

# REVOLUTIONIZING TRAINING THROUGH TECHNOLOGY

TRAINING & SIMULATION INDUSTRY SYMPOSIUM  
(TSIS-2020)



MAJOR GENERAL MARIA GERVAIS

DIRECTOR

CROSS FUNCTIONAL TEAM - SYNTHETIC TRAINING ENVIRONMENT

# FRENCH CAVALRY UNIT (PRE-WORLD WAR I)



UNCLASSIFIED

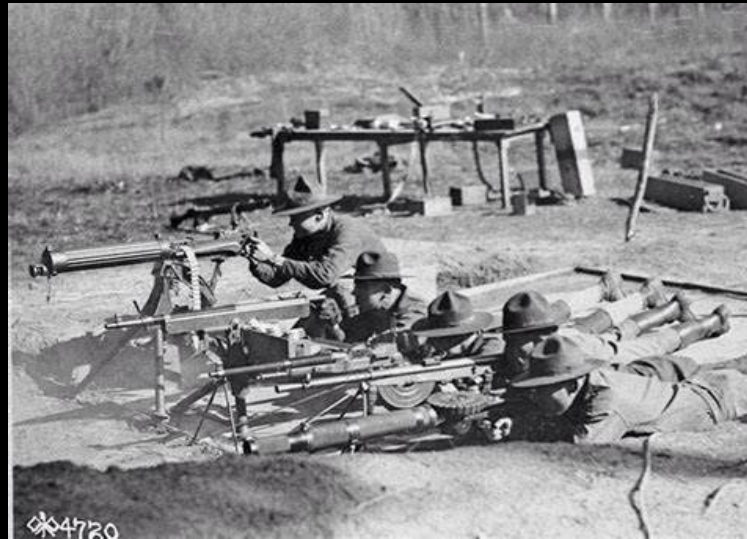
# CAVALRY TRAINING (PRE-WORLD WAR I)



UNCLASSIFIED

UNCLASSIFIED

# THE AMERICAN EXPEDITIONARY FORCE TRAINING (WORLD WAR I)



UNCLASSIFIED

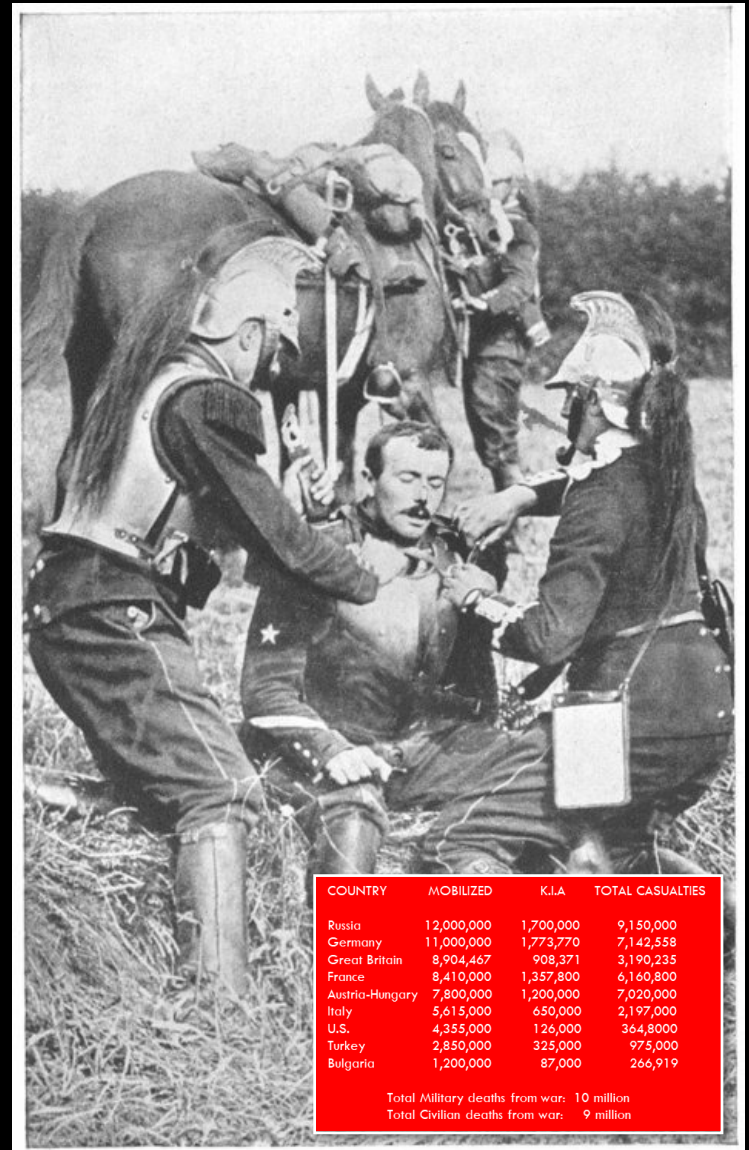
# TRAINING EVOLUTION VS. TECHNOLOGY REVOLUTION



