REVOLUTIONIZING TRAINING THROUGH TECHNOLOGY

TRAINING & SIMULATION INDUSTRY SYMPOSNUM
(TSIS-2020)

MAJOR GENERAL MARIA GERVAIS

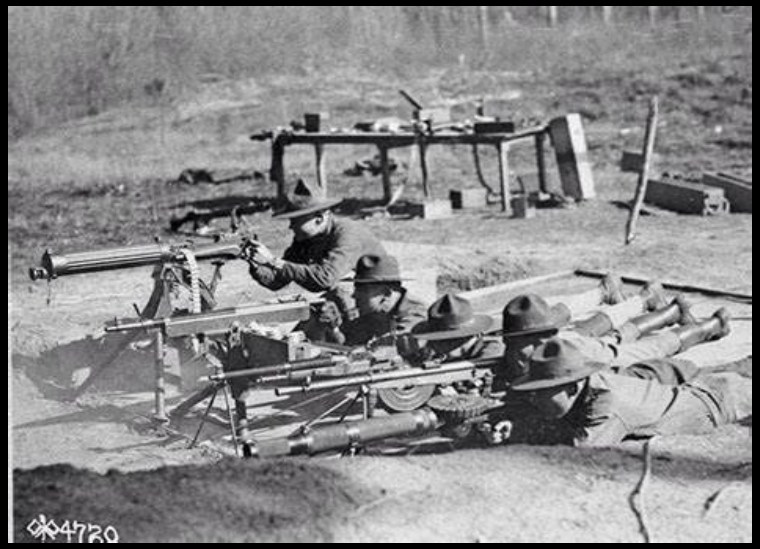
DIRECTOR

CROSS FUNCTIONAL TEAM - SYNTHETIC TRAINING ENVIRONMENT

FRENCH CAVALRY UNIT (PRE-WORLD WAR I)

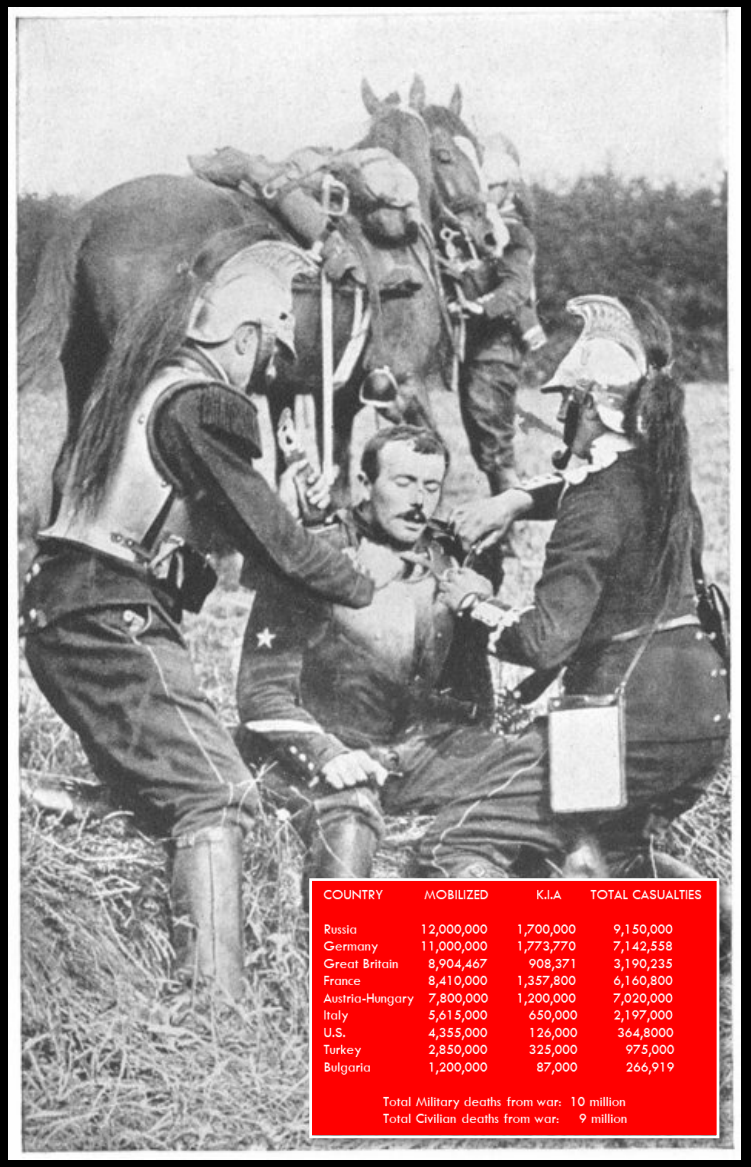
CAVALRY TRAINING (PRE-WORLD WAR I)

