



STE Standards and Architecture Framework TCM ITE

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Vision: Full Capability that is interoperable with authoritative data sources, mission command information systems and compliant with the current Common Operating Environment concepts, Live instrumentation systems, current legacy collective training systems, and Joint service models.

Open Standards Roadmap/Common Operating Architecture to Achieve Full STE Capability

Specific Standards and Architectures:

- Evolve to Meet Full Capability Needs
- Open/Non-Proprietary/Non-Closed Source
- Sustainable/Expandable with Future Technology Insertions
- Integrate Capabilities for Global Open Runtime Engine

Support interoperability to existing interfaces:

- Authorities Data Sources
- Mission Command Information Systems
- LVC-IA Trainers Legacy Systems
- Live TADSS

Success: An environment that allows execution of realistic, joint and expeditionary, multi-national multi-echelon, cross warfighter function, combined arms multi-domain battle training.



Capabilities: Common Global Environment with High Fidelity Entities.

Virtual Environment:

- Virtual Globe from common open terrain data
- Land, Water, Air, Sub-Terrain, Sub-Marine, Geo-synchronous orbital
- Terrain Integration with Mission Command Information Systems
- Shared Collective User Operating Space
- Support Large Entity Count (2 million+)
- Support large quantity (2000+) Constructive Users from Math & Realism simulations
- Dense Urban/Mega Cities, and Realistic Biomes with various Weather simulations

Modeling Fidelity:

- High Fidelity 3D Models of Personnel, Vehicle & Equipment.
- Modeled/Simulated Interfaces represent Real World Interfaces.
- Detailed texturing and realistic movement and rigging of 3D models.
- Open Standard Model Data
 - Shareable across Visual Presentation Pipelines for Semi-Immersive and Immersive Trainers.
 - Inclusive of Visual Change Representations.



Capabilities: Recreate Soldier Interfaces Physically and Virtually

User Interfaces:

- Semi Immersive, Immersive and Staff training environments
- Integrated User Interface Devices
- COTS computer capable training
- Plug In/Reconfigurable Hands On Interfaces
- High Resolution Graphics (HD/4K quality or better)
- Directional and Distance based Audio feedback
- Visual Fidelity Refresh rates 60hz up to 120hz or better
- Mixed, Virtual, Augmented Reality Extensions
 - Finger-level tracking
 - Haptic feedback
 - High Fidelity Visual Resolutions
 - Realistic Situational Awareness Field Of View
 - Wireless



Capabilities: Cloud Based Accessibility, Efficient Training Support Tools, Smart Reactive Automated Entities.

Accessibility:

- Cloud-Based Streaming & Processing to Point Of Need
- Reconfigurable & Transportable Immersive Platform Trainers
- Point of Need, Reconfigurable, Low Overhead Semi-Immersive Trainers
- Availability for Multiple Armed Services Access to Synthetic Environment.
- Accessible to the Commander anywhere, anytime

Usability:

- Easy Exercise Design Tools from Authoritative Data Sources.
- Efficiently Plan, Prepare, Execute, and Assess Training Events per Army Operations Process in FM 7-0.
- Training Management/Exercise Design utilizing Intuitive and Ease of Use User Experience Paradigms.
- Staff Trainers with a Reduced Support Footprint and Reduced Exercise Design Timeliness

Automation Support:

- Interactive AI Virtual Role Players
- Reactive Virtual Humans/Vehicles
- Intelligent Tutors/Smart Instructor
- Goal Orientated and Machine Learning AI
- Automatic Initialization for Training Environment from Training Support Package Parameters.



Capabilities: Open Architecture and Standards Set that Converges and Integrate Virtual, Gaming, Live and Constructive Environments for scalable multi-role, multi-service training within an authoritative cloud based runtime

Capabilities Convergence:

- Support Training Ground, Sea, Air Operations and Platforms.
- Allows Formations to Conduct Collective, Combined Arms Maneuver Training.
- Scales from Squad, Battalion Task Force and ASCC training capabilities.
- Centralized Representations and Adjudicates all Entity, User Inputs, and Operational Environment Interactions.
- Provides Single Authoritative Adjudication of Interactions for Live and Virtual.
- Open Architecture to Facilitate Future Updates.
- “Train as They Fight” with Digital Representations of the Weapons System and Realistic Control of Forces to with Mission Command Information System Interfaces.
- Streamed Training Content from the Cloud to the Point of Need.

Success: An environment that allows execution of realistic, joint and expeditionary, multi-national multi-echelon, cross warfighter function, combined arms multi-domain battle training.