NDIA Human Systems Conference

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PEO STRI
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Leveraging M&S and Virtual Training Environments to Enhance Force Readiness and Capability

Optimizing Warfighter Readiness



PEO STRI PRIORITIES

Strengthen collaboration with partners and stakeholders.

Transform with new technologies that modernize capabilities.

Rapidly deliver outcomes with agility and acquisition streamlining.

Invest in our people through professional development and growth opportunities.

VISION

The leader in delivering unmatched testing, training and information operations capabilities to enhance operational readiness in support of our national defense.

MISSION

Rapidly develop, deliver and sustain testing, training and information operations capabilities to enhance readiness across the operational spectrum.

PEO STRI Organizational Chart

MS. KAREN D. H. SAUNDERS, SES
PROGRAM EXECUTIVE OFFICER
(Tier 2)

MR. BOB WOLFINGER
DEPUTY PROGRAM EXECUTIVE OFFICER

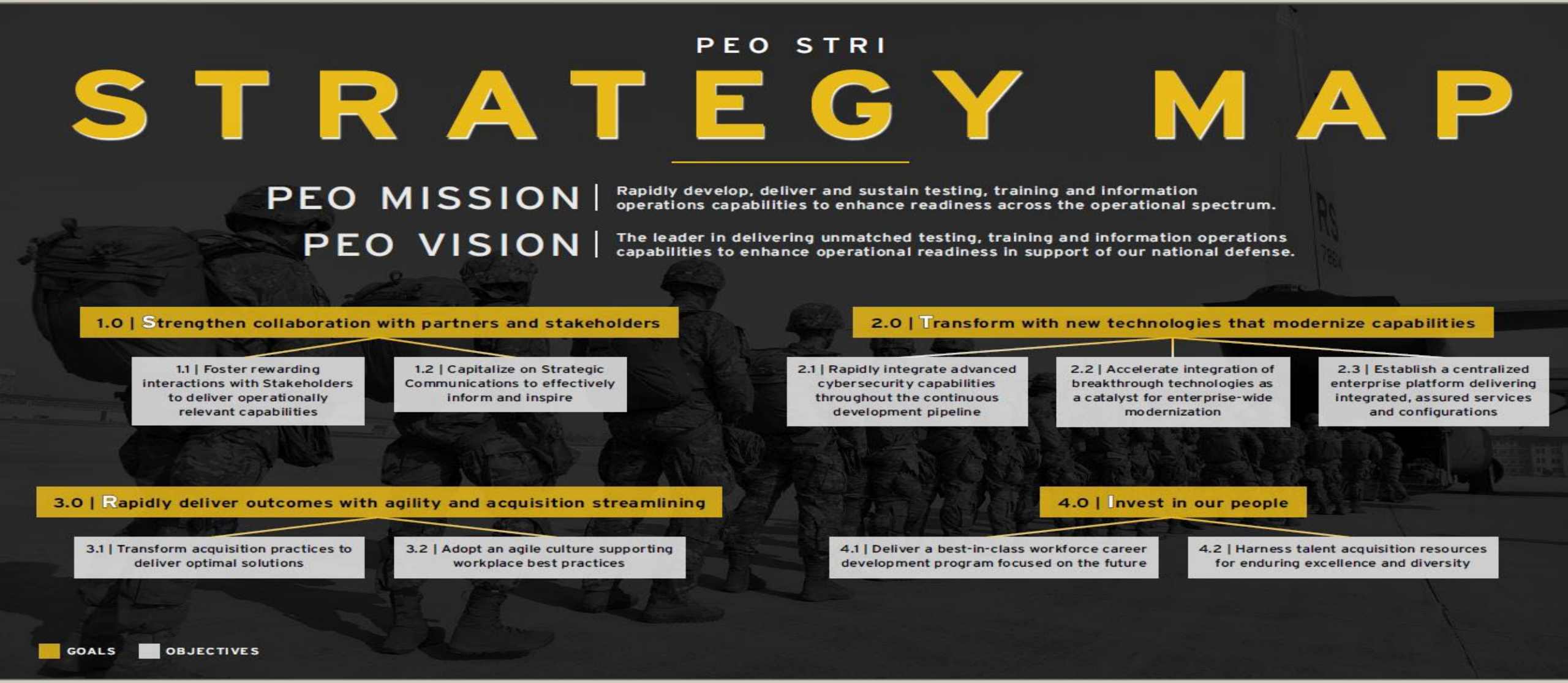
SGM STEVEN A. BROWN
SENIOR ENLISTED ADVISOR

