



U.S. ARMY COMBAT CAPABILITIES DEVELOPMENT COMMAND GROUND VEHICLE SYSTEMS CENTER

Ground Vehicle Information Systems (GVIS)

Mr. Kevin Mills, Deputy Executive Director (DXD)

24 APRIL 2024

Controlled by:	Kevin Mills
Controlled by:	Kevin Mills
CUI Category:	
Distribution Statement:	Distro A – OPSEC #8539
POC:	Stacy Mills



Video: Distro A from AFC played at AUSA on Youtube

[Human Machine Integration at Project Convergence Capstone 4 \(youtube.com\)](https://www.youtube.com/watch?v=...)

Won't embed here so file yet so file won't get crazy huge.

GROUND VEHICLE INTELLIGENT SYSTEMS (GVIS) ORGANIZATION & CAPABILITIES



Ground Systems Cyber Engineering (GSCE): Associate Director (A) - Mr. Philip Smith, philip.a.smith.civ@army.mil

- Information Systems Security
- Cyber Risk Management
- Acquisition and S&T Program Support
- Cyber Resilience
- Vulnerability Scanning / Penetration Testing
- Cyber Technology Development
- Cybersecurity Education
- Systems Security / Cybersecurity

Ground Vehicle Robotics (GVR): Associate Director - Mr. Michael Rose, michael.t.rose.civ@army.mil

- Ground Autonomy Software
- Robotic Control Software
- Robotic Architectures & Control Theory
- Combat Robotics and Teaming
- Combat Support Robotics
- Dismounted Robotic Systems
- Robotic System Integration
- Ground Robotic Safety
- RAS Mission / Test Support

Software Engineering Center (SEC): Associate Director - Mr. Ramzy Eid, ramzy.w.eid.civ@army.mil

- Program of Record Software Support
- Software System Project Management
- Software Architecture & Safety
- Postproduction Software Maintenance
- Software System Assurance
- Software Configuration Management
- Software System Integration Labs
- Realtime Embedded Software System RD&E

Web Enabled Systems (WES): Associate Director - Mr. Erik Kallio, erik.t.kallio.civ@army.mil

- Cloud Hosting Architecting
- IT System Administration
- Enterprise Web App Development
- Enterprise Process Automation
- PLM System Support

622 Total Associates
333 Government Employees
270 Contractor Employees
3 Military Officers
16 Active Vacancies

ENHANCING SOFTWARE READINESS ACROSS THE ARMY



Abrams



Bradley



Stryker Family of Vehicles



Self-Propelled Howitzer



Armored Multi-Purpose Vehicle



Light Armoured Vehicle



Mine Resistant Ambush Protected Integrated Bridge



Joint Light Tactical Vehicle



Joint Assault Bridge / Assault Breacher Vehicle



Route Clearance Explosive Hazard Pre-Detonation



M160 Robotic Mine Flail



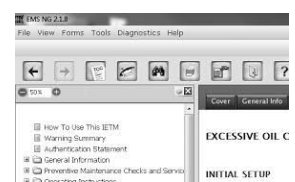
Man Transportable Robot System Inc II, Common Robotic System – Individual & Heavy



Autonomous Transport Vehicle



Watercraft Systems



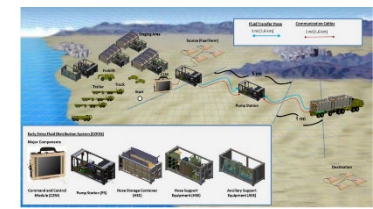
Electronic Maintenance System Next Generation



