# Life-Cycle Product-line Management (LCPM)

## *Industry Day Project Overview*

**8 June 2015**

# LCPM

LTC Yolanda Frazier

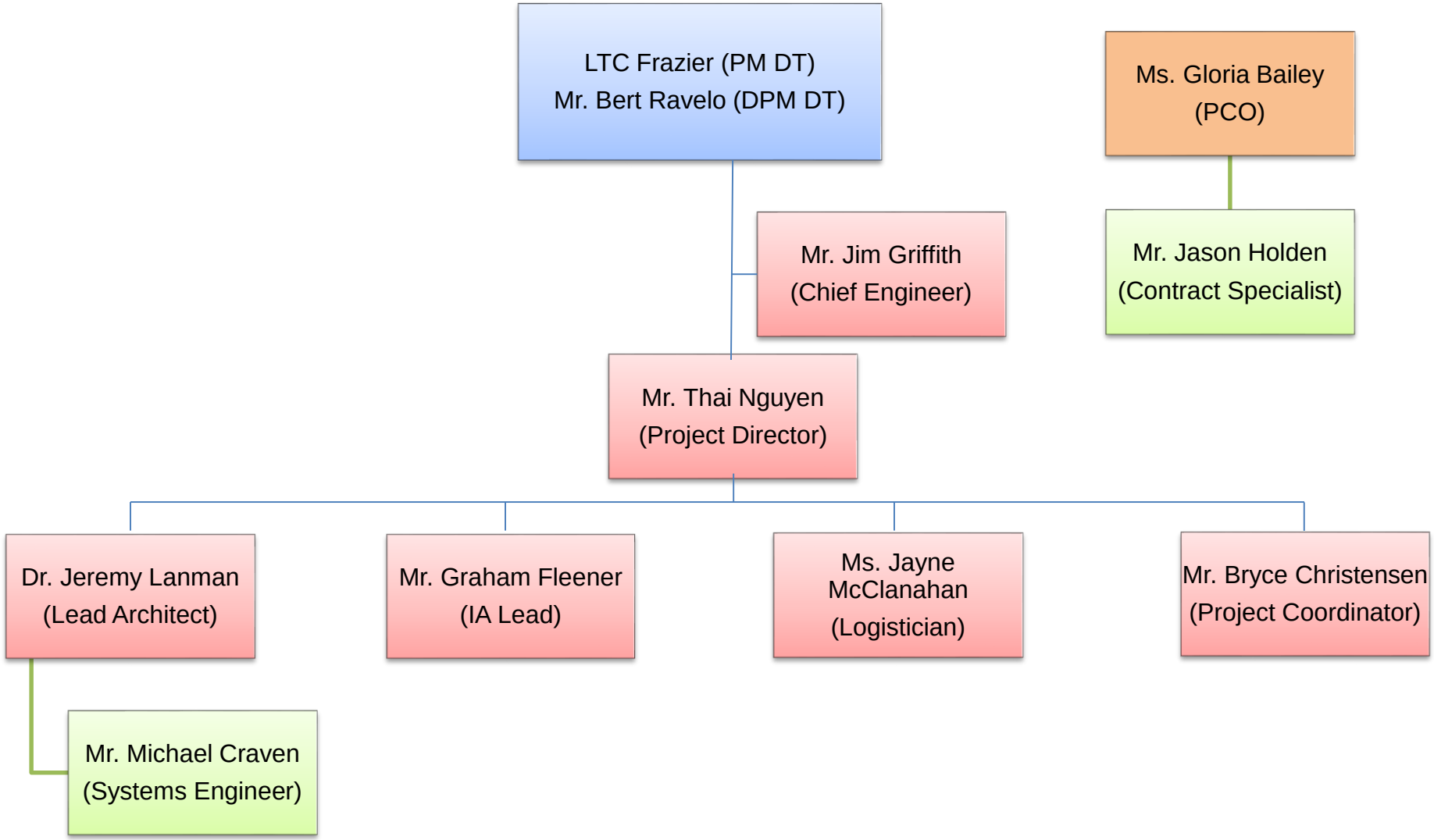
# Agenda

- PM TRADE SOP
- Program Update
- Portal Access
- Architectural Vision
- LCPM Goals and Concepts
- Draft Base SOW
- Information Assurance (IA)
- Draft SOWs 1-X
- Wrap-up

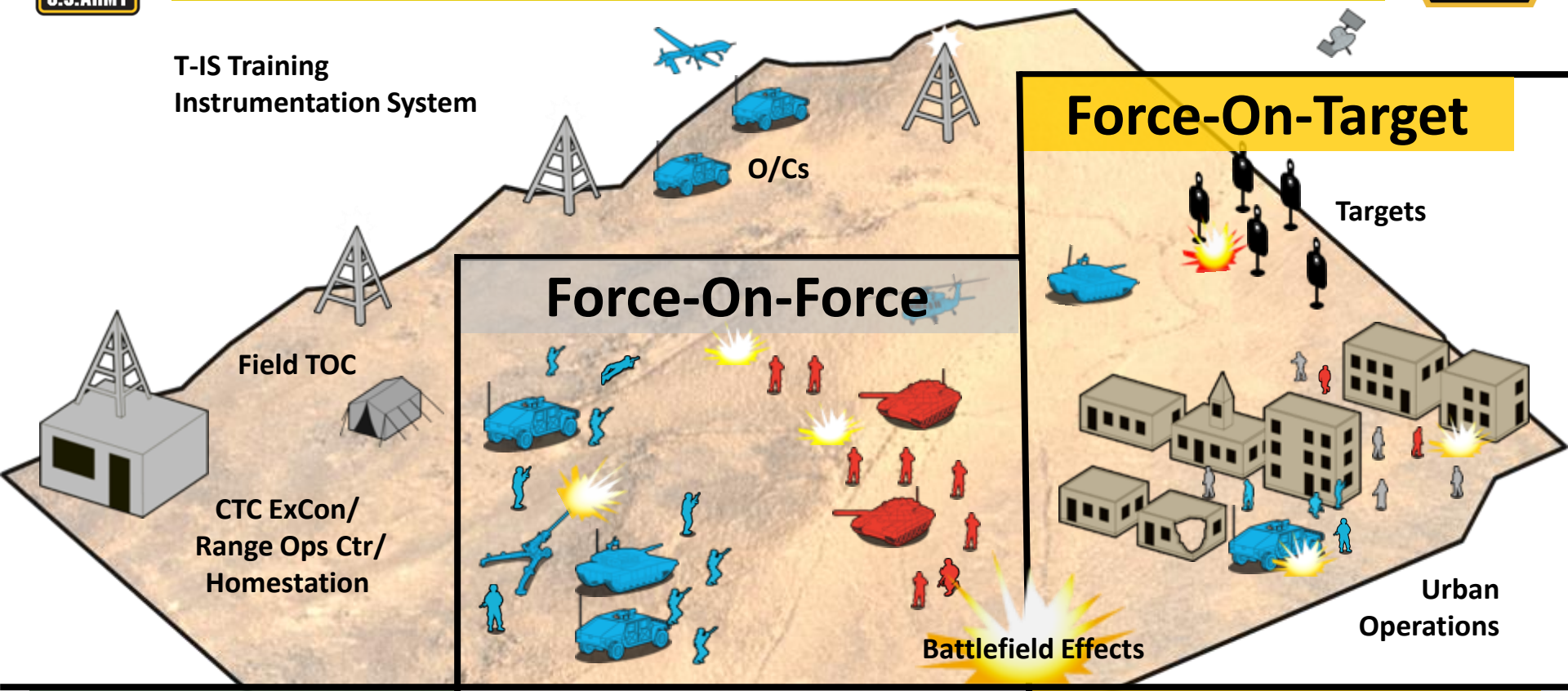
# SRI

Rob Wolf

# LCPM Team


LTC Frazier (PM DT)
Mr. Bert Ravelo (DPM DT)
Ms. Gloria Bailey (PCO)
Mr. Jim Griffith (Chief Engineer)
Mr. Jason Holden (Contract Specialist)
Mr. Thai Nguyen (Project Director)
Dr. Jeremy Lanman (Lead Architect)
Mr. Graham Fleener (IA Lead)
Ms. Jayne McClanahan (Logistician)
Mr. Bryce Christensen (Project Coordinator)
Mr. Michael Craven (Systems Engineer)

# Why LCPM ⇨ LCPM Spans Across PM TRADE Live Training Lines of Operation




| ExCon & Comms | Simulated Fire | Live Fire |
|---|---|---|
| ExCon, AAR, RF Comms. ABCS, & Network Data Management | Combined Arms Engagement Pairing BLUFOR & OPFOR | Instrumented Urban Operations, & Battlefield |
| PM CTIS T-IS | MILES PM LTS A-TESS | PM DT FASIT |

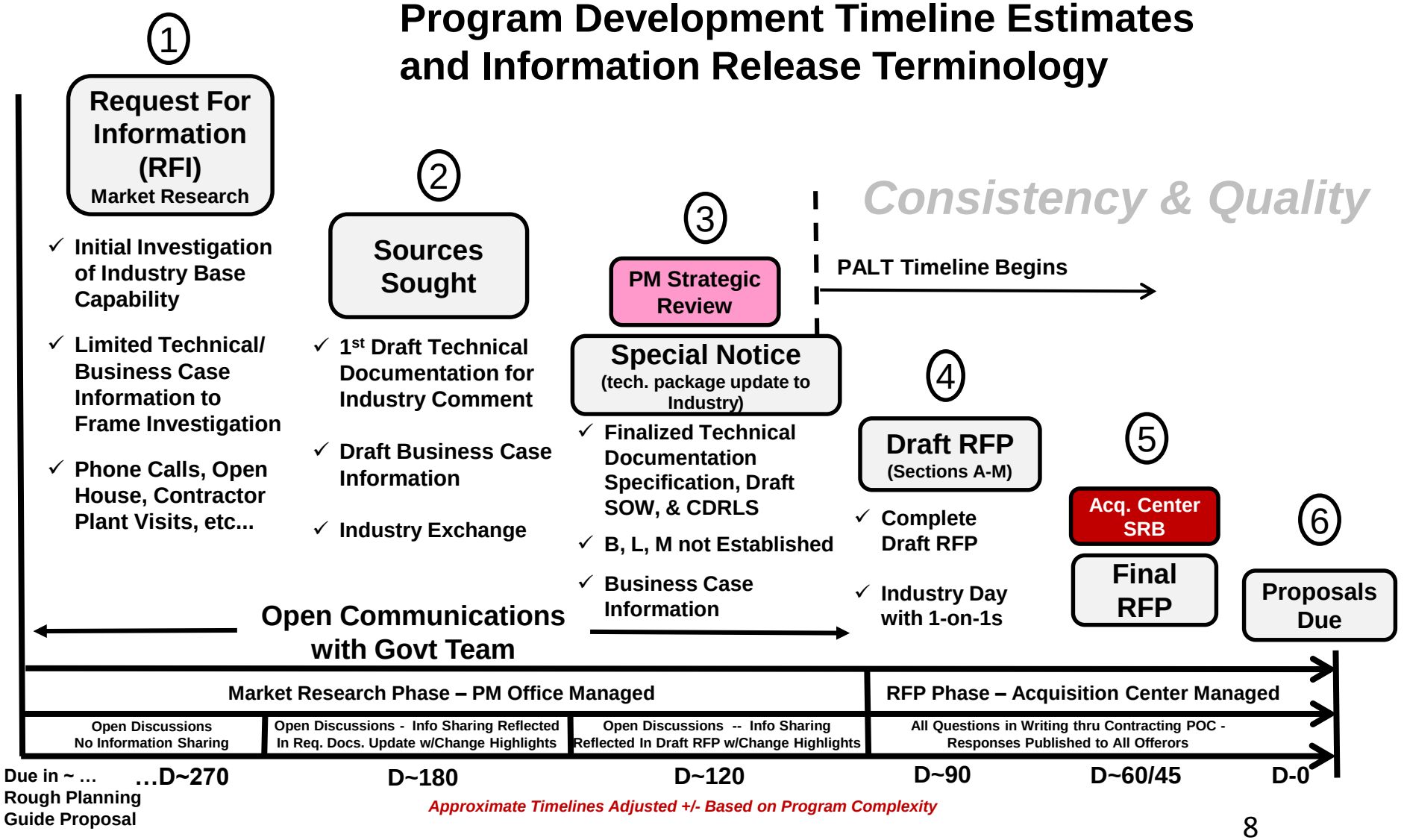
LT2 Standards Management (CTIA, LT2 TESS, FASIT) - APM TRADE

