

Concurrent Presentation Session
BRIDGING ADL AND SIMULATION



Training Management and STE: Mapping Squad Level Competencies in Simulation Data Through a GIFT/TLA Integration

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U.S. ARMY COMBAT CAPABILITIES DEVELOPMENT COMMAND – SOLDIER CENTER

Training Management and STE (Synthetic Training Environment): Mapping Squad Level Competencies in Simulation Data through a GIFT/TLA Integration

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ADAPTIVE PEDAGOGY AT THE TEAM LEVEL

Leveraging Sports and Military Psychology to Accelerate Team Development



WHAT IS THE GOAL OF A TEAM-AIS?

To Take a Team of Experts and to Build an Expert Team!...

...by leveraging sports and military psychology to accelerate team development



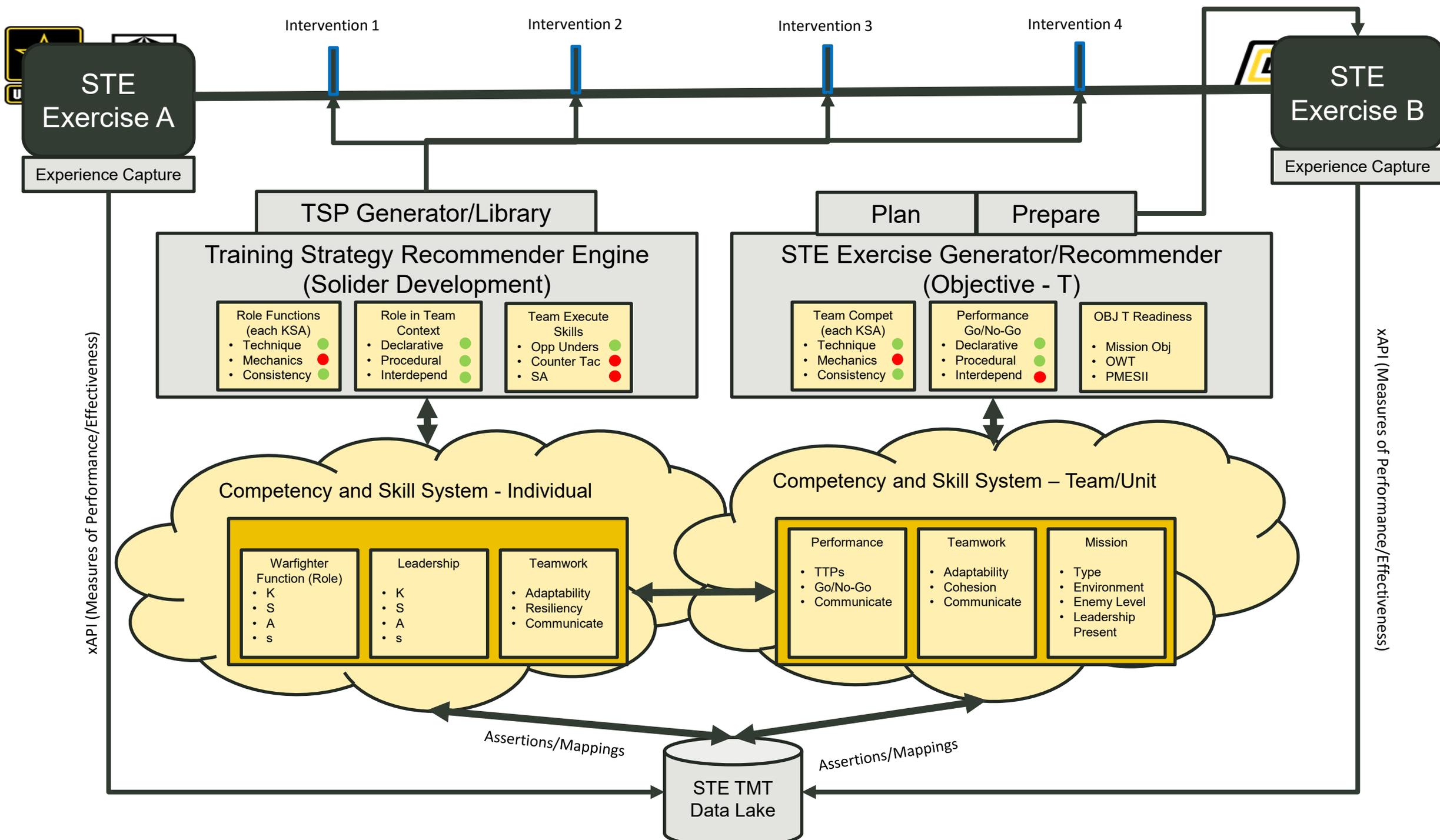
OVERARCHING TECHNOLOGY OBJECTIVE



- Leverage and integrate existing opensource technology to support an experiential training ecosystem based on X-Learning model
 - Implement persistent performance tracking across competency model based on SQUAD LETHALITY and TEAM DEVELOPMENT (xAPI)
