESE Research, Inc.	The Army's industry partner, DESE Research, Inc., will present and demonstrate SBOM Generation and Attack Surface Reduction utilizing the Embedded Attack Surface Reduction (EASR) GOTS tool. EASR provides the capability to analyze and automatically remove file- and function-level dependencies in an embedded system and can generate an enriched SBOM with the analysis data.
1040 – 1115	<b>SSCIP</b> Bill Baker, DESE Research, Inc.	The Army's industry partner, DESE Research, Inc., will present and demonstrate the Software Supply Chain Illumination Framework (SSCIP). This Army owned application manages a collection of Software Bill of Materials (SBOMs) by providing vulnerability notification and asset management as well as contributor details for open-source dependencies.
1115 – 1150	<b>Tactical Public Key Infrastructure (TPKI) Implementation into an Army Open Systems Verification Demonstration (OSVD) Event</b> Daniel Colvett, Ph.D., DEVCOM AvMC S3I Greg Sweeney, Lockheed Martin	This presentation highlights the integration of Public Key Infrastructure (PKI) into an Army Aviation system integration lab during PEO Aviation's Open System Verification Demonstration (OSVD) 4 event. It explores how cybersecurity components can be treated similarly to a hardware component in a Modular Open Systems Architecture (MOSA) approach. Key topics include implementation details, test cases, and lessons learned from the event.
1150 – 1300	Hosted Lunch & Virtual Exhibit Hall Hours	

# Agenda – October 15<sup>th</sup>



Time (CT)	Topic/Presenter	Description
Academia and Industry Session		
1300 – 1305	<b>Session Introduction</b>	Session organizers will introduce the session and provide an overview of what will be shown.
1305 – 1340	<b>AeroSync Quantum Resiliency</b> Noel Grover, EnQuanta	The Army's industry partner, EnQuanta, will present and demonstrate a quantum-resilient cryptography upgrade to the Astronautics AeroSync platform.
1340 – 1415	<b>Astronautics Cybersecurity Analysis Tool</b> Josh Berrian, Astronautics	The Army's industry partner, Astronautics, will present and demonstrate a cybersecurity analysis tool designed to support the DO-386 certification process. This tool facilitates modeling and simulation, aids in the development of mitigation strategies for a wide range of cyber vulnerabilities, and serves as a comprehensive system vulnerability analysis solution. It is capable of ingesting Software, Hardware, and Firmware Bills of Materials (SBOMs, HBOMs, and FBOMs) to identify and report known vulnerabilities in commercial off-the-shelf (COTS) software
1415 – 1450	<b>Know Your Network: The Vibrant System</b> Tim Kesecker, Securboration	The Army's industry partner, Securboration, will present and demonstrate the Vibrant system. The Vibrant system consists of a flight certified Mil-Spec hardware component that connects to the aircraft on-board data buses (Mil-Std-1553, ARINC-429). All bus data is captured, recorded, and decoded per defined ICDs, for real-time or post-mission analysis. The Vibrant System provides user-defined device health and performance metrics as well as custom visualization and analytics for each platform.