# Industry Day Ground Rules

- Industry Day is used to strengthen the Government's market research position, while also sharing the draft requirements to solicit industry input and eliminate ambiguity and confusion
- PM TRADE's second formal announcement of intent to acquire a product or service
  - Industry Days and Sources Sought are tools to help both the project team and industry
  - Open discussions during one-on-one's
  - Free flow of information using the information provided
  - Direct communications with team members during Market Research Phase encouraged
- The project team is currently refining the acquisition strategy and the Requirements Package from the RFI, we will continue to do so after this week's activities
- Updated draft requirement documents will be posted to the STRIBOP via a SSN Notice

# Industry Business Development Planning Map

## Program Development Timeline Estimates and Information Release Terminology




*Approximate Timelines Adjusted +/- Based on Program Complexity*

# Disclaimer

- Information being presented on subsequent slides is the Government's current intent for LCPM
- Draft requirement documents are subject to change
- This is not a commitment by the Government to purchase any of the supplies described in this brief
- Government will use the information from this week and the future Sources Sought Notice to help determine its approach to meeting the goals and requirements for life cycle management of its products

# LCPM Program Update

Thai Nguyen

# Life Cycle Product-line Management Objective

- The LCPM contract will establish a deliberate approach to Life Cycle Management (LCM)
- Proactively address all life cycle phases
  - Maintain or improve system's performance and operational readiness
  - Ensure relevancy
  - Improve system maintenance while reducing total ownership costs
  - Reduce logistics footprint

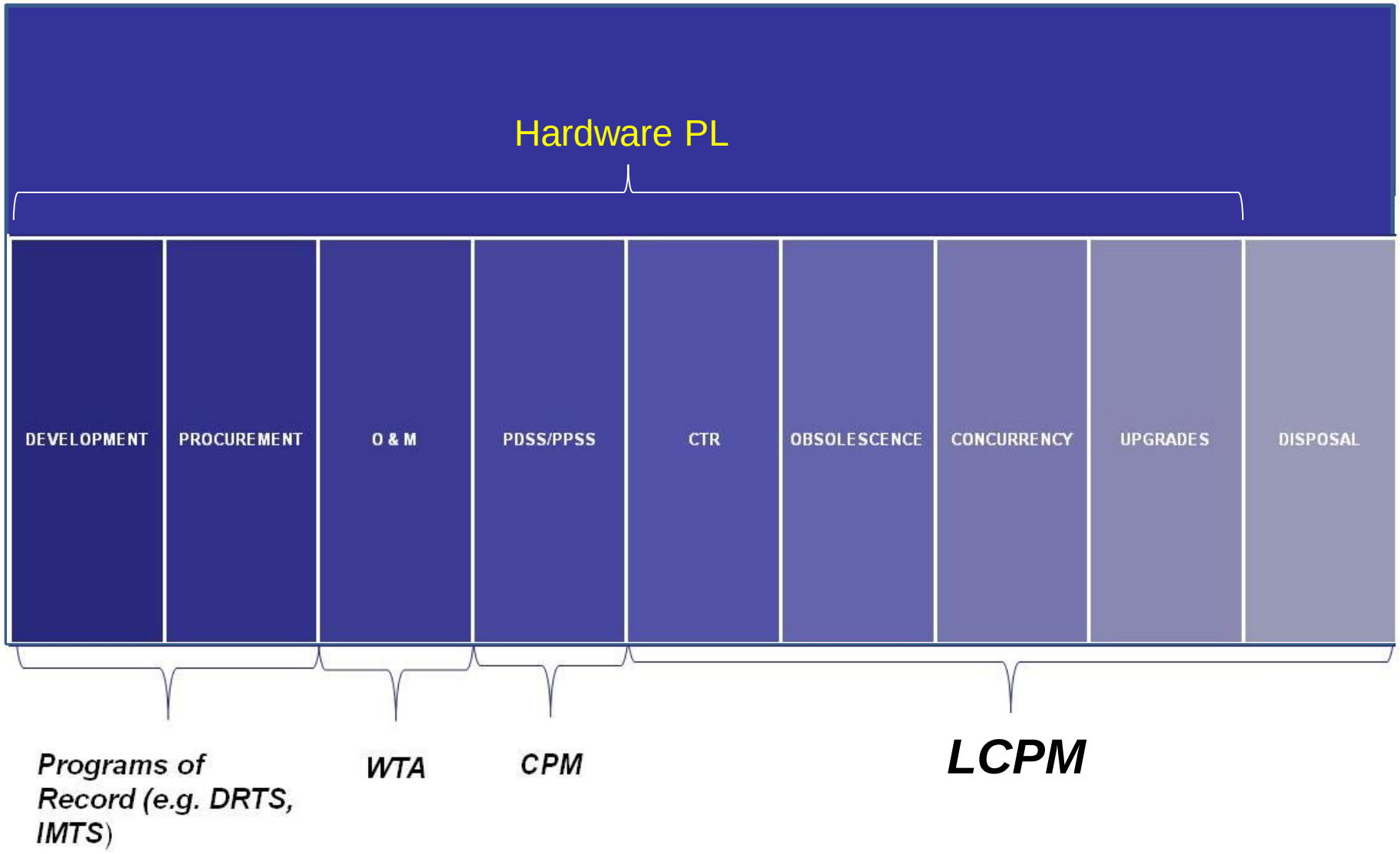
# Life Cycle Product-line Management Objective (Cont)

- Contract will support PM TRADE's business goals
  - Reducing Operational Cost & Complexity
  - Aligning & Supporting Product Development (common standards, interfaces, etc.)
  - Enhancing Soldier Training Effectiveness
  - Reducing Sustainment & Development Costs
  - Increasing Technology Agility
  - Leverage other Army systems and Commercial Off the Shelf (COTS) technologies, and align to Army Common Operating Environment (COE), mobile computing, and distributed computing strategies

# Life Cycle Product-line Management Objective (Cont)

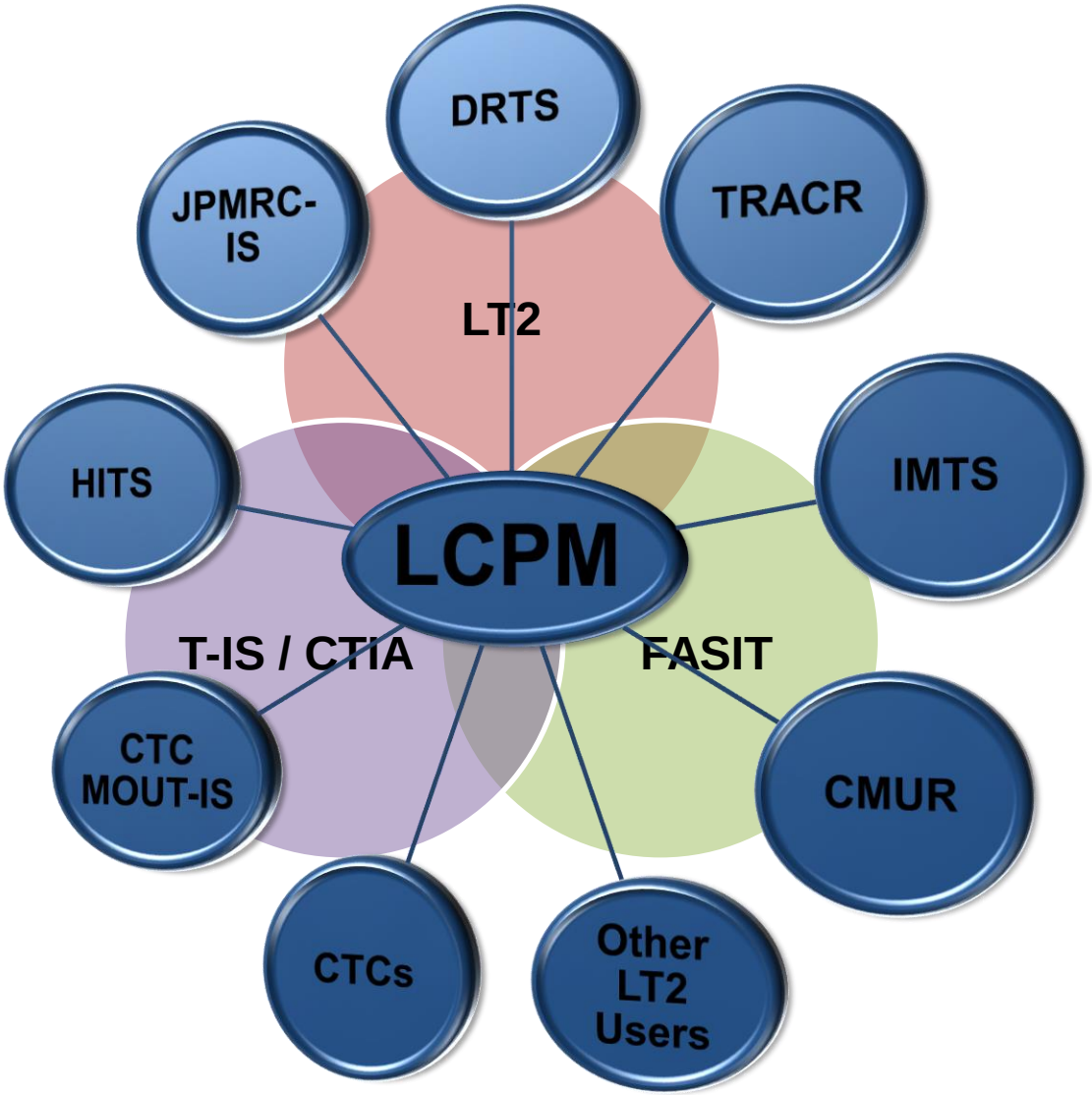
- Total LCM of systems/products within the LT2 Family of Training Systems (LT2 FTS) and other DoD customers
- LCPM will establish a Hardware Product-line (HPL)
  - Ensure standardization
  - Commonality
  - Synchronization
  - Maximum component reuse
  - Interoperability