## WORLD WAR I CASUALTIES



THE **NEXUS** BETWEEN  
RAPID TECHNOLOGY INSERTIONS  
AND  
EVOLUTIONARY ADVANCES IN  
TRAINING



COUNTRY	MOBILIZED	K.I.A.	TOTAL CASUALTIES
Russia	12,000,000	1,700,000	9,150,000
Germany	11,000,000	1,773,770	7,142,558
Great Britain	8,904,467	908,371	3,190,235
France	8,410,000	1,357,800	6,160,800
Austria-Hungary	7,800,000	1,200,000	7,020,000
Italy	5,615,000	650,000	2,197,000
U.S.	4,355,000	126,000	364,8000
Turkey	2,850,000	325,000	975,000
Bulgaria	1,200,000	87,000	266,919

Total Military deaths from war: 10 million  
Total Civilian deaths from war: 9 million

~ 10 MILLION MILITARY DEATHS

# EVOLUTIONARY LEAPS IN TRAINING

## U.S. ARMY POST-VIETNAM ERA TRAINING

### Training and Doctrine Command



The U.S. Army's Training and Doctrine Command (TRADOC) was established in 1973 as the single proponent for training reforms, doctrine revision, leader development, and the modernization of organizational structure, weapons, and equipment.

### Combat Training Centers



The U.S. Army Combat Training Centers (CTC) Program builds trained and proficient, combat-ready units and leaders to conduct operations as part of the joint force -ready to win in a complex world.



# EVOLUTIONARY LEAPS IN TRAINING

## U.S. ARMY POST-VIETNAM ERA TRAINING

### VIRTUAL



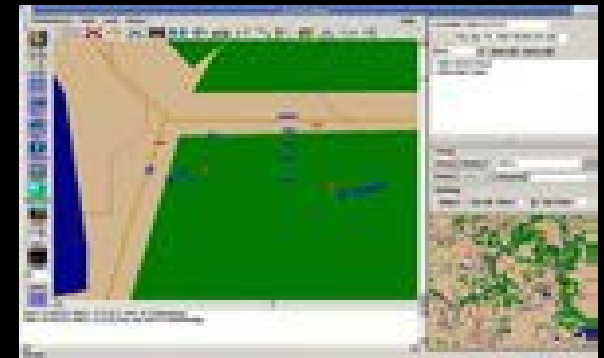
Close Combat Tactical Trainer (CCTT)  
 Aviation Combined Arms Tactical  
 Trainer (AVCATT)  
 Games for Training  
 Engagement Skills Trainer (EST)  
 Synthetic Environment Core (SE CORE)  
 Live, Virtual, Constructive-  
 integrating Architecture (LVC-IA)

### LIVE



Home Station Instrumentation  
 Training System (HITS)  
 Instrumentable – Multiple  
 Integrated Laser Engagement  
 System (I-MILES)