THE AMERICAN EXPEDITIONARY FORCE TRAINING (WORLD WAR I)



TRAINING EVOLUTION VS. TECHNOLOGY REVOLUTION

WORLD WAR I CASUALTIES



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

THE NEXUS BETWEEN RAPID TECHNOLOGY INSERTIONS AND EVOLUTIONARY ADVANCES IN TRAINING

~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 Environnent Core (SE CORE)

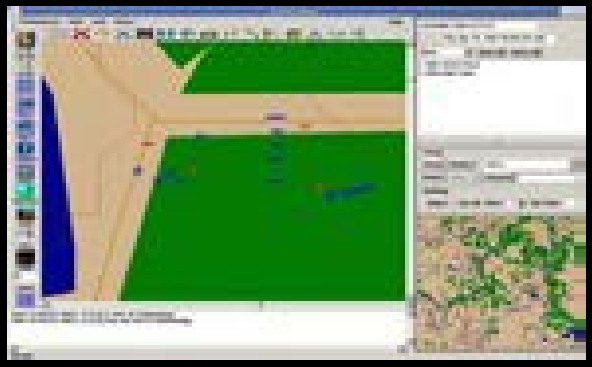
Live, Virtual, Constructive-integrating Architecture (LVC-IA)

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 (1980s/90s)

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

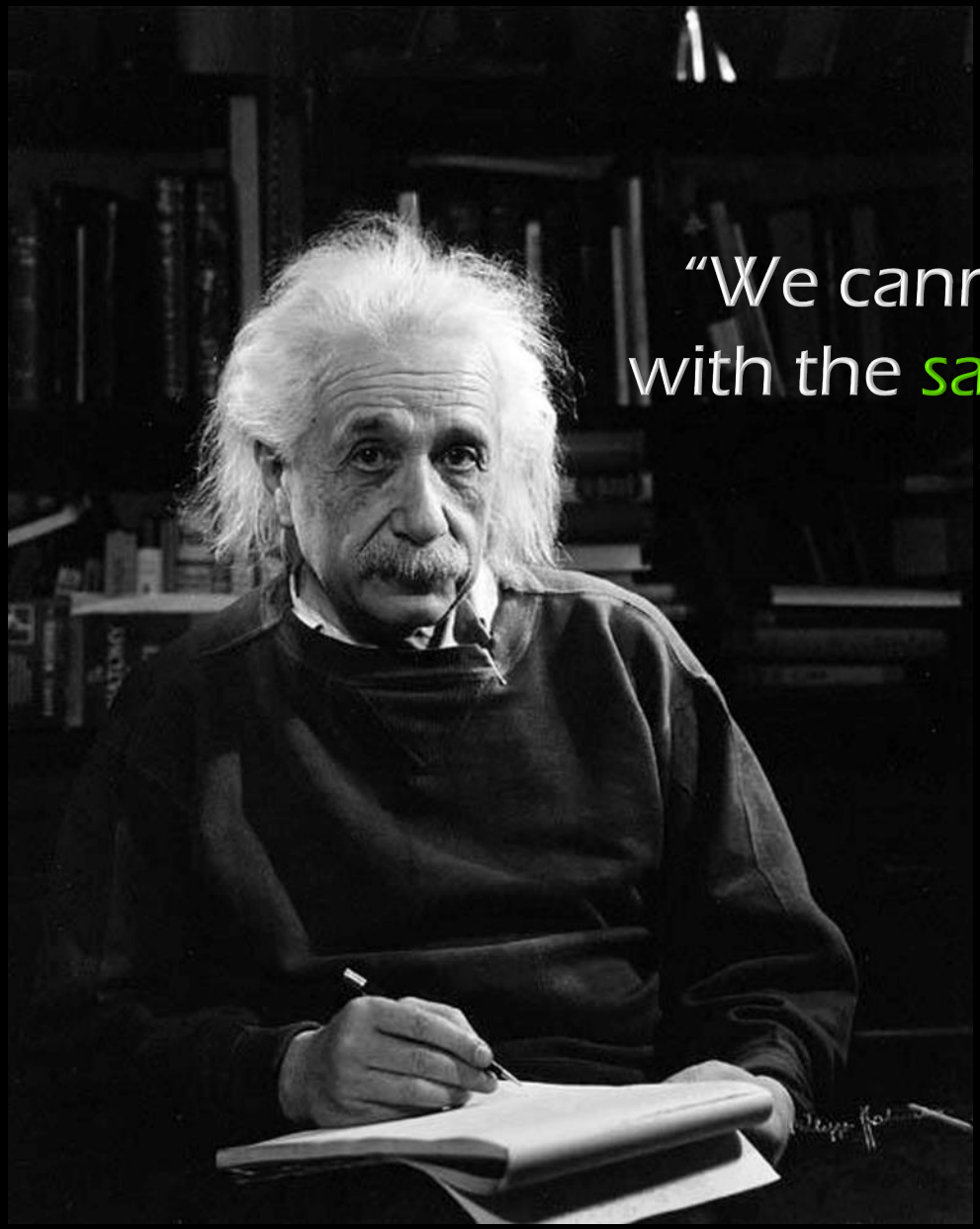
26,092 TOTAL INDIVIDUAL ARMY SOLDIER TASKS