# Agenda – October 15<sup>th</sup>



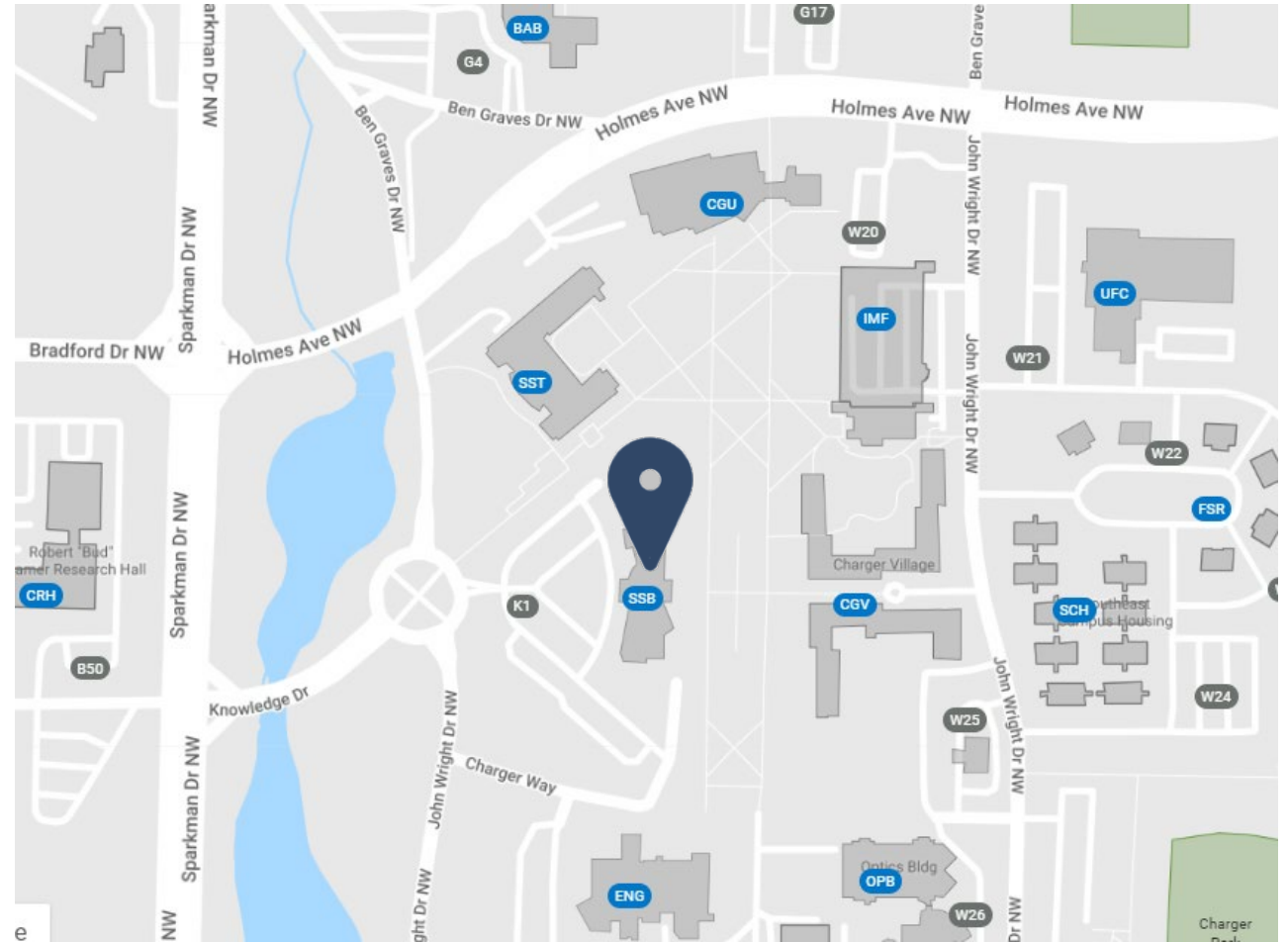
Time (CT)	Topic/Presenter	Description
Academia and Industry Session (Cont'd)		
1450 – 1500	Session Break	
1500 – 1535	<b>Why Traditional Defenses are Not Enough: Exploring Recent, Cutting-Edge Attack Techniques</b> Dr. Bramwell Brizendine, UAH	The University of Alabama in Huntsville will discuss two recent attack techniques, process injection via Return-Oriented Programming (ROP) and automated, universal ASLR bypasses – demonstrating why some common controls (EDR, DEP, ASLR) are insufficient on their own, as attackers often find ways to bypass existing mitigations.
1535 – 1610	<b>First Principles Approach to TRNG Circuits</b> Micah Tseng, UAH	The University of Alabama in Huntsville will present approaches for entropy generation that are grounded in first principles theory. UAH will also present circuits and theory that support a straightforward understanding of information generated as opposed to a posteriori statistical testing.
1610 – 1645	<b>Zero Trust in the Skies: Lessons from Aviation Architectures for DoD Networks</b> Sean Crouse, Ph.D., ERAU Dan Diessner, ERAU (Co-Author)	Zero Trust Architecture (ZTA) has become a cornerstone of the Department of Defense's cybersecurity modernization strategy, with the Networks pillar serving as its foundation. This presentation explores how aviation architectures reflect many ZTA principles. By examining how aircraft networks are structured, why safety system architectures are so resilient, and how flight-critical systems enforce segmentation and redundancy, we reveal striking parallels to Zero Trust concepts such as microsegmentation, least privilege, continuous monitoring, and "assume breach" design. The session will also map aviation lessons across multiple ZTA pillars, providing practical insights for strengthening DoD networks and mission systems