Chief Counsel	Clinical Advisor	FA57: Simulation Operations	Office of Small Business Programs	Equal Employment Opportunity

Assistant Program Executive Officer Project Support	Assistant Program Executive Officer Enterprise Support	Assistant Program Executive Officer Acquisition Operations Support	Project Manager Synthetic Environment	Project Manager Soldier Training	Project Manager Cyber, Test and Training	Project Lead Training Aids, Devices, Simulators and Simulations Support Operations	Project Lead International Programs Office
Provides integrated Engineering, Logistics, Talent Management and Finance expertise across the command	*Provides Human Resources, IT, Facilities and Security expertise across the command*	*Provides Acquisition, Operations and Strategic Communications expertise across the command*	*Provides Virtual, Constructive, Gaming and Medical Training to CTCs and Home Station Training* *Modernization: STE-IS IVAS/SiVT*	*Provides Live Training Systems to CTCs and Home Station Training as well as TREX OTA support* *Modernization: RVCT, SVT*	*Provides advanced technical cyber, test and training capabilities to the Army, other DoD Services and Allied Nations* *Modernization: PCTE, IEWTPT*	*TADSS Maintenance Program, providing integrated training systems sustainment and selected training services world-wide*	*Building partner capacity by providing training systems, training and sustainment in conjunction with PEO STRI PMOs portfolio of products*

Number of Programs Operated: 260+
Manpower Strength: 1,170+ Employees on Board (DAC, Military, Matrix, and CME)
Total Annual Obligating Authority: ~ Operating at $2.6 Billion per Fiscal Year

PEO STRI Strategic Map



PEO STRI Across the Globe

Mission Elements

Foreign Military Sales (FMS)
International Armaments Cooperation
Export Licensing, Technology Transfer and Control
Contracts, Services, Training, Sites and Devices
Mission Command and Collective Training
CTCs and Ranges
Crew Skills Training
Turn-Key Training Services
Live Individual and Collective Training

Collaborative Alliance

Improving **HUMAN PERFORMANCE** through **SIMULATION**

Team Orlando Mission: Support the U.S. Department of Defense's requirements by providing a consolidated interservice military entity in the Central Florida area for Human Performance, Modeling and Simulation and Training. **Facilitate research** and **collaboration** of new technologies, programs and agile processes across the **interagency** to further advance a thriving and innovative environment to best support Service requirements and initiatives for **effectiveness** and **efficiency**.

Accomplishments

Central Florida Tech Grove: NAWCTD Partnership Intermediary Agreement with the University of Central Florida (UCF)

Team Orlando Cross Service Warfighter Forum: Information sharing (LVC-IA simulation products with the USMC)

Academia: Enterprise Systems Engineering Toolkit project with UCF

S&T: Technology Transition Agreements

THE NATIONAL CENTER FOR SIMULATION
ORLANDO ECONOMIC PARTNERSHIP
SimLEARN
THE CORRIDOR

PEO STRI Major Efforts

Information Operations

Threat Systems

Instrumentation Management

FY23 Focus – Alignment

Facilitating engagements with stakeholders and partnering with other agencies.

Creating robust internal and external communication programs.

Strengthen Collaboration

Embracing new approaches to acquisition while engaging the workforce.

Rapidly evaluate innovative technologies to support test and training modernization.

Transform and Modernize

People
Readiness
Modernization

"The Year of Digital Transformation"

Generating an enterprise architecture with design and data standards.