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

COMBAT MEDIC (68W)	3384	+3060	+126	+ 39	+ 8 + 3
SCOUT (19D)	893	+ 463	+225	+ 85	+ 83 + 37
ARMOR (19K)	827	+ 422	+ 107	+ 21	+ 74 + 55
INFANTRY (11B)	859	+ 368	+247	+ 34	+ 29 + 33
ALL MOS's	148	72		+ 38	+ 23 + 15



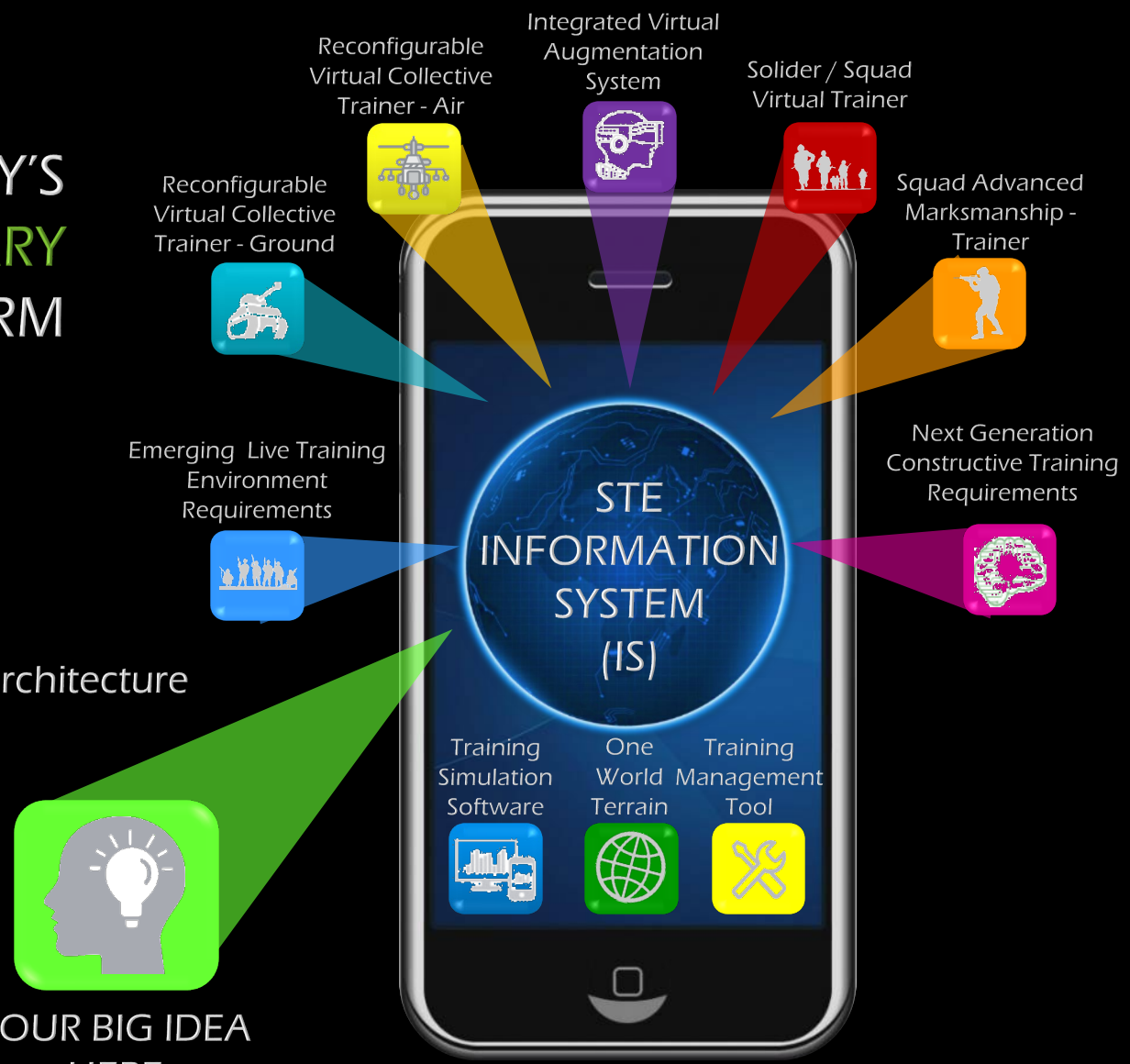
"We cannot solve our problems with the same thinking we used to create them."