### CONSTRUCTIVE



Joint Land Component Constructive  
 Training Capability (JLCCTC)

# EXAMPLE OF EVOLUTIONARY ADVANCES IN TRAINING

## MULTIPLE INTEGRATED LASER ENGAGEMENT SYSTEM (MILES)

MILES (1970s/80s)



Advanced MILES



MILES 2

(1990s/00s)



MILES XXI (2000s/10s)



I-MILES CVTESS (Today)



## INSTRUMENTABLE MULTIPLE INTEGRATED LASER ENGAGEMENT SYSTEM (I-MILES)

# BASIC SOLDIER TASKS

## TASK BREAKDOWN

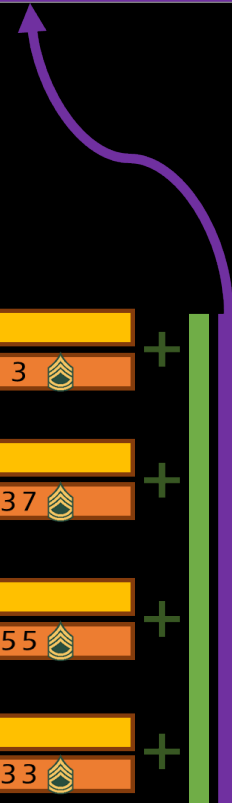
26,092 TOTAL INDIVIDUAL ARMY SOLDIER TASKS