Simplifying business practices – Centralizing configuration change management for a collaborative work environment.

Streamline Acquisition

Developing talent development programs to hone individual and leadership skills and reward the workforce.

Leveraging all talent acquisition programs and offer incentives.

Invest in People

Synthetic Training Environment (STE)

Collaboration with the STE CFT, CAC-T, COEs and ATEC stakeholders to ensure capabilities are developed and fielded at earliest moment followed by **continuous enhancement**

Utilize **Soldier Centered Design** through Soldier feedback including 50+ SME reviews and **STPs** IOT guide development and **user acceptance**

Reducing Bureaucracy, Stovepipes, and Constraining Processes between the Capability Developer, Materiel Developer, Contracting Activity, and the Vendor

Priority is RVCT with STE-IS to displace AVCATT and CCTT

STE-IS will provide a **MOSA** & **holistic integration** of Live, Virtual, Constructive environment

Enabling Multi-Echelon Combined Arms Training

STRI Agile Acquisition Response (STAAR) Team

STAAR integrates Teams & Technologies for the Army

Technologies of Interest for developing an MDO Environment

GNSS · AI · BLE · EDGE COMPUTING · Machine Learning · IoT · AESA · 5G · AUGMENTED REALITY · SDR · FPGAs · VIRTUAL REALITY · SENSOR FUSION

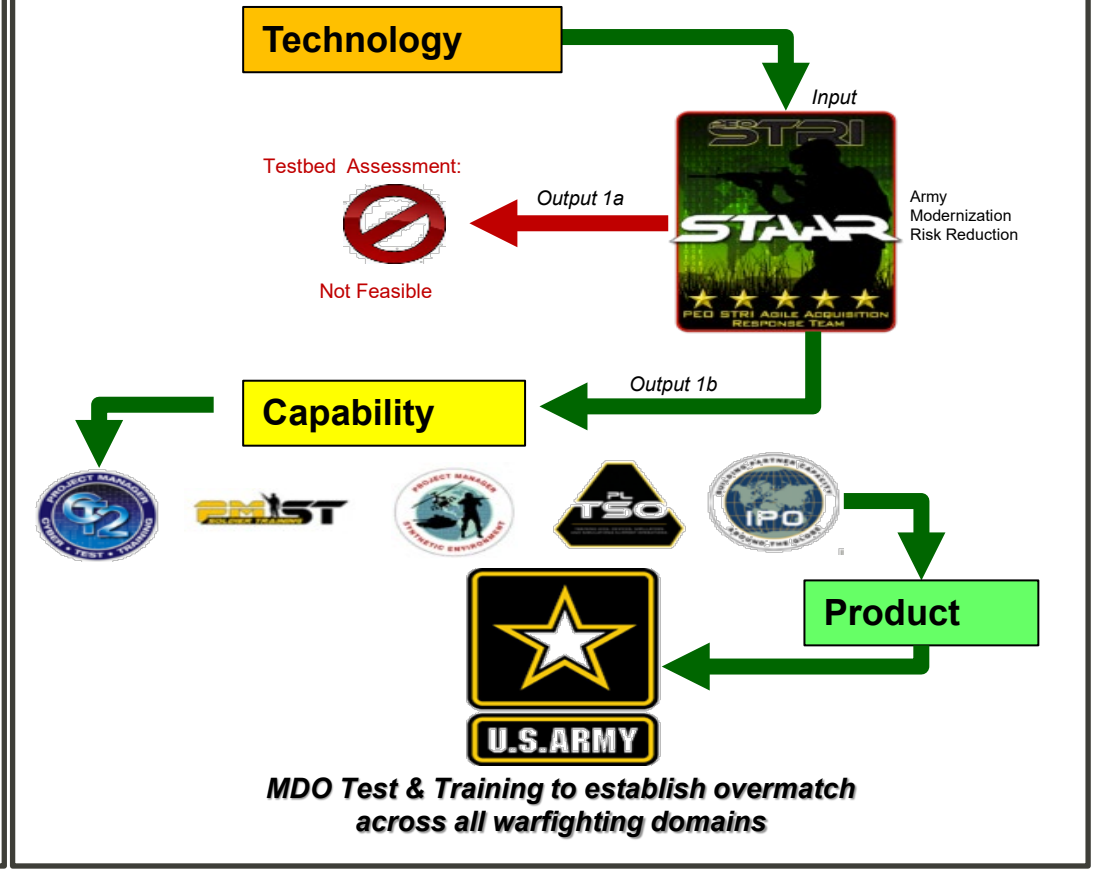
PEO STRI AGILE ACQUISITION RESPONSE TEAM