 - Use ecosystem to store STE exercise data for AI and adaptive training optimization and scenario generation (Big Data)
 - Maximize AAR and post-STE training efficiencies through directive Training Support Packages based on Unit Deficiencies (Recommender Engines)



- STE produces Raw Data [TSS] (simulation events [S/SVT, SAMT, IVAS, RVCT, etc.], movement, performance, bio/physio, etc.)
- Raw [TSS] consumed by STE TMT [e.g., GIFT] and produces Metrics (ACTIVE performance states [SPM/IVAS], PASSIVE performance states [MASTR-E], Go/No-Go, TEAM states [STTC research])
- STE TMT generates xAPI (experiential statements on all data context)
- xAPI routed to LRS/DataLakes for storage
- LRS/DataLakes accessed by Competency and Skills System (CaSS)
- CaSS updates Squad Lethality Competencies based on data assertions from STE TMT
- TMT Squad Lethality linked to ATIS/TMT/TLA
- Recommender engines target Solider development opportunities and guide and/or automate plan/prepare scenario generation activities





STE EXPERIENTIAL LEARNING (STEEL) PROJECT

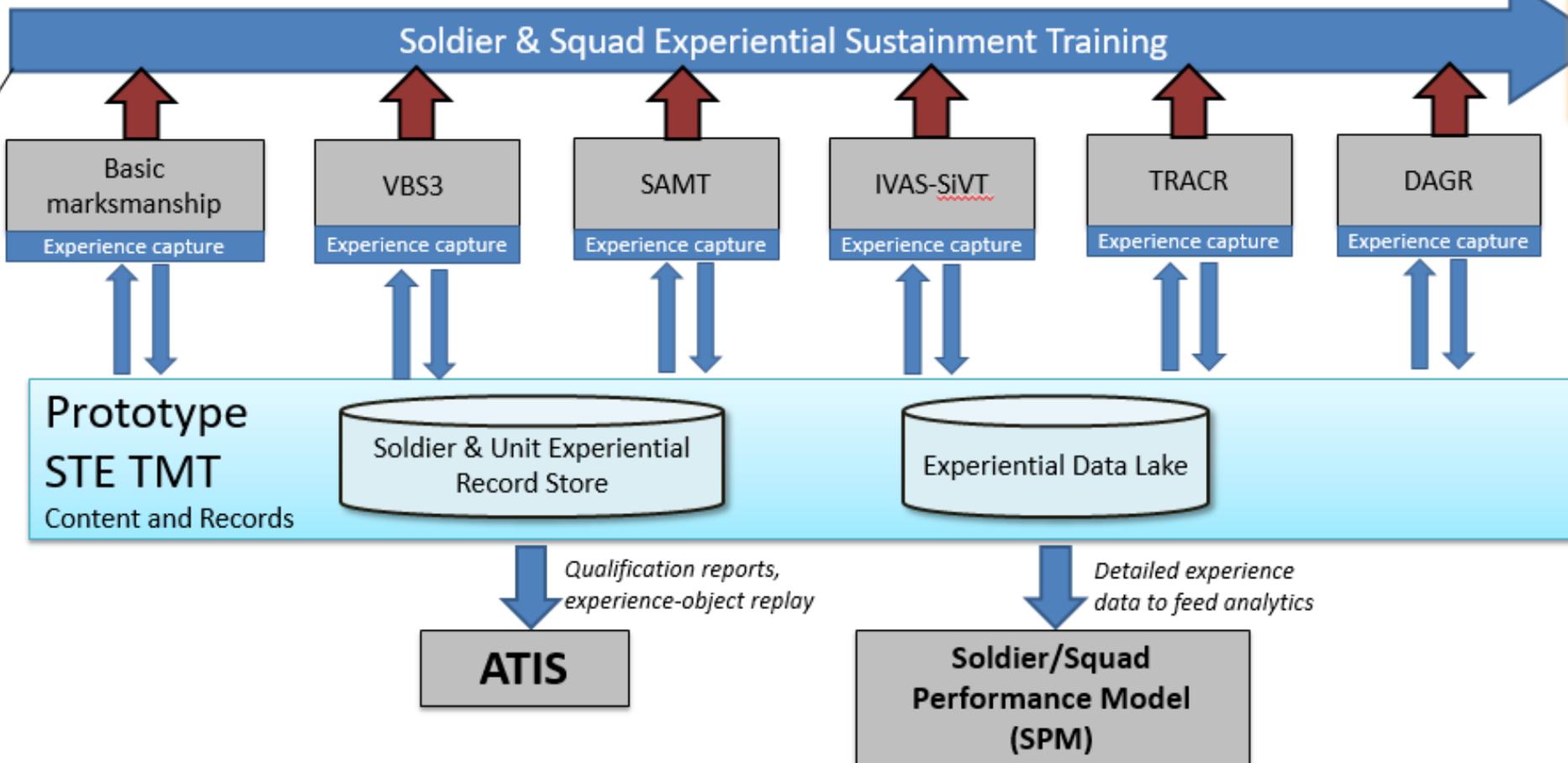
(OWENS, GUPTON & GOLDBERG)