~Albert Einstein

$E=mc^2$
STE
Revolutionary training
verses Evolutionary training

THE ARMY'S REVOLUTIONARY TRAINING PLATFORM

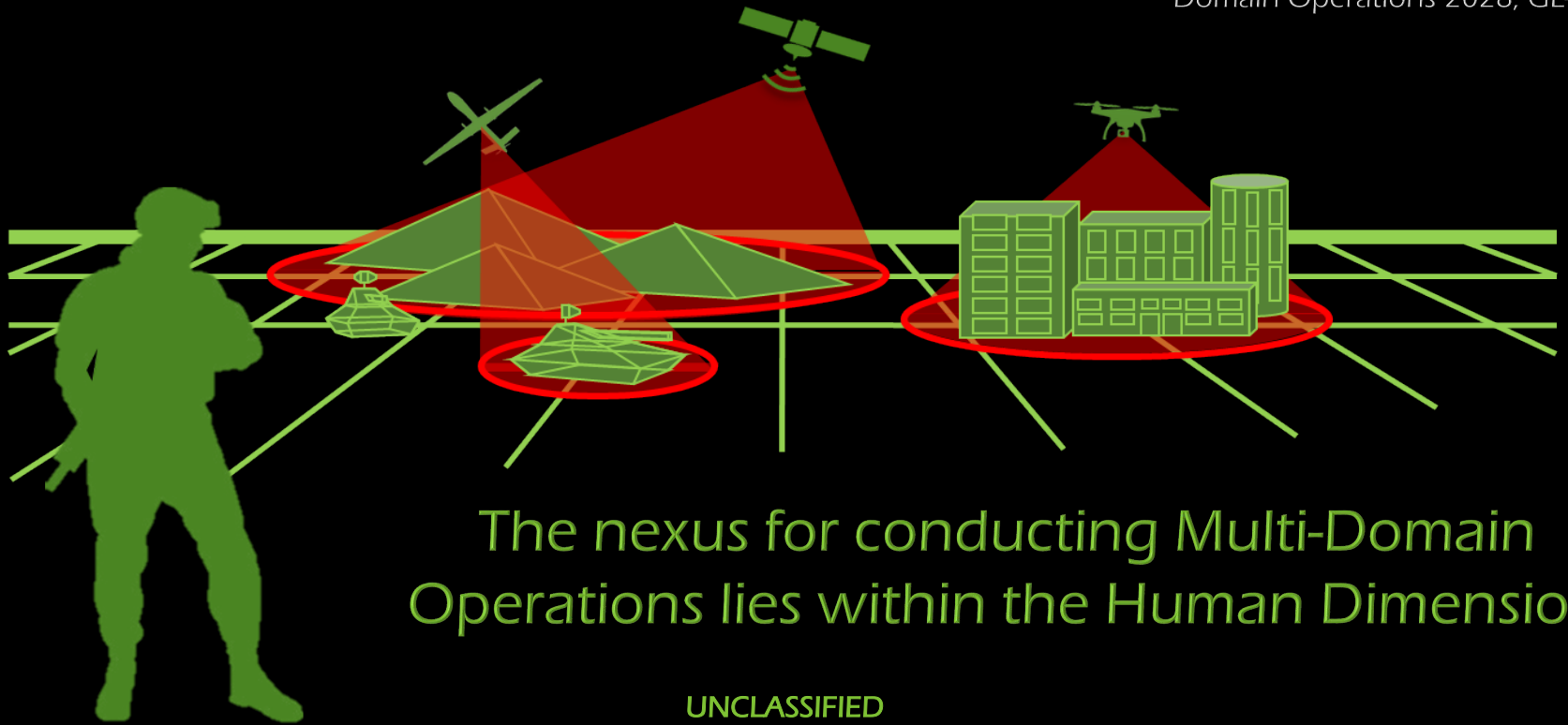
- Software centric
- Platform agnostic
- Modular Open System Architecture