Strategic Partnerships

Current STAAR Programs:

T&E: eXpeditionary LVC Command Center (XLCC)

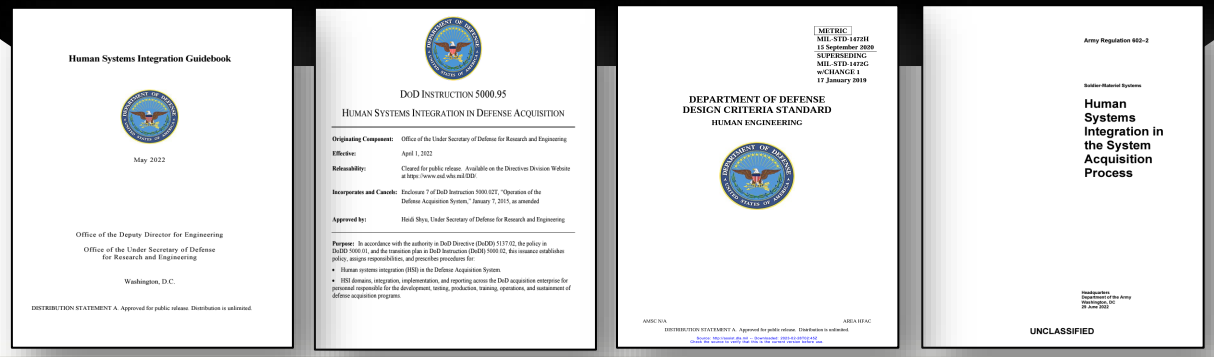
Training: STE – Live Training Systems (STE-LTS) *Rapid Prototyping