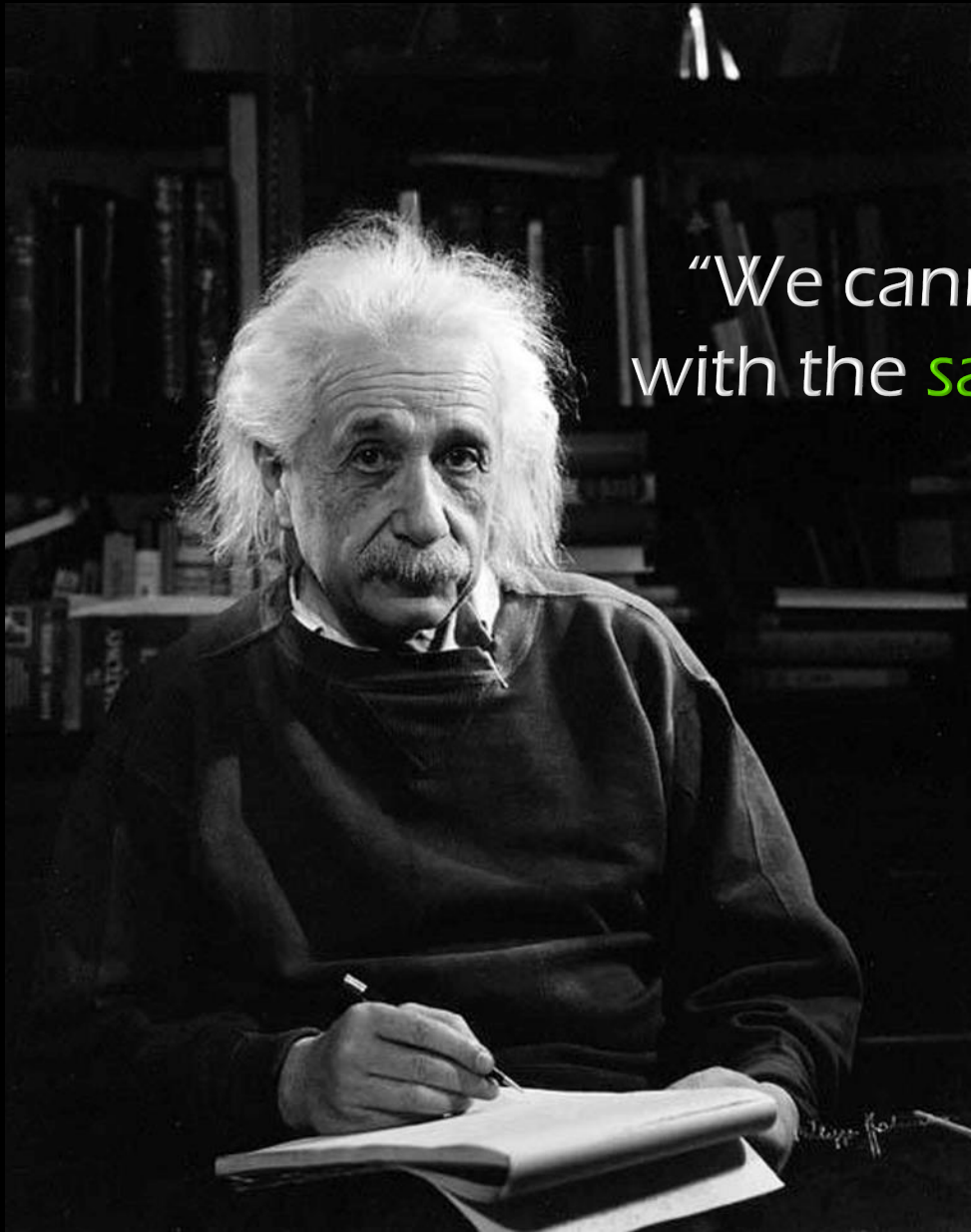
6,360 TOTAL COLLECTIVE TASKS

- SOLDIER TASKS
- CRITICAL TASKS
- MOS TASKS
- COLLECTIVE TASKS

Numbered Tasks DO NOT include:

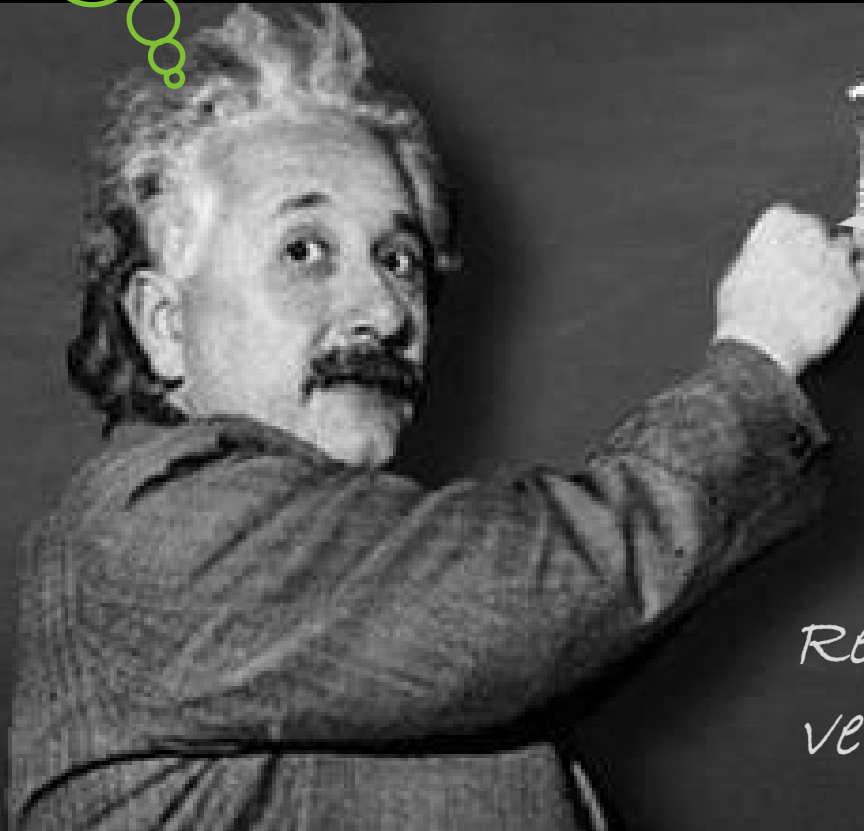
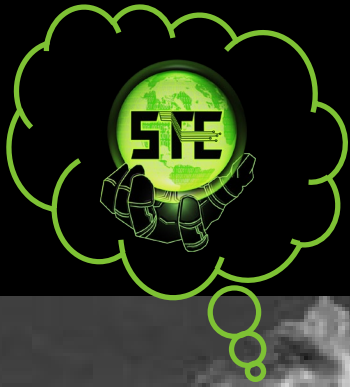
- (1) New Equipment Training
- (2) Deployment specific training
- (3) A-typical MOS-agnostic assignments (i.e. AFC)
- (4) Collective tasks
- (5) Unit-specific tasks