This Prototype will focus on improving Basic Soldier and Squad Marksmanship Skills using experiential learning and a combination of VBS, SAMT and IVAS-SiVT technologies that will result in better final live fire (TRACR / DAGR) performance.



Plan and Purpose	Essence	Assess
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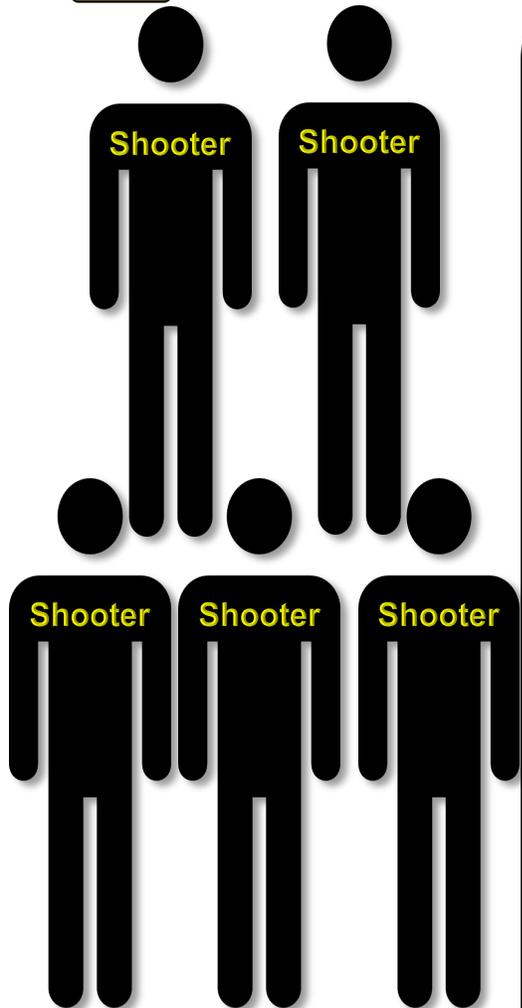
- Threat
- Detection
- Acquisition
- Identification
- Engagement
- Individual Fire
- Buddy Fire
- Team Fire
- Squad Fire



SQUAD ADVANCED MARKSMANSHIP TRAINER (SAM-T): BATTLE-DRILL TRAINING



EXPERIENCE CAPTURE/INTELLIGENT TUTORING



SAM T

Weapon



BioHarness Sensor



Performance



Eye-Tracking (Nov. 19?)