# Total Life-Cycle Management



# LCPM Domain

- Diverse Scope
- Multiple programs



# LCPM TSIS Chart

## Description/Summary of Contract

Provides life cycle management in the support of:

- The Digital Range Training System (DRTS) program comprised of the following range types: Digital Multi-Purpose Range Complex (DMPRC), Digital Multi-Purpose Training Ranges (DMPTR), Battle Area Complex (BAX), Digital Air/Ground Integration Range (DAGIR)
- Integrated-MOUT Training Systems (IMTS) comprising: Collective Training Facility (CTF), Urban Assault Course (UAC), Shoot House and Combined Arms Collective Training Facility (CACTF) & Combat Training Centers MOUT-IS (CTC MOUT-IS)
- Combat Training Centers (NTC, JRTC & JMRC)
- Targetry Range Automated Control and Recording (TRACR); and Location of Miss And Hits (LOMAH)
- Homestation Instrumentation comprised of the following systems: HITS & JPMRC-IS

### ACQUISITION STRATEGY

- Contract Vehicle: TBD
- Contract Type: TBD

### PERIOD OF PERFORMANCE

- 5 year POP

### MILESTONES

Sep 14 RFI

June 15 Sources Sought

2nd Qtr 16 RFP

1st Qtr17 Contract Award

### POINT OF CONTACT

Organization: PM TRADE

Phone: 407-384-5201

Email: TRADE@peostri.army.mil

### FUNDING

- OPA/OMA/RDT&E Ceiling: ~ $400 M

### CURRENT CONTRACT/ORIGINAL DEVELOPER/OEM (IF RECOMPETE)

- NA

# Changes Since First Industry Day

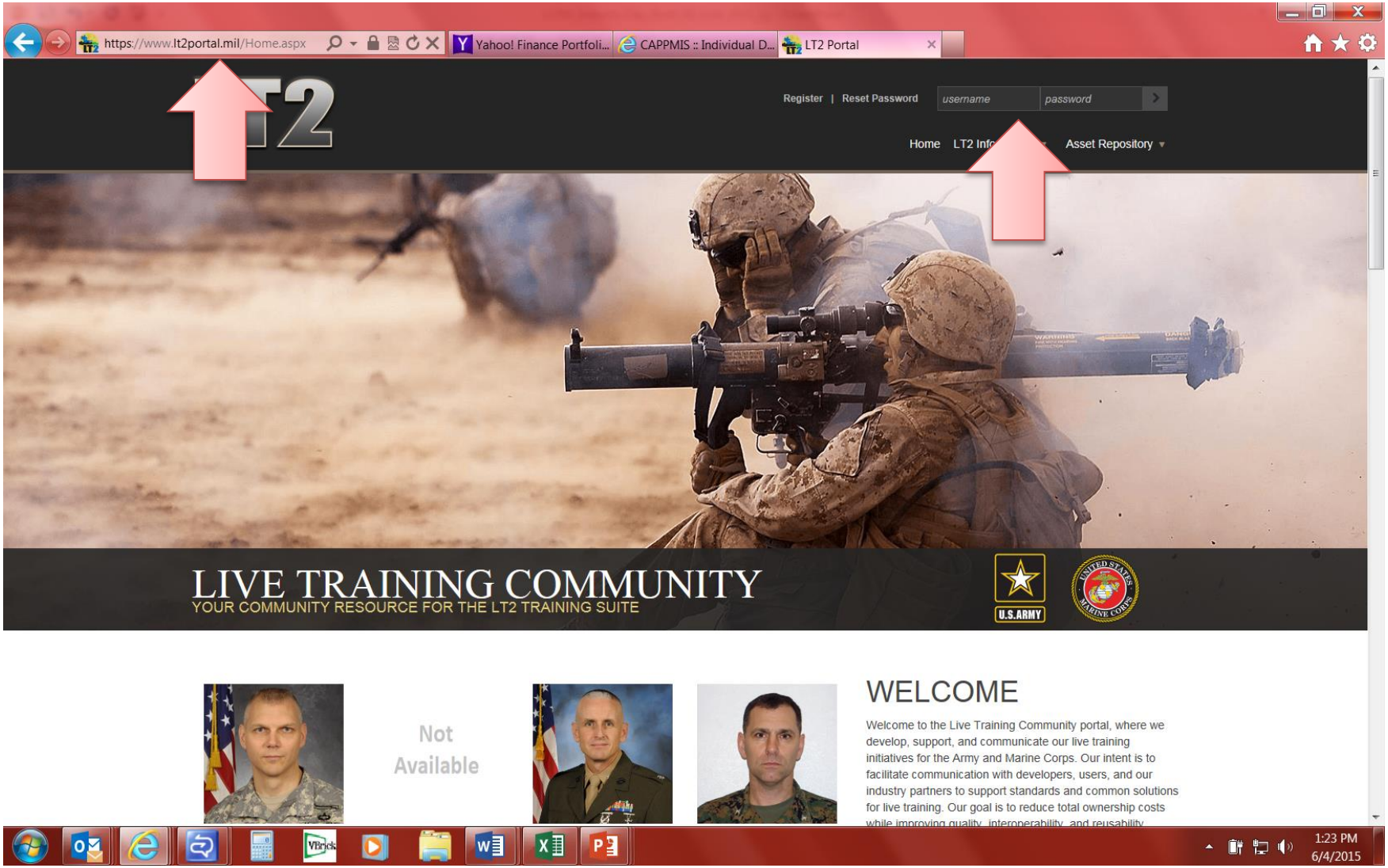
- Ceiling
  - Estimated to be ~ $400M
  - Originally projected at $100M
  - Multiple program inclusion resulted in increased ceiling projection

- Requirements Package Documents
  - Input from industry was incorporated into the Draft SOWs
  - Intent is to release SSN end of June with updated requirement documents

# LT2 Portal Access

Jim Griffith

# LT2 Portal - Reference Documents



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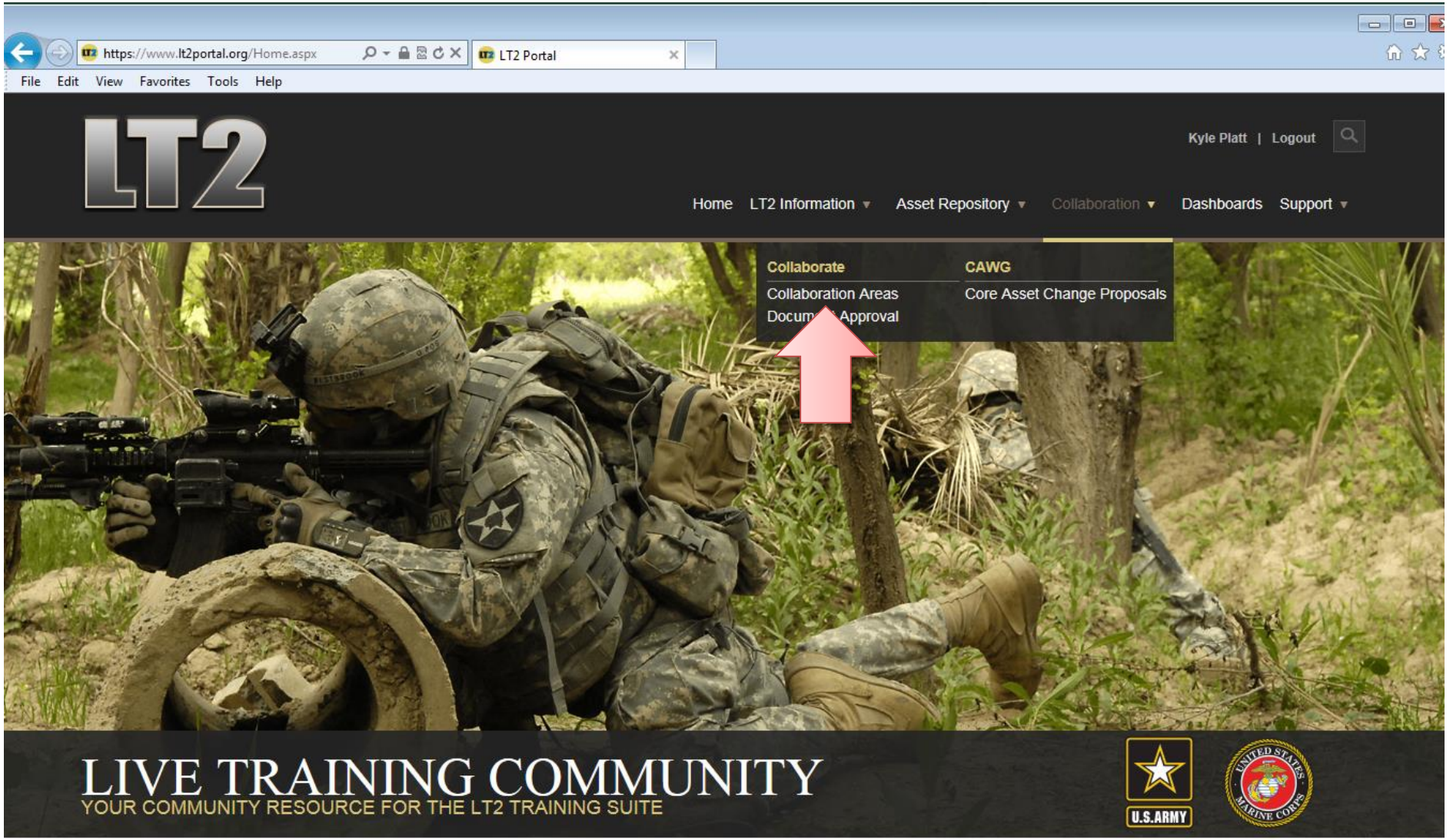