REVOLUTIONARY TRAINING SOLVING THE CHALLEGES 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

STE's NEXT BIG CHALLENGE:

REVOLUTIONIZE LIVE-SYNTHETIC TRAINING

Twelve Engagements

Currently replicate only 60% of Brigade Combat Team

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)

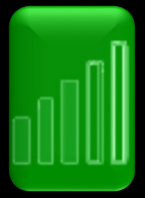
Radiant Energy (Sonic, Microwave)

Plume (CBRNE)

Plus Five

Instrumentation

Calculations


Networks

Transmitters

Terrains

Sensors

Traditional timeline…need to accelerate

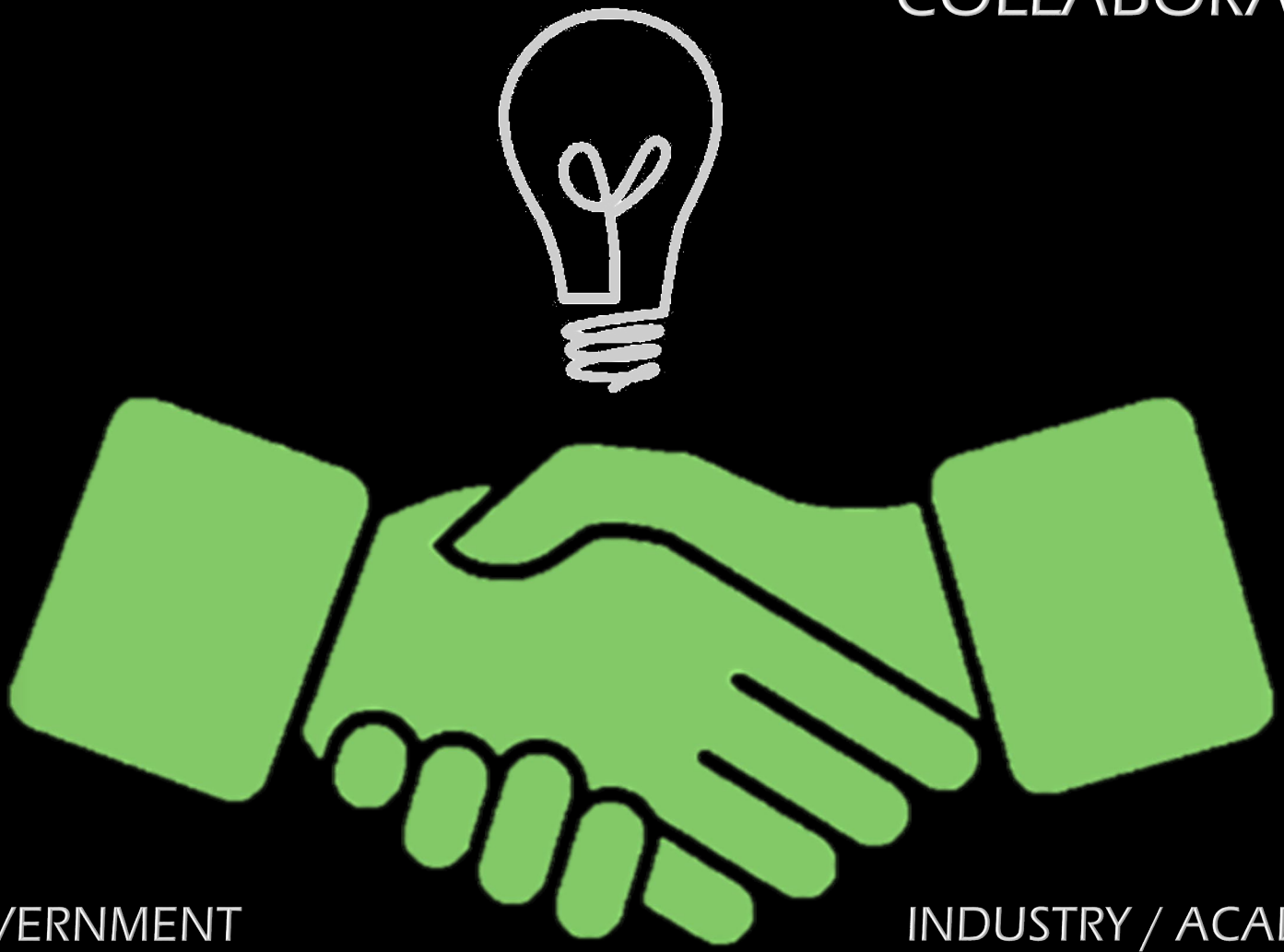
INFORMING STAGE – NOW
DEVELOPMENT STAGE – FY26
FIELDING STAGE – FY35

Next Steps:

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

Remote Sensing
Human Performance
Machine Learning / AI

A PARADIGM SHIFT WITH PARTNERSHIP & COLLABORATION



GOVERNMENT

INDUSTRY / ACADEMIA

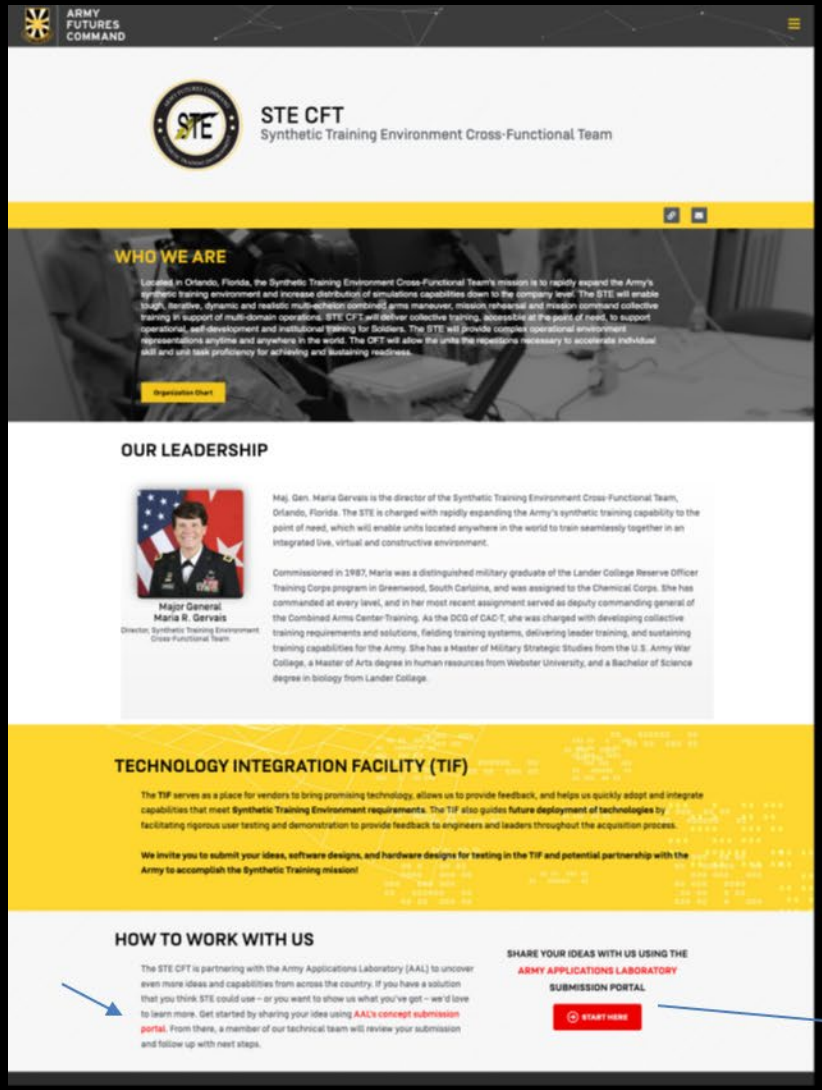
INNOVATION PARTNERSHIP

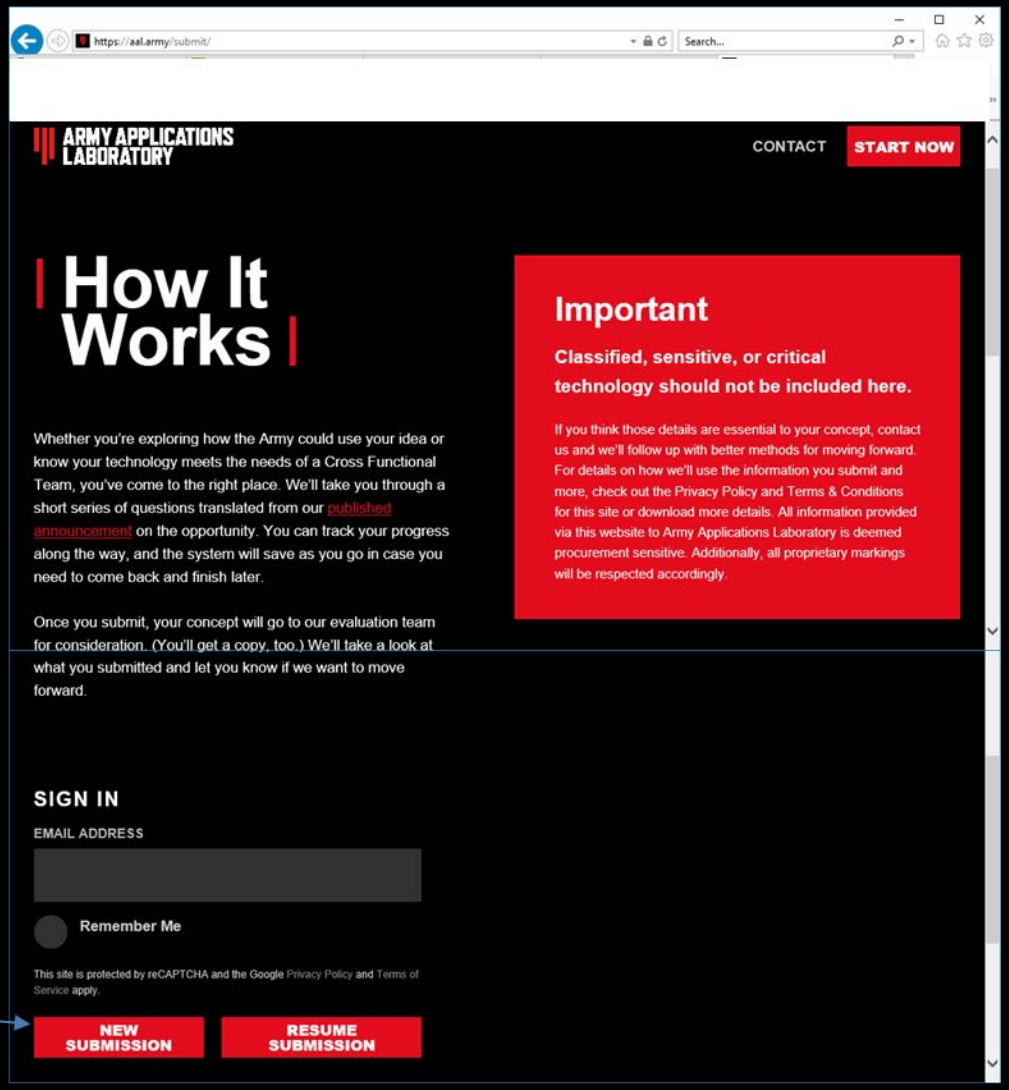
Synthetic Training Environment (STE)
Technology Integration Facility (TIF)

powered by: ARMY APPLICATIONS LABORATORY

Team Orlando Tech Grove

CALL TO ACTION





https://ArmyFuturesCommand.com/ste

ARMY FUTURES COMMAND
STE
SYNTHETIC TRAINING ENVIRONMENT

FORGE THE FUTURE