Scenario Library

Weapon:
Aim (x,y)
Trigger Squeeze

BioHarness:
Breathing
ECG
Posture

Performance :
Hit/Miss
Casualties
Rate of Fire

Eye Tracking:
Gaze/Fixation
Communication:
NLP
OC Input

STE TMT

LMS

Coaching Model

Team/Trainee Model

Assessment

Team Performance Model

Back-Up Behavior Models

Expert Marksmen Models

Team Coordination Model

DKF Metadata Matching

Feedback/Remediation

xAPI

Learner Record Store

Total Learning Architecture

Universal Trainee Record

Competency Framework: SQD Performance Model

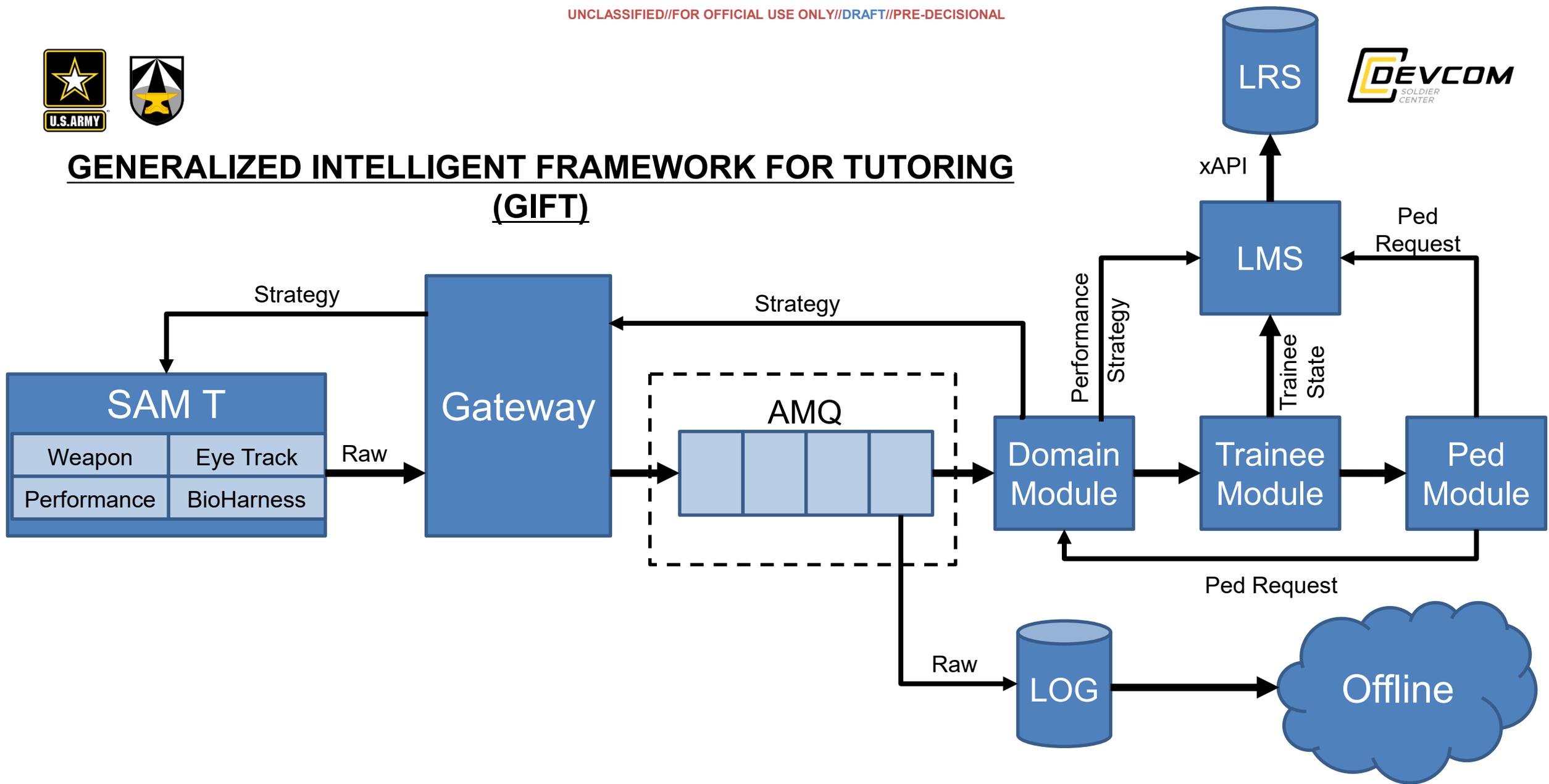
Recommender Engine

Metadata File

Scenario Request



GENERALIZED INTELLIGENT FRAMEWORK FOR TUTORING (GIFT)