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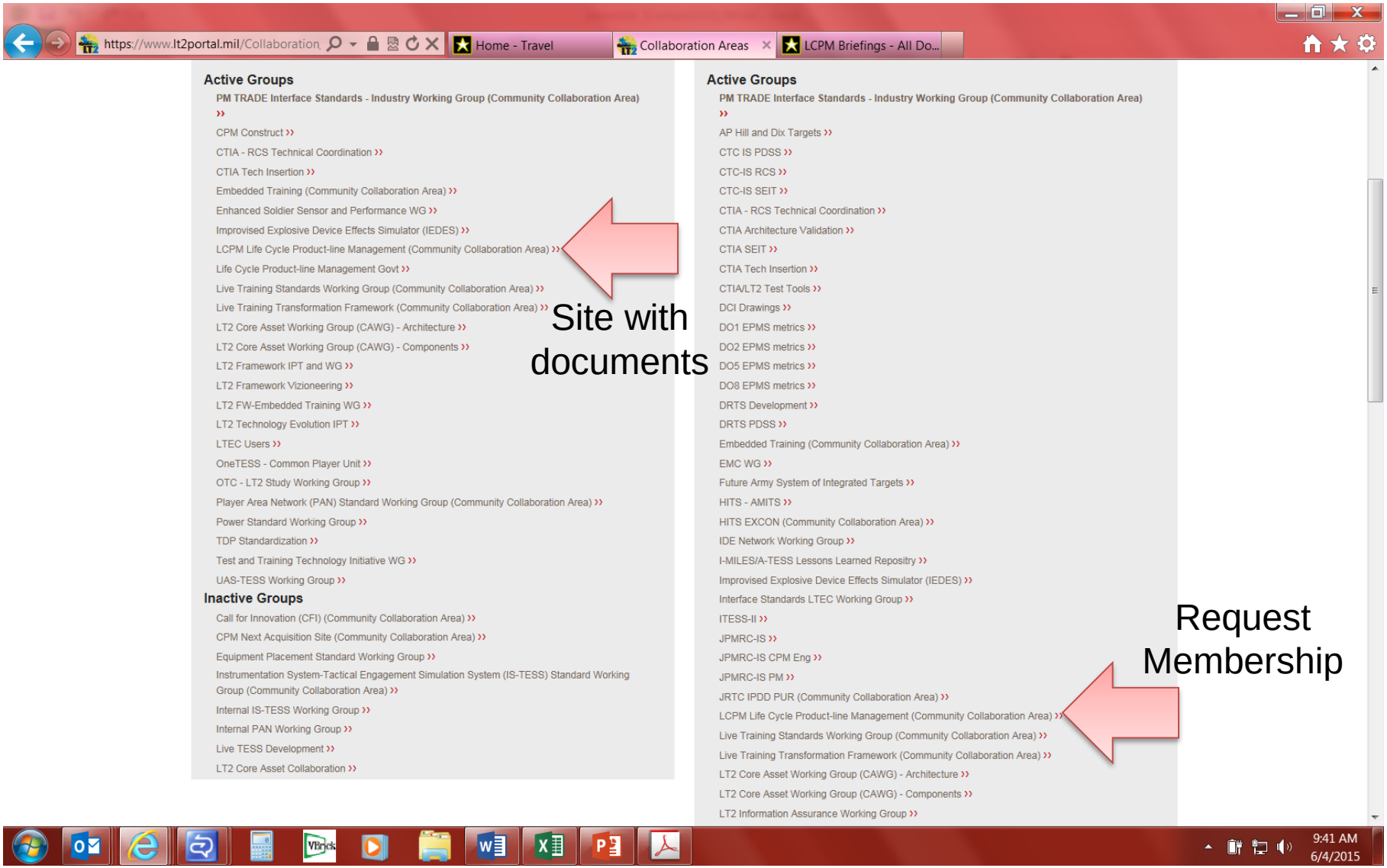
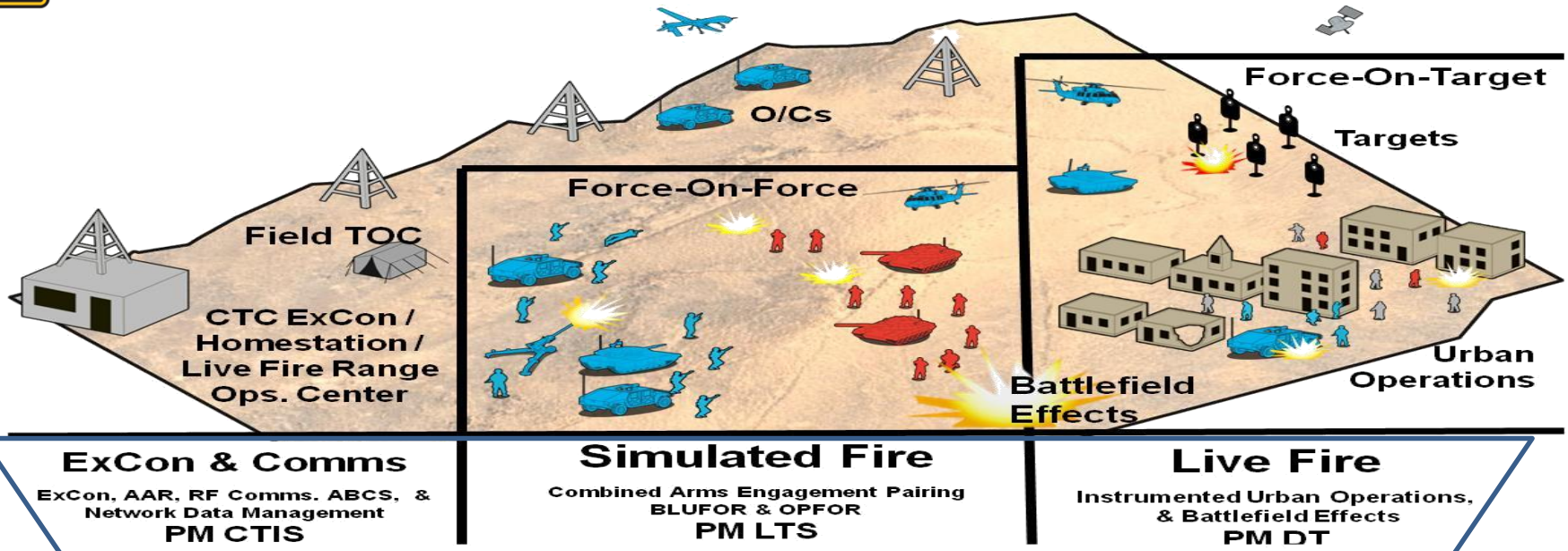


# Architectural Vision

# LT2 FTS Operational View - Current




**APM TRADE Consolidated Product-Line Management**

**Architectures, Common Components & Services, Standards & Processes**

**A-TESS** **CTIA/T-IS** **FASIT**

**LT2 Product-line**

**LT2 Enabling Framework**

| Instrumented Ranges | UOTS | CTC-IS | I-MILES | HITS | RISCon | Targets |
|---|---|---|---|---|---|---|

**Products & Programs**

Program integration to achieve required training systems capabilities

*Home-station/ Institution* — *Deployed*

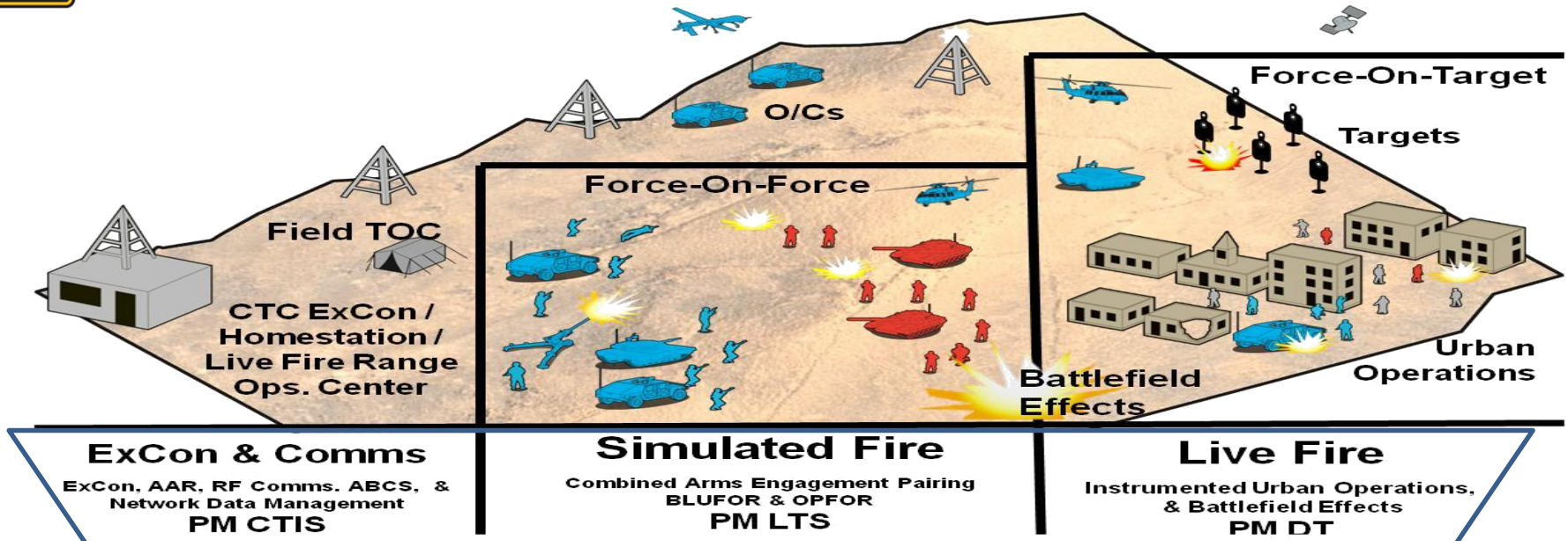
*NTC JRTC CTC JMRC 29 Palms*

**Family of Training Systems**

**Legend:**

CTC – Combat Training Center
NTC – National Training Center
JRTC – Joint Readiness Training Center
JMRC – Joint Multinational Readiness Center
CTIA – Common Instrumentation Architecture
HITS – Homestation Instrumentation System
I-MILES – Instrumented-Multiple Integrated Laser Engagement System
MC-ITS – Marine Corp – Instrumented Training System
A-TESS – Army-Tactical Engagement Simulation System
UOTS – Urban Operations Training System
FASIT – Future Army System of Integrated Targets