# Location



## UAH Student Services Building (SSB)

- Auditorium/Room 112
- 301 Sparkman Dr NW, Huntsville, AL 35899
- 34.72470, -86.64061
- POC: Sharon Johnson, 256-457-8483



# Accommodations and Airports



## Accommodations

- **Huntsville Marriott at the Space & Rocket Center**
  - 5 Tranquility Base, Huntsville, AL 35805
  - 256-830-2222
  - 1.4 miles [4-Minute drive]
- **Hilton Garden Inn Huntsville/Space Center**
  - 4801 Governors House Dr SW, Huntsville, AL 35805
  - 256-430-1778
  - 1.3 miles [4-Minute Drive]
- **106 Jefferson Huntsville, Curio Collection by Hilton**
  - 106 Jefferson St S, Huntsville, AL 35801
  - 256-288-0128
  - 5 miles [8-Minute Drive]
- **The Westin Huntsville**
  - 6800 Governors W, Huntsville, AL 35806

- 256-428-2000

- 3.3 miles [9-minute Drive]

- **Four Points by Sheraton Huntsville Airport**

- 1000 Glenn Hearn Boulevard, Huntsville, AL 35824

- 256-772-9661

- 9.7 miles [18-Minute drive]

## Airport(s)

- **Local:**

- Huntsville International Airport (HSV)

- **Driving Distance:**

- Birmingham-Shuttlesworth International Airport (BHM) [1.5-Hour Drive]

- Nashville International Airport (BNA) [2-Hour Drive]

# Dining



## Nearby

- **Governor's Drive:**
  - [Taqueria El Cazador, Stovehouse](#) (256-678-7047)
  - [Straight to Ale, Campus 805](#) (256-801-9650)
  - [Gold Sprint Coffee](#)
- **Midcity Area:**
  - [Viet Huong](#) (256-890-0104)
  - [Kamado Ramen](#) (256-964-6826)
  - [Tous Les Jours](#) (256-270-7168)
  - [Salt Factory Pub](#) (256-585-2488)
  - [Rosie's Mexican Cantina](#) (256-922-1001)
  - [Chipotle](#) (256-895-7761)
- **Bridge Street Town Center:**
  - [Connors Steak & Seafood](#) (256-327-8425)
  - [Agave & Rye Epic Tacos](#) (256-203-5788)
  - [Panera Bread](#) (256-971-1235)

## Area

- **Downtown Area:**
  - [Purveyor](#) (256-419-2555)
  - [The Poppy and Parliament](#) (256-715-7152)
  - [L'Etoile Patisserie](#) (256-460-6309)
  - [Canadian Bakin](#) (256-489-2323)
  - [Jack Brown's Beer & Burger Joint](#) (256-270-7045)
- **Town Madison:**
  - [J. Alexander's Restaurant](#) (256-870-7100)
  - [Prohibition Rooftop Bar & Grill](#) (256-325-4438)
  - [Super Chix](#) (256-325-4063)
- **Redstone Gateway:**
  - [Rocket City Tavern](#) (256-319-3333)
  - [Fiero Mexican Grill](#) (256-319-3310)



# Huntsville Area Information



WELCOME TO THE HUNTSVILLE/MADISON COUNTY COMMUNITY! Huntsville is a great place to live, work, and play. Decades ago, Huntsville played a major role in sending man to the Moon. Now, the Rocket City is powering NASA's Space Launch System, which will take us back to the Moon, then on to Mars! We continue with advancements in military and space – we are home to Redstone Arsenal, a Federal Center of Excellence with more than 75 federal organizations and commands including NASA's Marshall Space Flight Center, the four-star U.S. Army Materiel Command, and an FBI presence that is growing by the day (and soon, SPACE COMMAND!). Huntsville is also home to one of Alabama's top tourist destinations, the U.S. Space & Rocket Center. Huntsville and Madison County offer a high quality of life. In 2022, U.S. News & World Report named our city the No. 1 Best Place to Live in the country! We have consistently ranked in the magazine's top cities the past several years, including for affordability.



**Check out Huntsville's Destination Guide below:**

[2025 Huntsville Destination Guide](#)