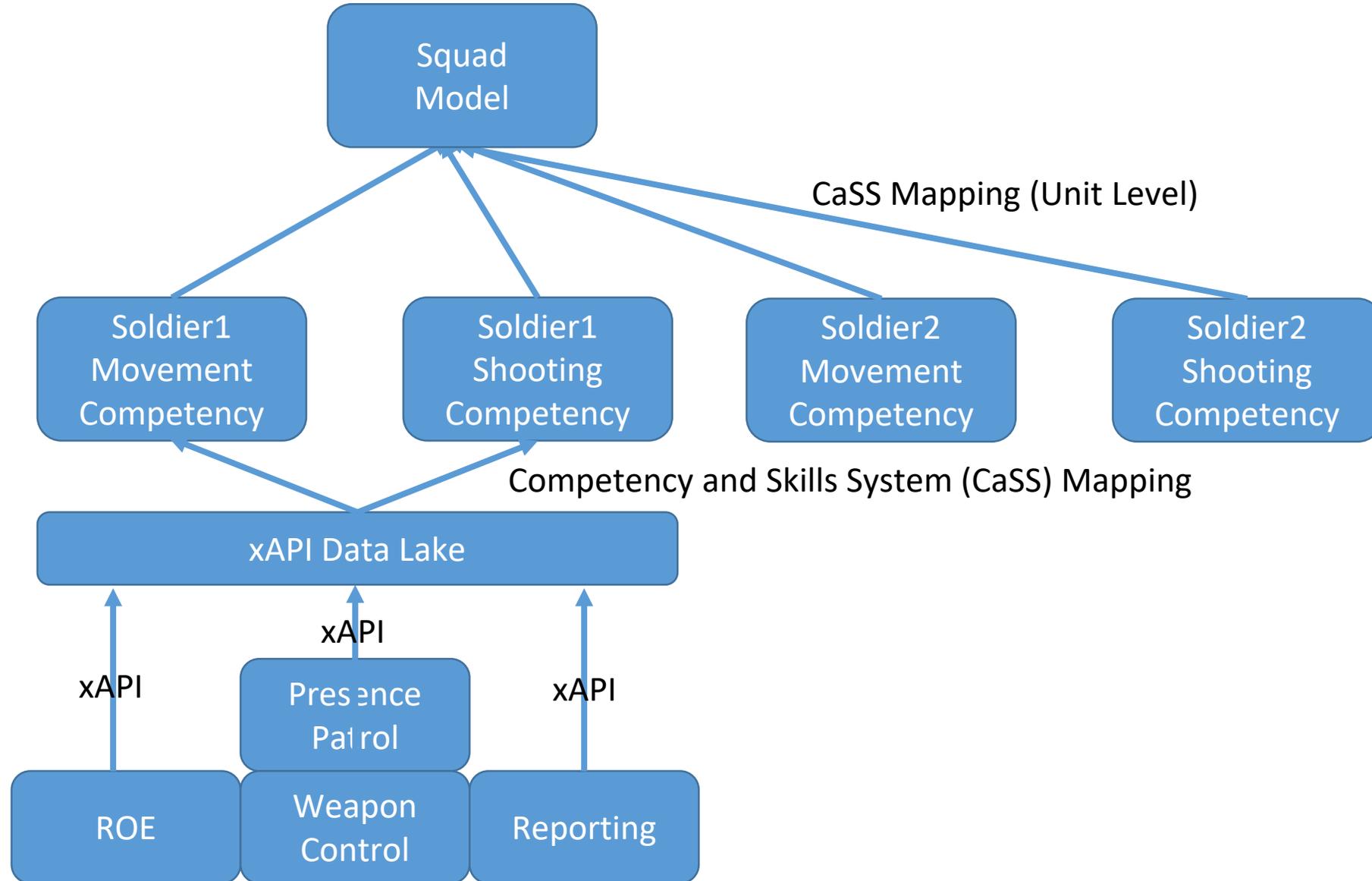




CaSS Mapping (BTL Level)

Training Managers create these

Training Managers create these



CaSS Mapping (Unit Level)