# LT2 FTS Operational View – with LCPM




**LT2 Product-line**

**LT2 Consolidated Product-Line Management**

**Architectures, Common Components & Services, Standards & Processes**

**A-TESS** **CTIA/T-IS** **FASIT**

**LT2 Enabling Framework**

Software and Hardware PLs

**Products & Programs**

**Instrumented Ranges** | **UOTS** | **CTC-IS** | **I-MILES** | **HITS** | **RISCon** | **Targets**

Program integration to achieve required training systems capabilities

***Home-station/ Institution*** ⟷ ***Deployed***

**Family of Training Systems**

***NTC JRTC CTC JMRC***

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**UOTS – Urban Operations Training System**
**FASIT – Future Army System of Integrated Targets**

# LCPM Goals and Concepts

# Live Training Standards

**Commonality**
- Reduces developmental cost
- Promotes reuse

**Modularity**
- Reduces lifecycle costs
- Improves Reliability, Availability and Maintainability (RAM)

**Nonproprietary**
- Promotes greater vendor diversity
- Maximizes industry involvement in
  - Technology agility
  - Product-line development
  - Providing training capabilities

**Interoperability**
- Live/Virtual/Constructive ITE – increases training opportunities and enhances each domain
- Joint service – train as we fight
- Test and Training – reduce costs

**Extensibility**
- Enables modernization and embedded training

**Accreditation**
- Improves flexibility in addressing system accreditation

**INDUSTRY PARTNERS**

**PEO STRI Live Training Standards Initiatives**
- Product Line Architectural Framework (PLAF)
- Common Training Instrumentation Architecture (CTIA)
- Future Army System of Integrated Targets (FASIT)
- Model-Based Systems Engineering (MBSE) SoS Architecture
- Player Area Network (PAN)
- Connectors/power
- Batteries
- Common message format
- MILES Communication Code
- Live Training Engagement Composition (LTEC)

Government and industry work together to establish live training standards to promote systematic reuse of software and interoperability solutions

# LT2 Initiatives

# What's Important

- Concept for establishing a HPL
- Technical management of the HPL through governance
- Approach for proactive obsolescence, failure rate and usage analysis
- Managing multiple DOs – able to begin implementation upon contract award
- Metrics showing benefit of HPL
- Approach for minimizing site down time
- Reduction in documentation costs
- Information Assurance - limiting the quantity of new accreditations, ensuring ease of transition to CPM, and incorporation of LT2 IA processes and procedures

# Draft Base SOW

# Requirements

- The Draft Base SOW for LCPM defines the scope and breadth of tasks that can be performed under the various envisioned efforts
  - Program Management
  - Engineering
  - Logistics
  - Information Assurance
  - HPL
  - LT2 Governance
  - CPM Next / WFF / ATMP Synchronization

# Program Management

| | |
|---|---|
| Technical Planning | Hardware Interface Management |
| Requirements Management | Hardware Configuration Management |
| Risk Management | CTR Strategy and Management |
| Technical Data Management | Hardware Obsolescence Management |
| Decision Analysis | Continuous LT2 Integration and Synchronization |
| Technology Forecasting | Metrics, Measurement and Tracking |
| Resource Planning and Management | Facilities Management |
| Integrated Product Team Management | Technical Reviews |
| Business Strategy | ***Hardware Concurrency and Upgrades Strategy and Management*** |
| Reuse Analysis | ***Disposal Management*** |
| LCPM Transition Planning | Training Development |

# Engineering

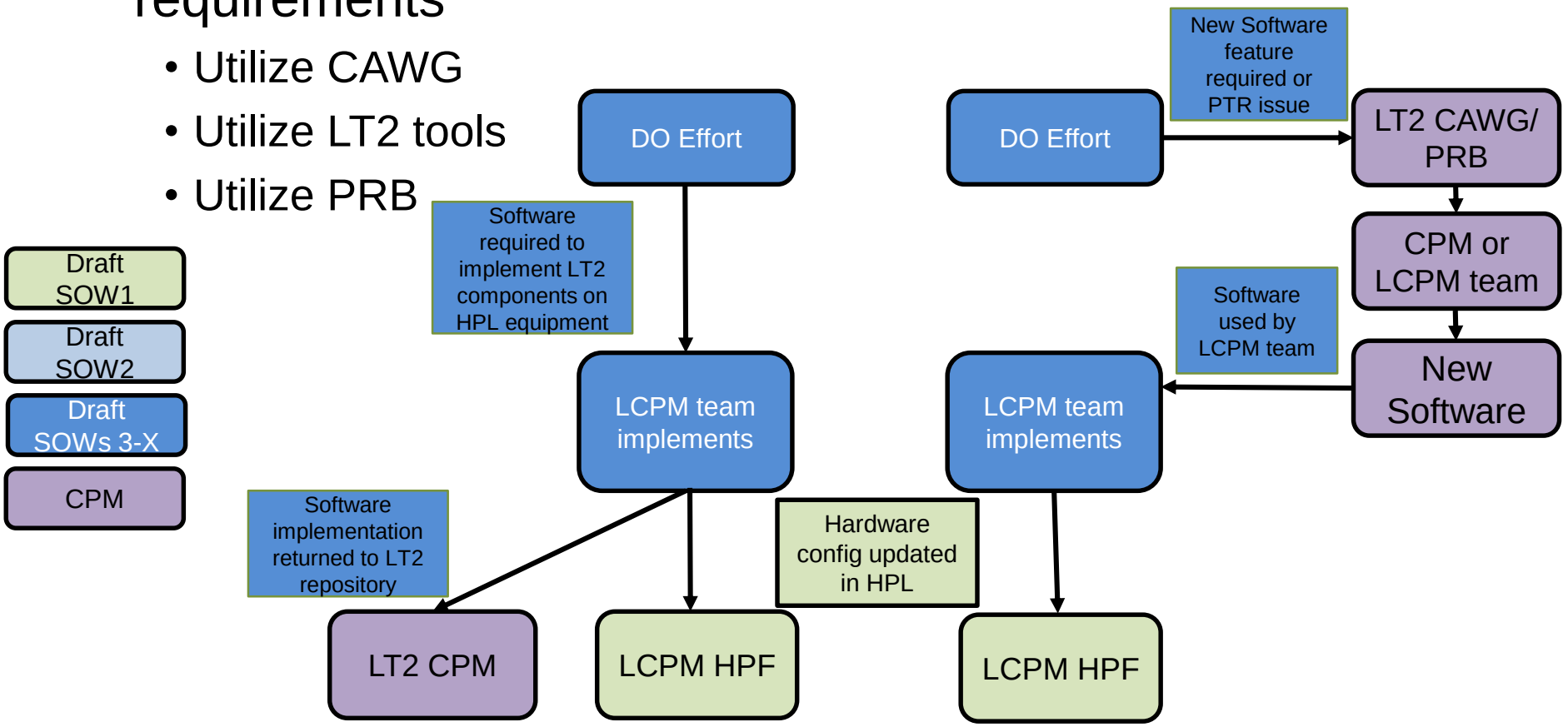
| | |
|---|---|
| Concept Development | Functional Analysis |
| Requirements Analysis | System Engineering |
| Continuous LT2 Integration and Synchronization | System Design |
| Prototyping | Software Integration |
| System Integration | Testing & Test Engineering |
| Fielding | Training |
| Verification Testing | Validation Testing |
| System Demonstration | Risk Management Framework (RMF) Testing and Certification |
| Hardware Configuration Management | Security Engineering |
| Trade Studies | Quality Engineering |

# Logistics

| | |
|---|---|
| Requirements Analysis | IUID Marking and Reporting |
| Post Production Support | Training Support Package |
| Test and Evaluation | Training and Support |
| Maintenance Actions | Training Facility and Equipment |
| Fielding plans | Reliability Analyses |
| Validation | Tools and Test Equipment |
| Verification | Facility Analyses and Summary |
| Supportability Analyses | Diagnostic Procedures |
| Repair Level Analyses | Repair Procedures |
| Commercial Off The Shelf Publications | Support Concepts |
| Technical Publications | Spares and Support and Test Equipment |
| Initial Spares and Repair Parts Lists | Logistics Database Management |
| Provisioning Parts List | Common and Bulk Items |
| Serial Numbers | Materiel Component List |
| Accounting Requirements Codes | Warranty Data |
| Baseline Drawing Revisions | Source, Maintenance, and Recovery Codes |
| Maintenance Planning | Supply Support |
| Site Support | Manpower, Personnel and Training |
| Transition Planning | Interim Contractor Support |
| Hardware Component Agreements | Interactive Maintainer Manuals |

# Software Development

- LCPM is envisioned mainly as a hardware development contract vehicle with minimal software development requirements
  - Utilize CAWG
  - Utilize LT2 tools
  - Utilize PRB

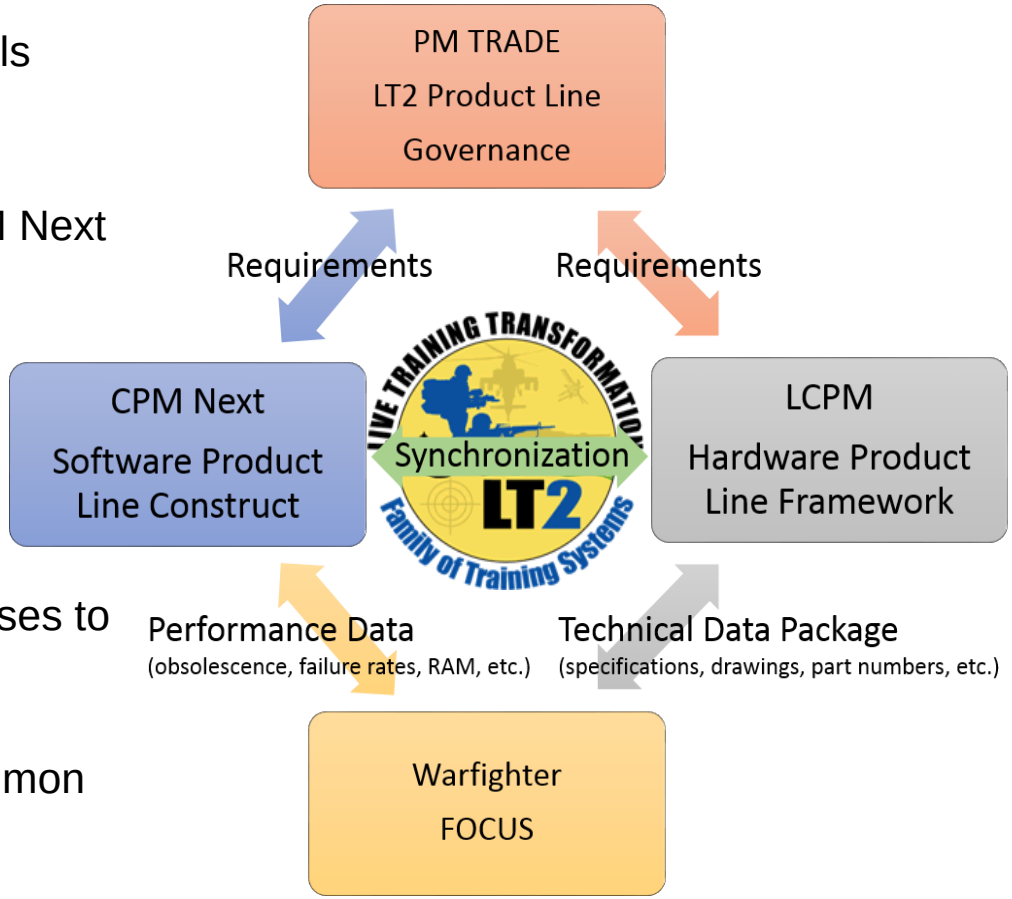


# LCPM Interoperability

- LCPM will work synergistically with CPM Next and WFF/ATMP
  - Data mining of WFF sustainment data
  - TDP repository, analysis tool usage/implementation & LT2 product-line expertise
- WFF/ATMP consumption data will be the true metric of future Life Cycle Management efficiencies enacted by LCPM and CPM-Next
  - Identify and alert back through system on obsolescence
  - HPL provides manual, TDP and other data to WFF/ATMP