“We cannot solve our problems  
with the **same thinking** we used to  
create them.”

~Albert Einstein



~~$E=MC^2$~~

STE

*Revolutionary training  
verses Evolutionary training*

# THE ARMY'S REVOLUTIONARY TRAINING PLATFORM



Software centric



Platform agnostic



Modular Open System Architecture



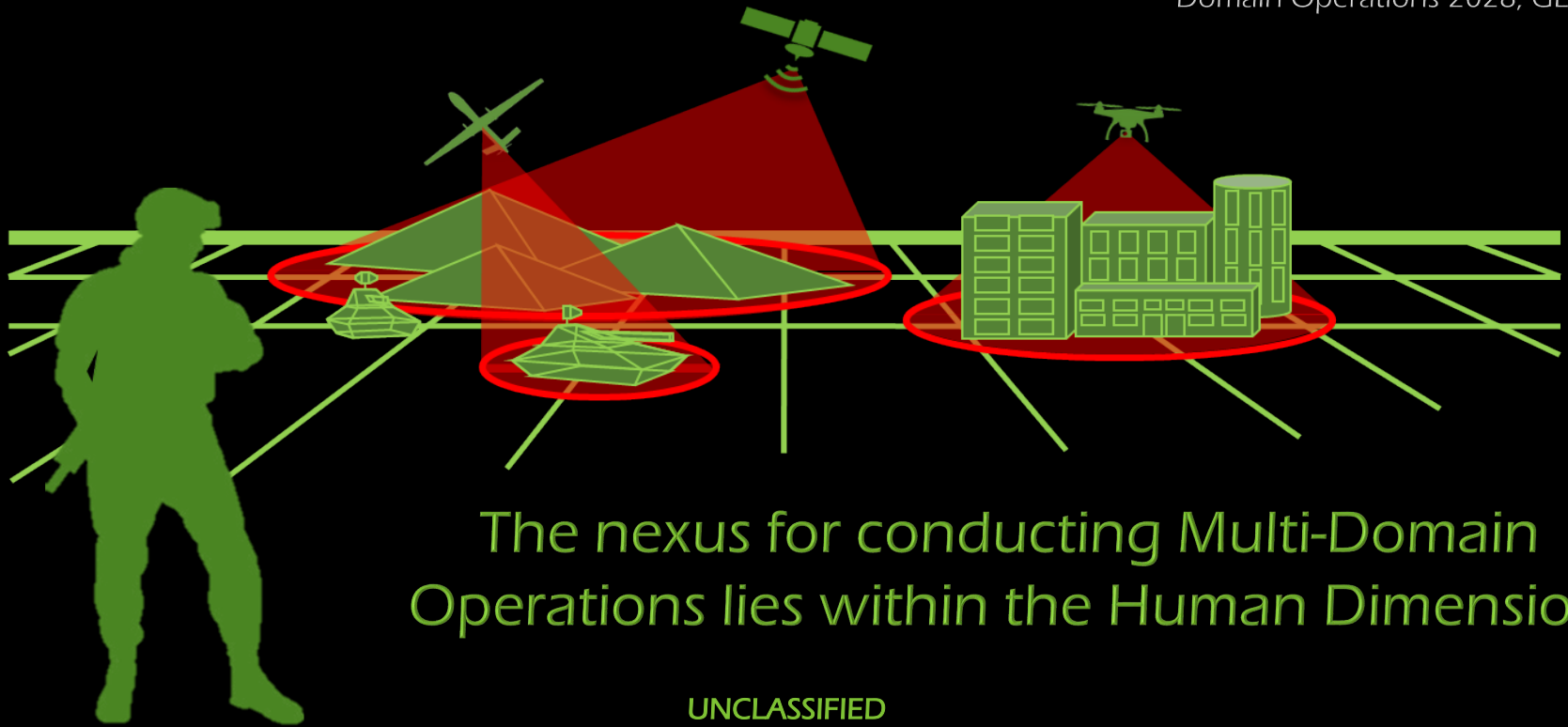
YOUR BIG IDEA  
HERE



# REVOLUTIONARY TRAINING SOLVING THE CHALLENGES OF MULTI-DOMAIN OPERATIONS

Operations conducted across multiple domains and contested spaces to overcome an adversary's (or enemy's) strengths by presenting them with several operational and/or tactical dilemmas through the combined application of calibrated force posture; employment of multi-domain formations; and convergence of capabilities across domains, environments, and functions in time and spaces to achieve operational and tactical objectives.

TP 525-3-1, The U.S. Army in Multi-Domain Operations 2028, GL-7.



The nexus for conducting Multi-Domain Operations lies within the Human Dimension

# PERSONALIZED DIGITAL TWIN (AVATAR) CONCEPT

## APPEARANCE



## MOVEMENT



## FUNCTIONS



- Soldier Skills
- MOS Skills
- Cognitive
- Physiological
- Health
- Fatigue
- Nutrition
- Voice/Language

Intelligent Tutoring

### 12802 GEN BROWN

**ACFT**  
556

**WEAPONS**

**M3**  
 Expert

**M4**  
 Sharpshooter

**SKILLS**

**EBB**

**SAPPER**

**PERFORMANCE**

**CREDENTIALS**

**RESILIENCY**

**WZF**

**CREDENTIALS**

▼ GRE Score: 310  
- Quantitative: 156  
- Verbal: 154

► Demo  
► Generator Mech  
► 2-Year College

[SQUAD >](#)



# STE'S NEXT BIG CHALLENGE: REVOLUTIONIZE LIVE-SYNTHETIC TRAINING

Twelve Engagements

Currently replicate only 60% of Brigade Combat Team

Plus Five

Instrumentation



Direct Fire  
(Small Arms, Tank)



Counter-Defilade  
(M320, MK-19)



Indirect Fire  
(Mortars, Artillery)



Placed Object  
(Mine)



Thrown Object  
(Grenade)



Dropped Object  
(Bomb)



Guided Weapon  
(Missile)



Autonomous  
Weapon  
(Missile, Smart  
Munitions)



Connections  
(Information  
Warfare)



Directed Energy  
(Laser)



Radiant Energy  
(Sonic,  
Microwave)



Plume  
(CBRNE)



Calculations



Networks



Transmitters



Terrains



Sensors

## Next Steps:

Indirect Fire  
Placed/Thrown/Dropped  
Force on Target (Live Fire)