Diagnostic Software Viper



Petroleum Quality Analysis



Early Entry Fuel Distribution System



Direct Support Electrical System Test Set



Vehicle Protection Systems Vehicle Base Kit

DELIVERING SOFTWARE MODERNIZATION FOR THE FUTURE



Software Modernization

Automated Testing

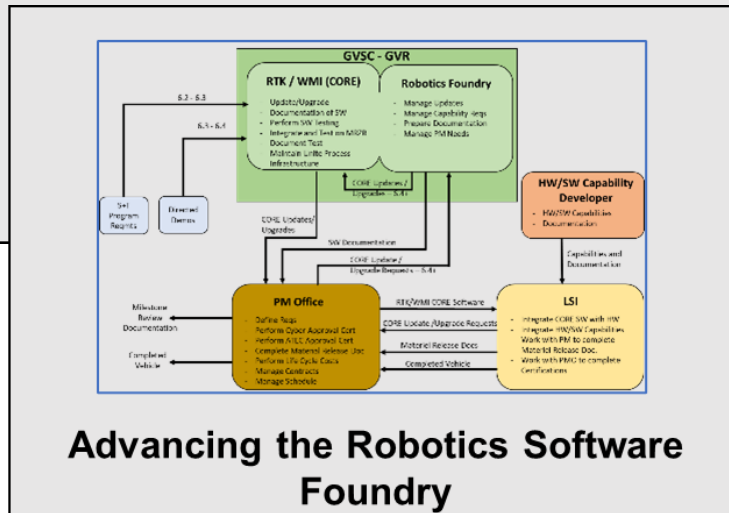
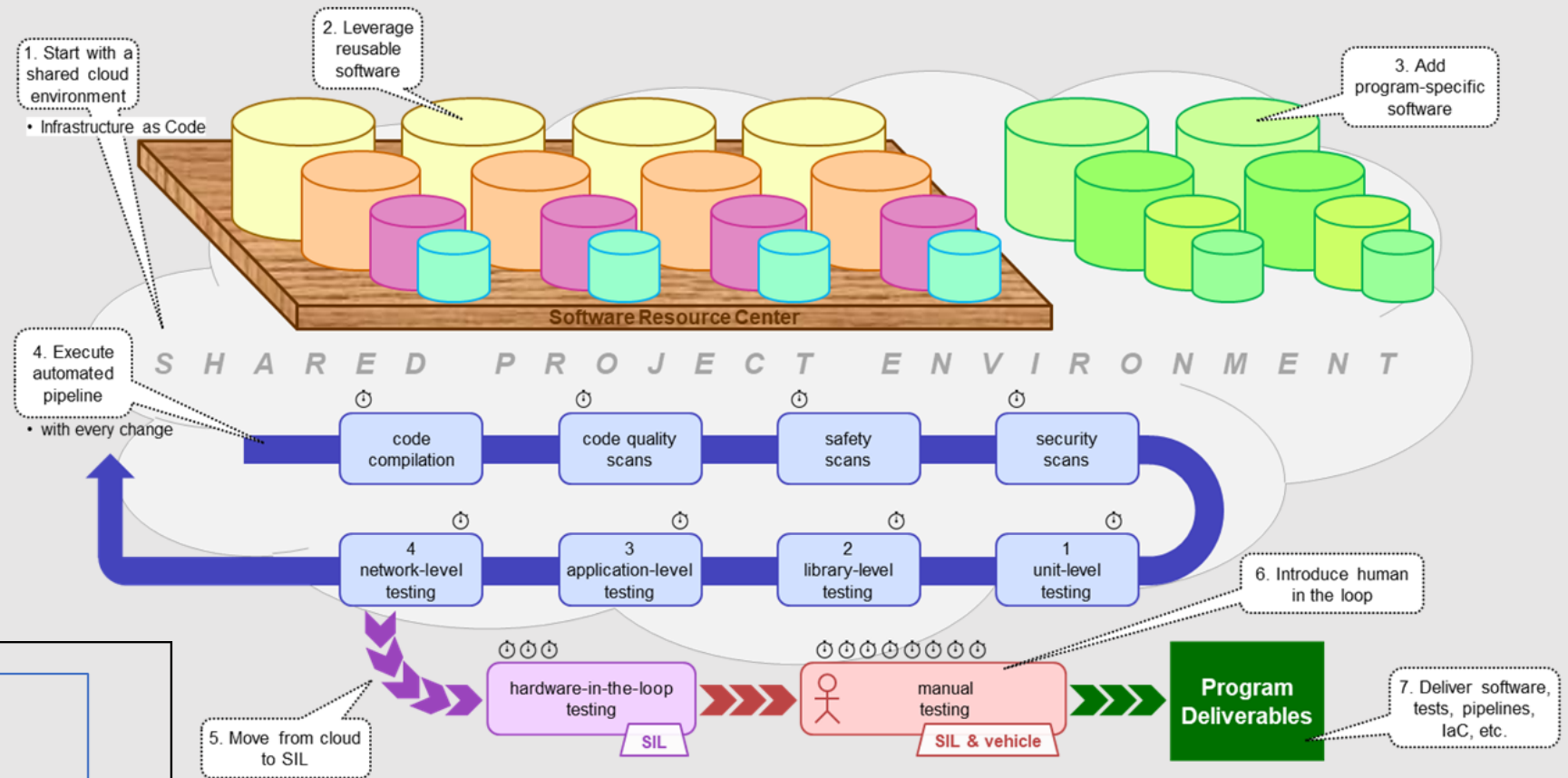
- Software-Centric
- Hardware-In-The-Loop