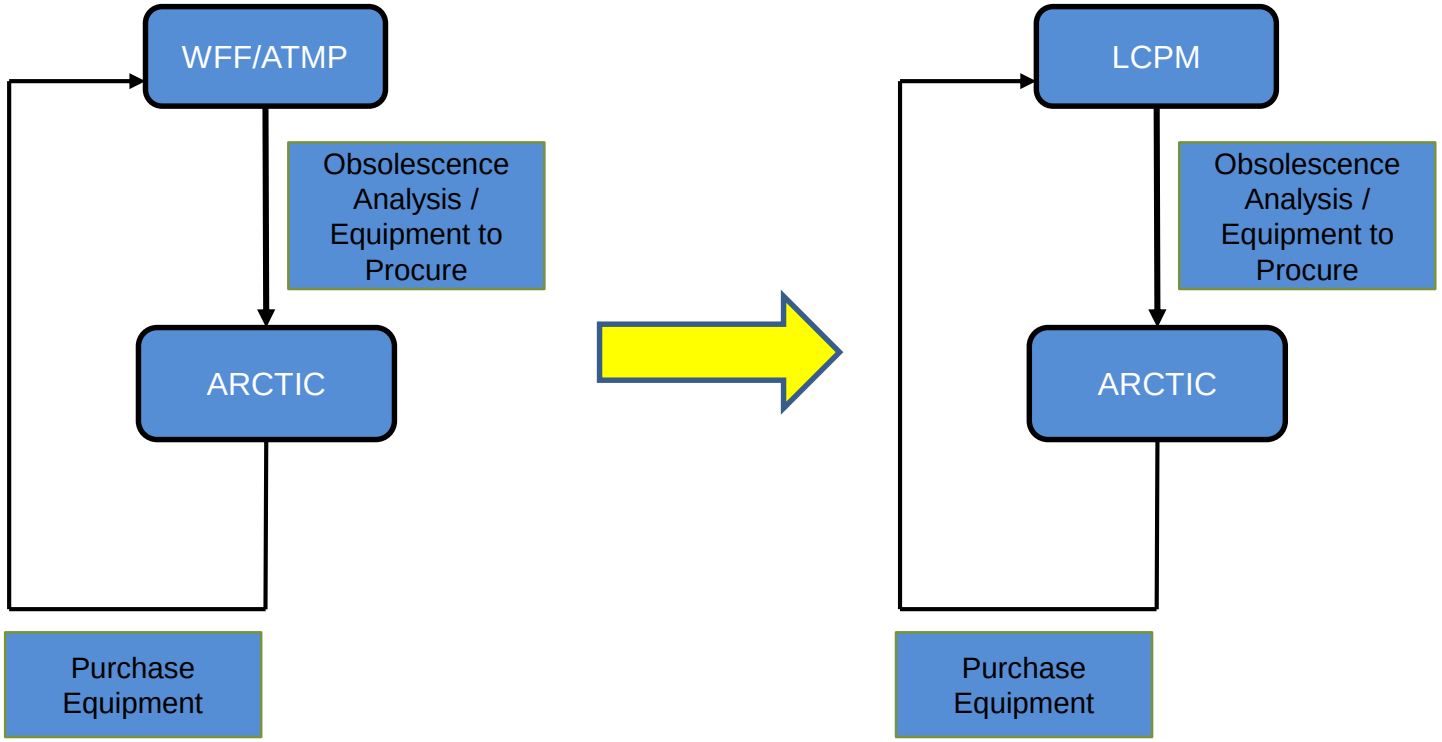
# LCPM Interoperability

- LCPM will leverage the lessons learned from the CPM contract and implement similar configuration management goals with an emphasis on hardware
- The contract will complement the CPM Next S/W P/L, utilize the LT2 Portal, and leverage/enhance the existing LT2 governance process and tools
- LCPM will provide 3 main things for PM TRADE:
  - The tools, procedures, and processes to develop and manage a Hardware Product-line (HPL)
  - A HPL to migrate programs to common H/W components
  - A contract vehicle for live training systems to perform life cycle management while focusing on the HPL



# ARCTIC Interoperability

- ARCTIC remains as the contract to procure equipment for ATMP (one to one replacement) and LCPM (larger scale CTR) for the CTCs



# Information Assurance

## Graham Fleener

# Information Assurance Concepts

## Initial IA Compliance

- ✓ Ensure initial IA compliance for any components, infrastructure, or systems fielded by LCPM contractor
- ✓ Support various accreditation types:
  1. Standalone
  2. Closed Restricted Networks
  3. Global Information Grid (GIG) Connected
- ✓ Utilize lab environment to support certification testing, when feasible

## Transition IA package to CPM

- ✓ CPM is responsible for IA sustainment
- ✓ Support various accreditations:
  1. Standalone
  2. Closed Restricted Networks
  3. Global Information Grid (GIG) Connected

## Limit new accreditations

- ✓ Work with program team to limit and potentially reduce the number of accreditations PM TRADE supports
- ✓ Each new accreditation and system baseline requires individual annual reviews and reaccreditations
- ✓ Demonstrate an innovative means of meeting this requirement to include hardware and software commonality, leveraging current accreditations

## Leverage LT2 IA processes

- ✓ Work with CPM team to leverage current LT2 IA processes, procedures, and risk profiles
- ✓ Maintain consistent IA process across PM TRADE product line

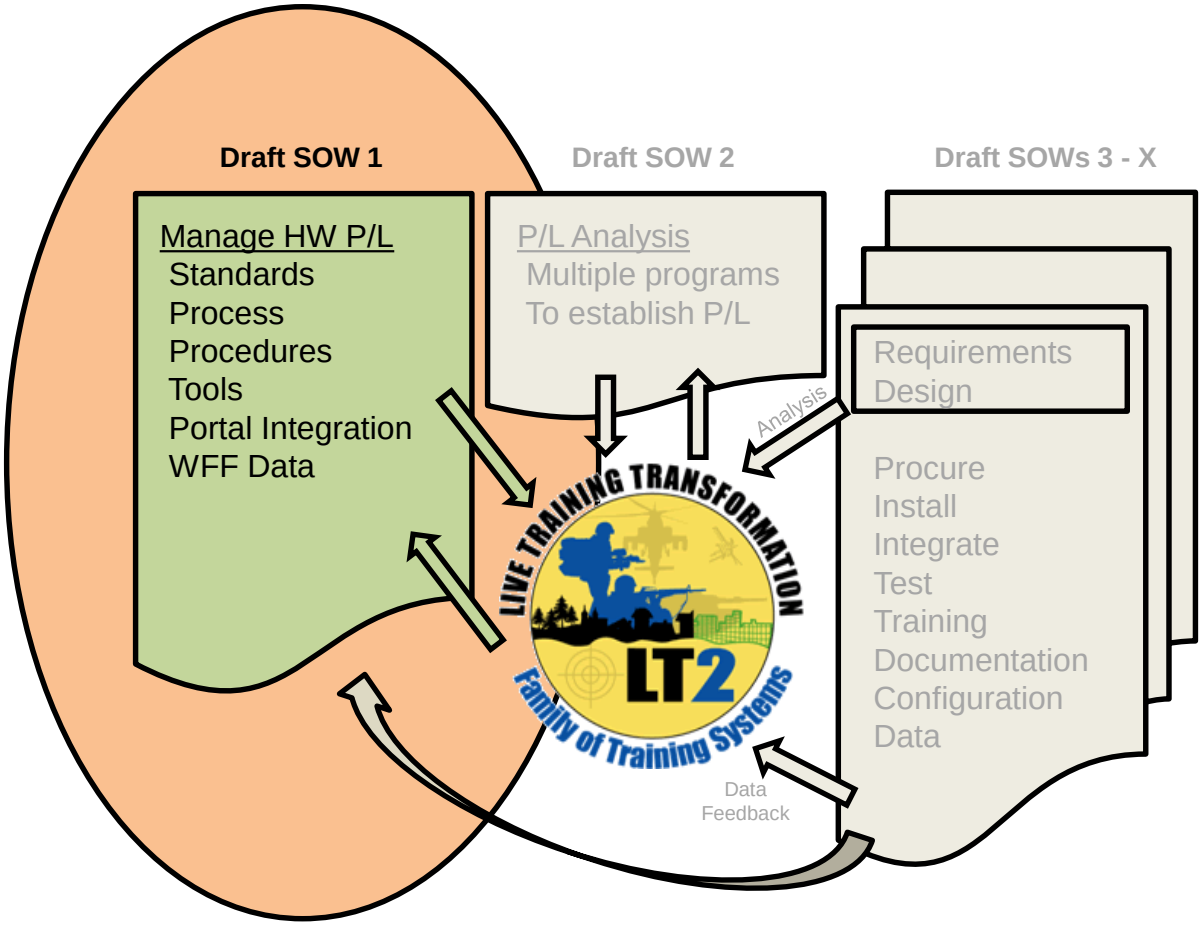
## Assist with transition to RMF

- ✓ Assist with creating efficiencies to support the transition from DIACAP to Risk Management Framework
- ✓ RMF increases assessment and compliance procedures
- ✓ DoD 8500.2 IA controls are transitioned to NIST 800-53
- ✓ 149 controls increases to 310 controls and 1376 assessment procedures