Remote Sensing  
Human Performance  
Machine Learning / AI

Traditional timeline...need to accelerate

INFORMING STAGE – NOW  
DEVELOPMENT STAGE – FY26  
FIELDING STAGE – FY35

UNCLASSIFIED

# A PARADIGM SHIFT WITH PARTNERSHIP & COLLABORATION



GOVERNMENT

INDUSTRY / ACADEMIA

UNCLASSIFIED

# INNOVATION PARTNERSHIP



## Synthetic Training Environment (STE) Technology Integration Facility (TIF)

powered by:  ARMY APPLICATIONS LABORATORY



## Team Orlando Tech Grove



**ARMY FUTURES COMMAND**

**STE CFT**  
Synthetic Training Environment Cross-Functional Team

**WHO WE ARE**

Located in Orlando, Florida, the Synthetic Training Environment Cross-Functional Team's mission is to rapidly expand the Army's synthetic training environment and increase distribution of simulation capabilities down to the company level. The STE will enable tough, realistic, dynamic and realistic multi-domain combined arms maneuver, mission rehearsal and mission scenario collective training in support of multi-domain operations. STE CFT will deliver collective training, accessible at the point of need, to support operational, self-development and institutional training for Soldiers. The STE will provide complex operational environment representations anytime and anywhere in the world. The CFT will allow for units the resources necessary to accelerate individual skill and unit task proficiency for achieving and sustaining readiness.

**OUR LEADERSHIP**

**Major General Maria R. Gervais**  
Director, Synthetic Training Environment Cross-Functional Team

Maj. Gen. Maria Gervais is the director of the Synthetic Training Environment Cross-Functional Team, Orlando, Florida. The STE is charged with rapidly expanding the Army's synthetic training capability to the point of need, which will enable units located anywhere in the world to train seamlessly together in an integrated live, virtual and constructive environment.

Commissioned in 1987, Maria was a distinguished military graduate of the Lander College Reserve Officer Training Corps program in Greenwood, South Carolina, and was assigned to the Chemical Corps. She has commanded at every level, and in her most recent assignment served as deputy commanding general of the Combined Arms Center Training. As the DCG of CAC-T, she was charged with developing collective training requirements and solutions, fielding training systems, delivering leader training, and sustaining training capabilities for the Army. She has a Master of Military Strategic Studies from the U.S. Army War College, a Master of Arts degree in human resources from Webster University, and a Bachelor of Science degree in biology from Lander College.

**TECHNOLOGY INTEGRATION FACILITY (TIF)**

The TIF serves as a place for vendors to bring promising technology, allows us to provide feedback, and helps us quickly adopt and integrate capabilities that meet Synthetic Training Environment requirements. The TIF also guides future deployment of technologies by facilitating rigorous user testing and demonstration to provide feedback to engineers and leaders throughout the acquisition process.

We invite you to submit your ideas, software designs, and hardware designs for testing in the TIF and potential partnership with the Army to accomplish the Synthetic Training mission!

**HOW TO WORK WITH US**

The STE CFT is partnering with the Army Applications Laboratory (AAL) to uncover even more ideas and capabilities from across the country. If you have a solution that you think STE could use – or you want to show us what you've got – we'd love to learn more. Get started by sharing your idea using AAL's concept submission portal. From there, a member of our technical team will review your submission and follow up with next steps.

**SHARE YOUR IDEAS WITH US USING THE ARMY APPLICATIONS LABORATORY SUBMISSION PORTAL**

**START HERE**

**ARMY APPLICATIONS LABORATORY** **CONTACT** **START NOW**

**How It Works**

**Important**  
Classified, sensitive, or critical technology should not be included here.

If you think those details are essential to your concept, contact us and we'll follow up with better methods for moving forward. For details on how we'll use the information you submit and more, check out the Privacy Policy and Terms & Conditions for this site or download more details. All information provided via this website to Army Applications Laboratory is deemed procurement sensitive. Additionally, all proprietary markings will be respected accordingly.

Whether you're exploring how the Army could use your idea or know your technology meets the needs of a Cross Functional Team, you've come to the right place. We'll take you through a short series of questions translated from our [published announcement](#) on the opportunity. You can track your progress along the way, and the system will save as you go in case you need to come back and finish later.

Once you submit, your concept will go to our evaluation team for consideration. (You'll get a copy, too.) We'll take a look at what you submitted and let you know if we want to move forward.

**SIGN IN**

EMAIL ADDRESS

Remember Me

This site is protected by reCAPTCHA and the Google Privacy Policy and Terms of Service apply.

**NEW SUBMISSION** **RESUME SUBMISSION**

<https://ArmyFuturesCommand.com/ste>