Reuse

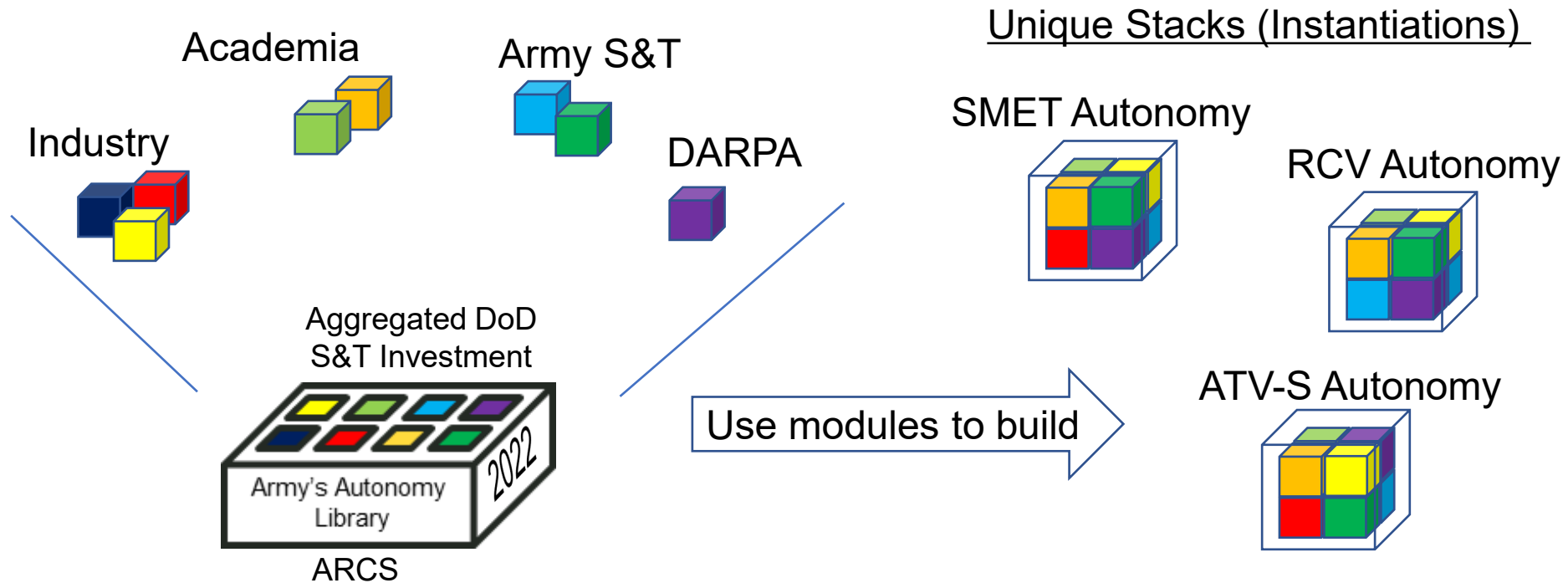
- MOSA Compliant Reusable Software

Cloud Based Development

- Shared Project Environment
- Containers
- Pipelines
- Infrastructure as Code



ARMY ROBOTIC COMMON SOFTWARE LIBRARY (ARCS)