# Draft SOW 1

Jeremy Lanman

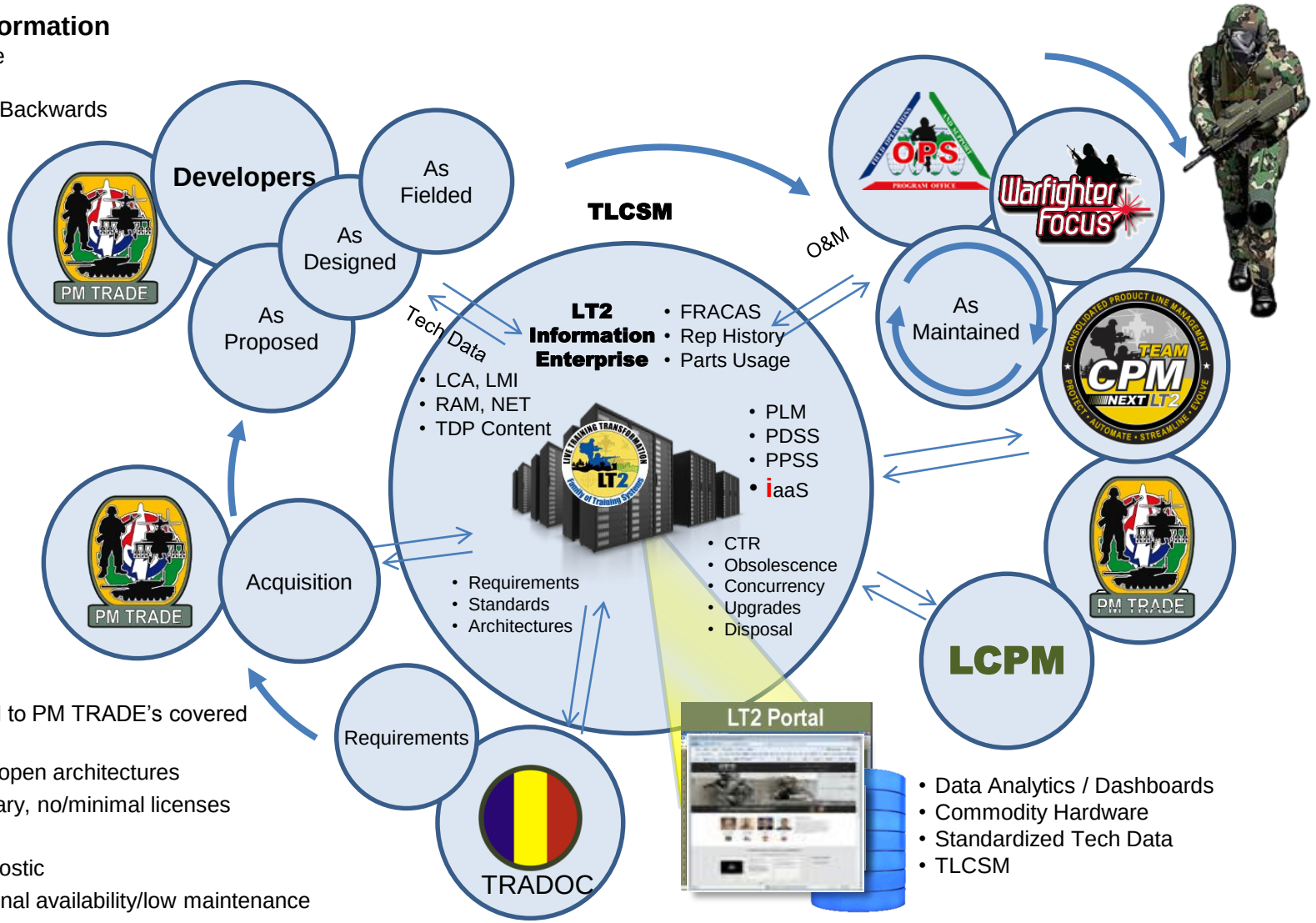
# Draft SOW 1


Draft SOW 1
Draft SOW 2
Draft SOWs 3 - X
Manage HW P/L
Standards
Process
Procedures
Tools
Portal Integration
WFF Data
P/L Analysis
Multiple programs
To establish P/L
Requirements
Design
Procure
Install
Integrate
Test
Training
Documentation
Configuration
Data
Analysis
LIVE TRAINING TRANSFORMATION
LT2
Family of Training Systems
Data
Feedback

# Draft SOW 1 – Hardware Product-line Framework (HPF)

**Actionable Information**

- What / Where
- Status
- Forward and Backwards Mapping
- Scheduling
- Impacts
- Costs



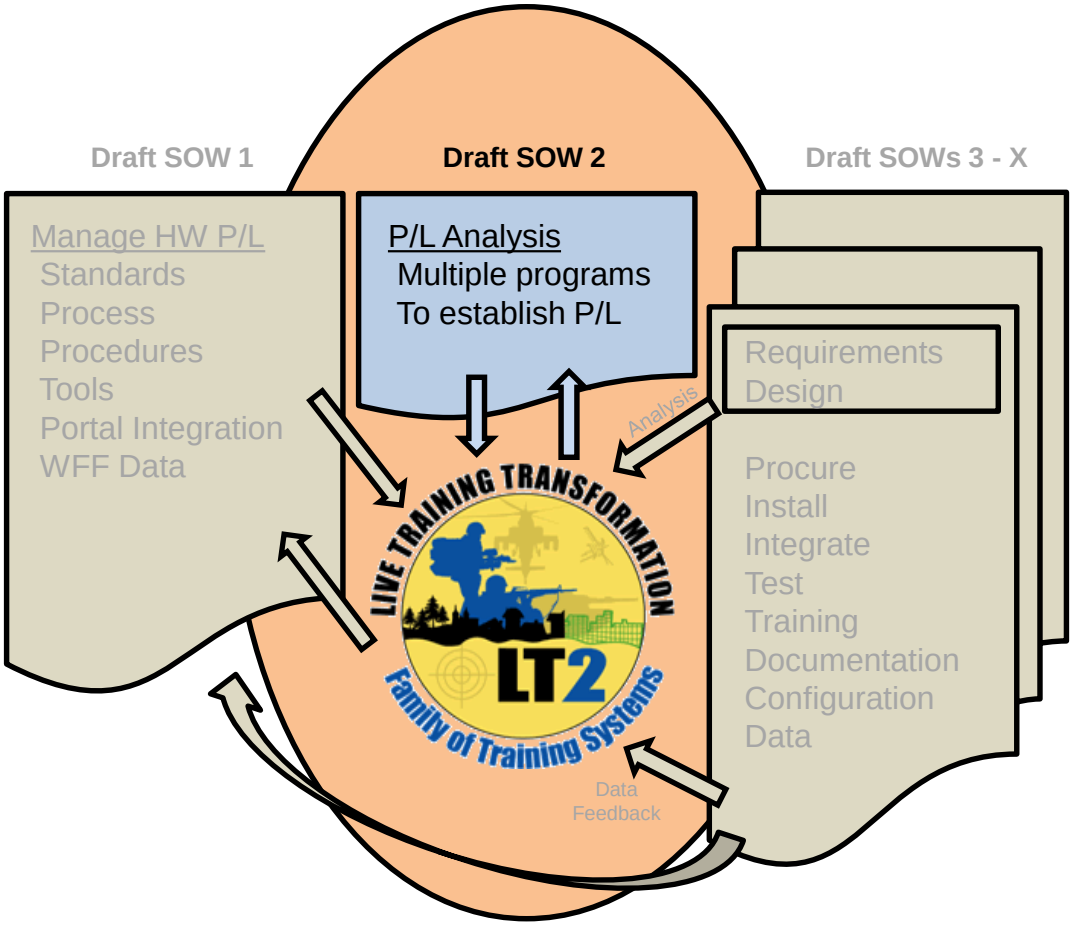

**Vision**

- Scope limited to PM TRADE's covered systems
- Modular and open architectures
- Non-Proprietary, no/minimal licenses
- P/L approach
- Software agnostic
- High operational availability/low maintenance
- Reduction in IA accreditation costs

# Draft SOW 2

Jeremy Lanman

# Draft SOW 2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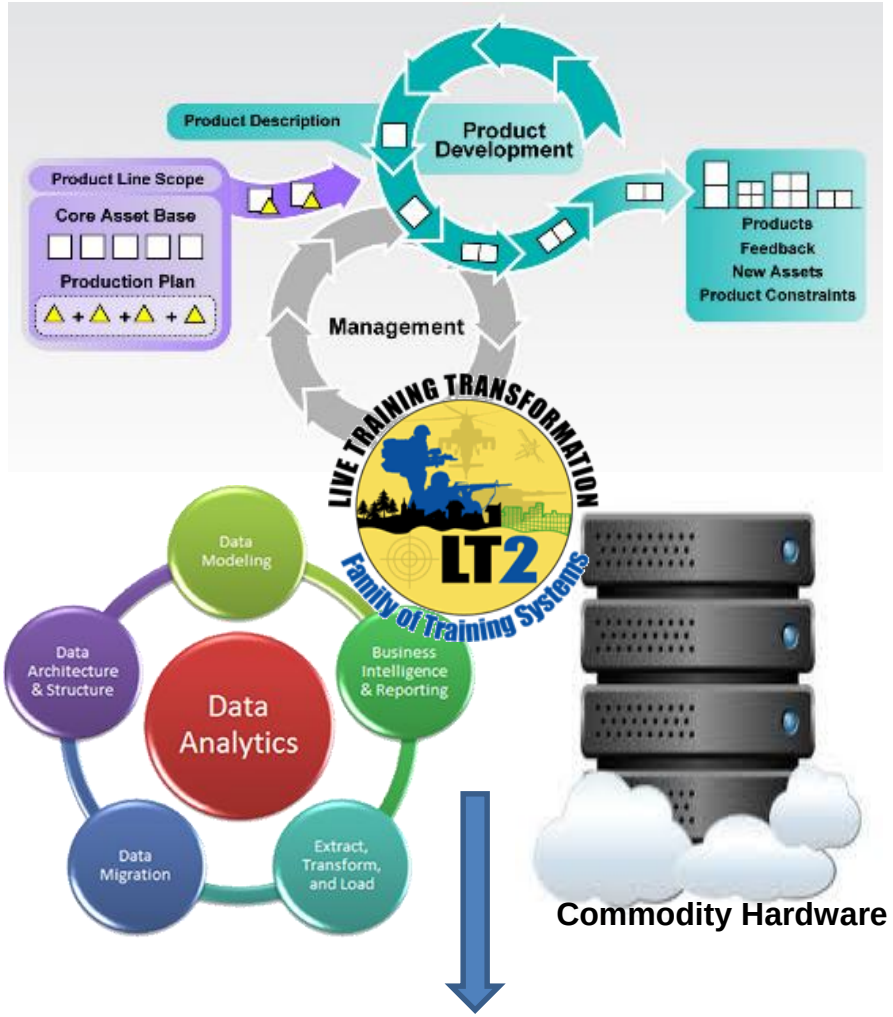
# Draft SOW 2 – Hardware Product-line Instantiation (HPI)