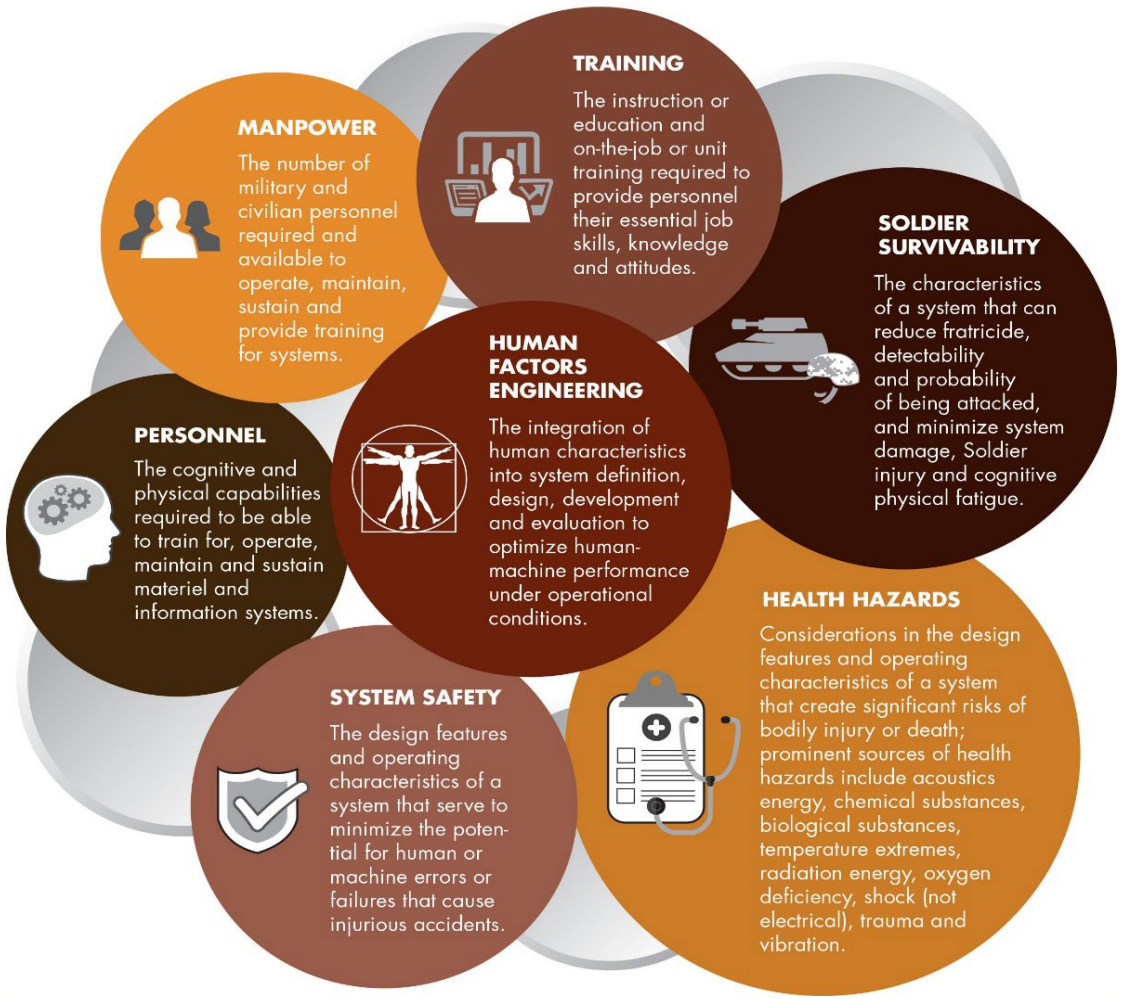
STAAR functions as PEO STRI's Technology Center of Excellence for Test & Training

U.S. Army Human Systems Integration (HSI)

- Army HSI helps ensure that Soldiers can effectively operate systems, providing the capabilities required in the projected operational environments to accomplish their assigned missions.
- Enhancements to human performance will correlate directly to total system performance in intended operational environments and reduce life cycle cost.
- To facilitate this, Army HSI is divided into seven domains listed below, and defined in DODI 5000.95.
- All these domains should be considered when developing, modifying, or sustaining a system.



ARMY HUMAN-SYSTEMS INTEGRATION DOMAINS:



PEO STRI Top 10 Technology Focus Areas

- Artificial Intelligence, Machine/Deep Learning & Intelligent Tutoring
- Immersive multi-sensory Simulation & Training (i.e., A/V, haptic, olfactory)
- Human Performance & Training Effectiveness
- Cyber Training (Certified Ethical Hacking)
- Cybersecurity (continuous Authority-to-Operate or cATO)
- Embedded Training on Tactical Platforms
- Integrated Internet of Things (IoT) at Point of Need (PoN)
- High Performance Gaming/Game Engines
- High Fidelity Terrain/Environment Modeling and Rendering
- Medical Simulation Modernization and Realism

State-of-the-art technologies in support of Army's highest priority simulation, test and training modernization programs!

Simulation & Training Evolution

Enabled by Soldier-Centered Design

The Army “Metaverse”

“Synthetic training will prepare the Army of 2030 for modern warfare. Soldier touch points like these are a key element of the Army’s Soldier-Centered Design concept because they ensure the final product is one Soldiers like, one that will not slow them down, weigh them down, or interfere with other elements on the battlefield.” ***--- Karen D. H. Saunders, SES, Program Executive Officer, PEO STRI.***

WE WORK FOR OUR SOLDIERS... IT'S THE BEST JOB WE'VE EVER HAD!