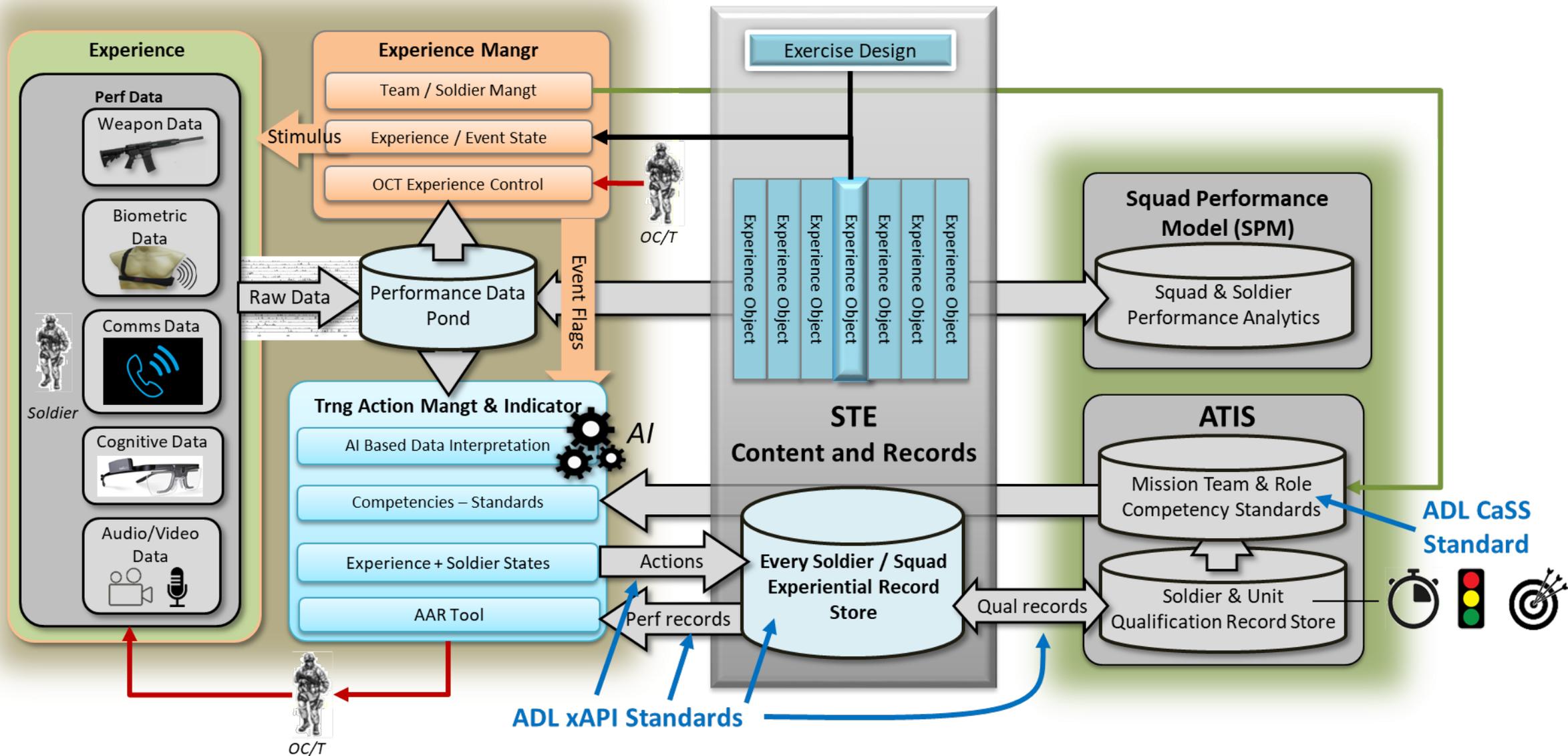
Competency and Skills System (CaSS) Mapping

Scenarios create these via GIFT xAPI specifications

(authored by domain experts... Represented in GIFT task model)



ARCHITECTURE STRATEGY





Moving Forward...



MOVING FORWARD...



- Receive proponent approval to proceed (COMPLETE)
- Build Testbed Environment for Data Logging
 - Modify API/GIFTadapter for SAM T data formats (COMPLETE)
 - Incorporate eye-tracking and video/motion capture data sources into modeling efforts (IN PROGRESS)
- Coordinate with operational training test sites identified for pilot data collection
 - Fort Benning (Initial Entry Training)
 - Fort Bragg (Special Operational Forces)
 - Fort Campbell (Home Station Training)

METL Task Number	METL Task Title/Description
07-SQD-D9509	Enter and Clear a Room
07-PLT-D9501	React to Direct Fire Contact while Dismounted
071-COM-440	Employ Hand Grenades
071-COM-0608	Use Visual Signaling Techniques



MOVING FORWARD...



- Define and Implement a Data Strategy (WE need your help!)
 - Proper Front-End Analysis with Community of Interest
 - Establish analysis Wish List (What questions do you want the data to answer?)
 - Establish simulation translation layer via GIFT with specified measures mapped to analysis requirements
 - Build xAPI statement structures around GIFT logging schemas
 - Build Reference Implementation of Squad Performance Model (SPM) in CaSS
 - Research individual competency model to support Soldier development
 - Research team competency model predictive of readiness (Objective – T)
- Implement Data-Driven recommender engines
 - Training Strategy grounded in sports and military psychology
 - Targets accelerated team-development centered on lethality and SPM attributes



THANK YOU FOR YOUR ATTENTION!!!