- Gov Managed Library of Ground Autonomy Modules
- Aggregates Autonomy investments across DoD
- Well documented interfaces and IP rights
- Library formally updated annually
- Modules validated to work together through system level evaluation

- Autonomy Stacks are built from library modules (or compatible) modules
- Code re-use: Instantiations generally use +80% of the same modules
- Don't pay for same capability again (ex. LF on RCV)
- Faster testing due to commonality of the code

NAMC INDUSTRY / GOVERNMENT PARTNERSHIP FOR ARCS LIBRARY



The objective of the “ARCS Government/Industry Collaboration” initiative is to provide Industry a greater voice in the future development and management of ARCS

FY24 work underway:

- Form a multi-disciplinary team of Government and Industry representatives to develop a plan to establish an enduring **governance and management structure** for a Government/Industry Collaboration

FY25 working groups will be open for engagement, to include:

- Senior Steering Committee
 - Focusing on strategic roadmap of activity, representing Army priorities and interest to shape plans for working groups
- Government/Industry Collaboration Executive Committee
 - Maximize business opportunities for working with ARCS
- Technology Advisory Board
 - Set the development path for ARCS
- ARCS Acceptance, Availability, Accessibility Working Group
 - Drive technical strategies to increase usability of ARCS

PAYLOAD INTEROPERABILITY FOR GROUND ROBOTICS



Standardized data messaging system connecting critical subsystems to the ground robotic vehicle

Standardized militarized physical connectors for rapid integration and commonality for swappable payloads

Open interfaces



Fostering third-party innovation



Flexibility & Cost Control

Defines **electrical, data infrastructure** to enable many payloads to include safety critical functions and cyber security

Government **compliance testing** to ensure standards are met

“WARREN RAIL” Interoperability Profile (IOP)



Essential infrastructure

Conformance Verification Tools



Government and Industry Partnership

- Updated via SAE standard body with industry
- Released on ~biannual basis as new capabilities are require in Army Requirements documents.
- Currently on all fielded Army ground robotic systems



Revisions actively managed under SAE AS-4 – Joint Architecture for Unmanned Systems (JAUS)

IOPv6 available today, v7 (focus on MMP for HMI-F) available 1QFY25

GROUND VEHICLE INTELLIGENT SYSTEMS TALENT RECRUITMENT



People, People, People

- Remote & Local Work Arrangements
- Government and SETA contractor positions

New to Mid Level Software + Security Specialists

Project Engineering Leads

- Software background in demand

Life Cycle Acquisition Engineering Support Leads

- DOD Software Acquisition Management and the new Adaptive Acquisition Framework (AAF) expertise in demand

Process Engineers

- DevSecOps (Continuous Integration, Continuous Delivery, Cloud Computing) in demand
- Software Configuration Management in demand
- ISSM, ISSE, ISSO, Cyber Professionals / Security Engineers

Product Assurance

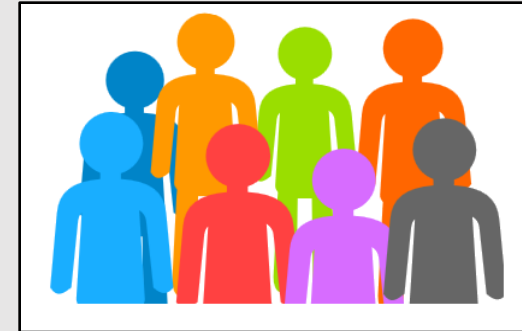
- Automated & Simulation Test expertise in demand

Developers

- Embedded Software Sub-System Architecture expertise, Autonomy, Controls, Robotics Systems

Electrical Lab Engineers

- LabView, PLC, CANoe and AutoCad, all in demand



QUESTIONS AND ONE-ON-ONES



Questions?

**Join the GVR, GSCE, SEC and WES Teams for
One-on-One Conversations at
Tables #5, #6 and #7 Classroom 144**