U.S.ARMY

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Artificial Intelligence & Machine/Deep Learning

- Decision modeling and analysis
- Automation (e.g., Automated/ Adaptive scenario generation, autonomous simulated forces/agents, autonomous robots/vehicles, cyber events, flight models, etc.)
- Cybersecurity/information security
- AAR analysis and auto-generated feedback
- Data analytics, data heuristics

U.S. ground troops patrol while robots carry their equipment and drones serve as spotters
Illustration by U.S. Army

- Clustering, prediction analysis, anomaly detection, patterns, forecasting, data mining, neural networks, cognitive synthesis, block chain data/record management

How do we leverage and apply AI/ML/DL technologies to aggregate datasets captured in assessment, performance, and records tied to training qualifications and readiness to provide deeper insights and analysis?

Multi-sensory Simulation & Training

- Increased realism in training battlespace (live, virtual and constructive seamless exercise integration)
- Augmented/Mixed reality (realistic, accurate, real time PNT/GPS of live actors) & HUD/HMD Integration
- Haptics and other sensory cues (sights, sounds, smells, etc.)
- 3D Visualization, Animation and Visual Effects
- Instrumentation/Sensors/Devices (size, weight, power, etc. considerations)
- Voice and comms integration
- Multi-spectral imaging for live fire target silhouettes (2D/3D realism, radar reflectivity, etc.)

Army National Guard conduct Virtual Convoy Operations Training, Golden Coyote
Photo by U.S. Army

- Data collection, storage and presentation for training assessment

How do we choose and employ technologies to dynamically and seamlessly integrate sensory realism end-to-end for a complete and immersive training experience?

Human Performance & Training Effectiveness

- Intelligent Tutoring
- Advanced/Automated Learning Management Systems
- Training Effectiveness
- Training Fidelity/Realism
- User Experience (UX) design and development
- Virtual Human
- Adaptive Training
- Competency (Fires, Intel, Aviation, Cyber, Maneuver, etc.) Modeling
- CBRNE Training
- Data analytics and automated performance metrics

Photos/Illustrations by U.S. Army

Can we improve human performance through introduction of technologies that increase realism?

Embedded Training / Internet-of-Things

- Simulation and Training capability embedded into operational/tactical weapons platforms (hardware, software, data, networks, etc.)
- Organic interoperability with tactical platforms (ex AR IVAS)
- Weapon Orientation
- Haptics
- Sensor fusion technology and integration
- Systems modeling, architectures, interfaces and standards integration
- Hardware and software optimization across networks (wired and wireless)
- High bandwidth/availability networks
- Data collection, analytics
- Edge Devices (SWaP)

Next Gen Force-on-Force System (left), Future Live Training Environment Right)

How can we leverage emerging technologies to improve Combat Realism in live training environment while minimizing instrumentation footprint (SWaP) and reduce lifecycle sustainment cost?

Medical Simulation Modernization

STRI Needs/Challenges:

- Live/Virtual Medical Simulation training at the Point of Need (PoN) addressing Soldier Tactical Combat Casualty Care at the Squad, Team, Platoon, Company, and Brigade levels
- Physics based Human Physiology Models to enable Prolonged Casualty Care
- Human Sensor suite; key patient system physiological markers to provide real-time biometric data
- Anatomically accurate Gender-based reconfigurable live/virtual patient systems
- Patient tissue characterization and Morphing Moulage/Dynamic Wounds in the live/virtual environment
- Interoperability of patient simulator medical hardware and software with terrains, networks, sensors, and devices across the live/virtual domains
- Medical disciplines delivered over the network to training audience at the PoN; Home station, deployed, or at the school house
- Vision system platform to enable live/virtual training of critical procedures on patient medical dispositions across multi-domain operations
- Virtual after action reviews to assess medical Individual and Collective Tasks

Technical challenges: Live/Virtual training patient simulators for Prolonged Casualty Care scenarios