- Goals & Objectives
  - Analyzing current systems and future objectives
  - Analyzing the current system implementation
  - Developing the definition of a commodity HPL that will satisfy PM TRADE's performance requirements
  - Establishing a centralized/distributed capability to accommodate multiple fielded systems and to lower the amount of IT resources required to operate the systems
  - Synchronizing with established LT2 processes and standards as defined on the LT2 Portal (www.lt2portal.mil)
  - Providing a technical methodology to be used across future delivery orders as a guide to making HPL decisions

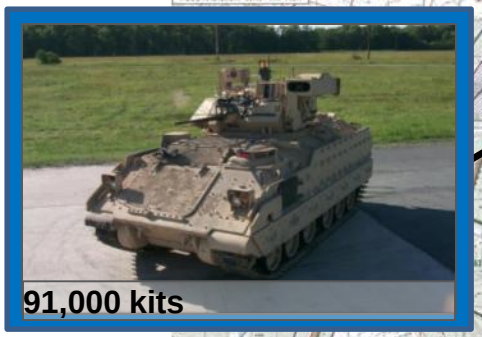
**PM TRADE Business Goals**

- Reducing operational cost & complexity
- Aligning & supporting product development (common standards, interfaces, etc.)
- Enhancing soldier training
- Reducing sustainment & development costs
- Increasing technology agility
- Leveraging other Army systems and Commercial Off the Shelf (COTS) technologies, and aligning to Army Common Operating Environment (COE), mobile computing, and distributed computing strategies




**Feeds HPF**

# Live Training at Home Station Today




I-MILES

Shoot House Systems

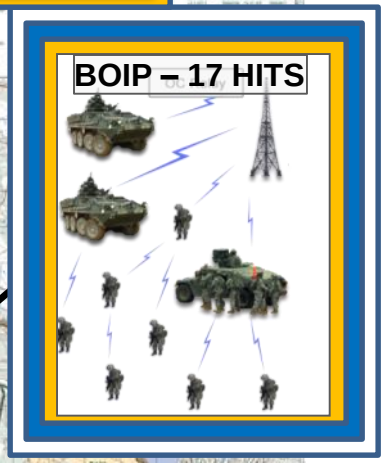
DRTS Systems

LIVE FIRE AREA

CACTF Systems

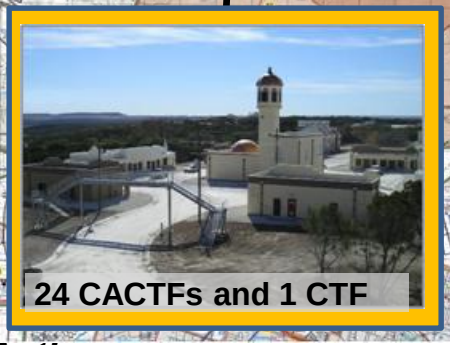
IMPACT AREA

HITS Systems



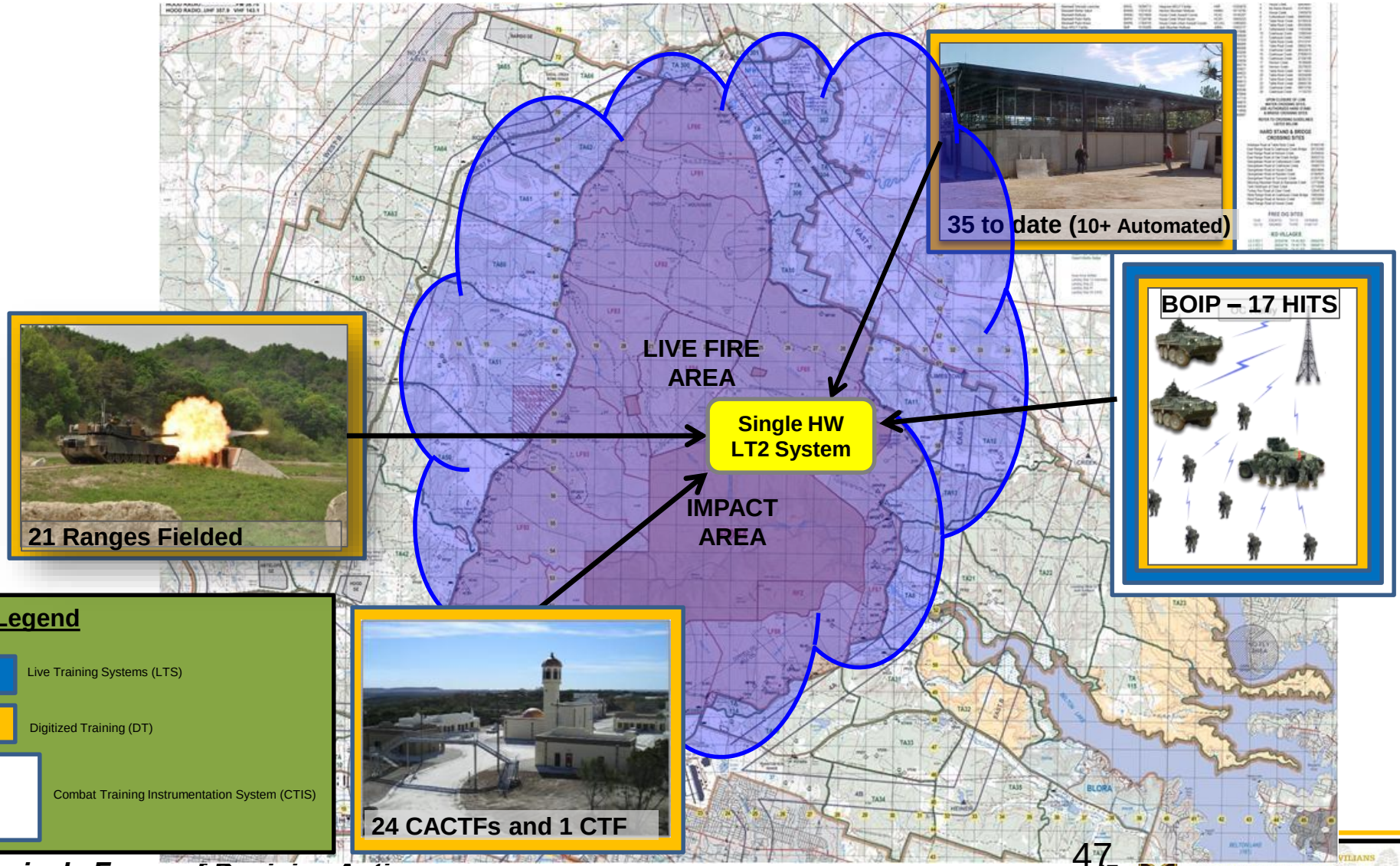

**Legend**

- Live Training Systems (LTS)
- Digitized Training (DT)
- Combat Training Instrumentation System (CTIS)




I-MILES

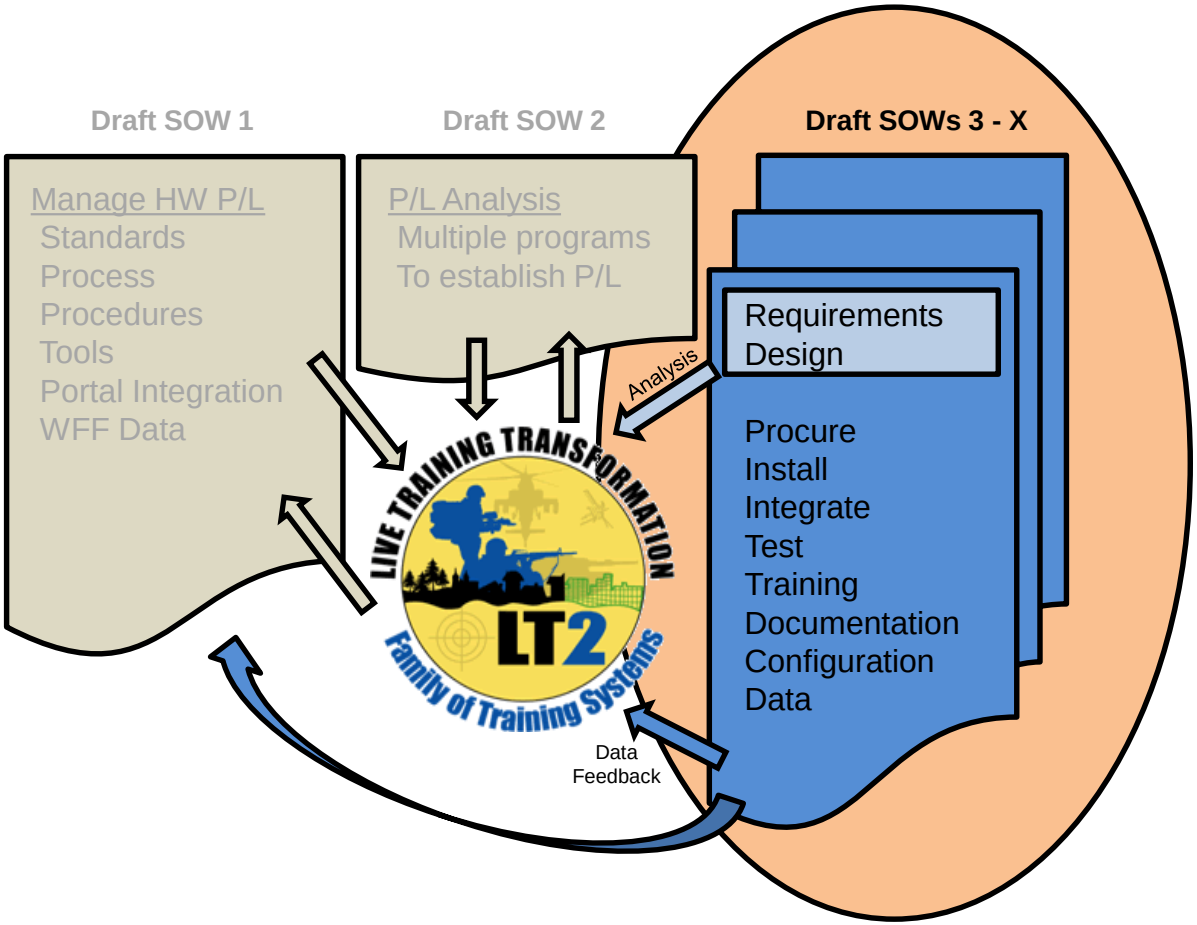
# Example LT2 Initiative Impacts at Home Station



# Draft SOWs 0003 - X

Michael Craven

# Draft SOWs 0003 - X



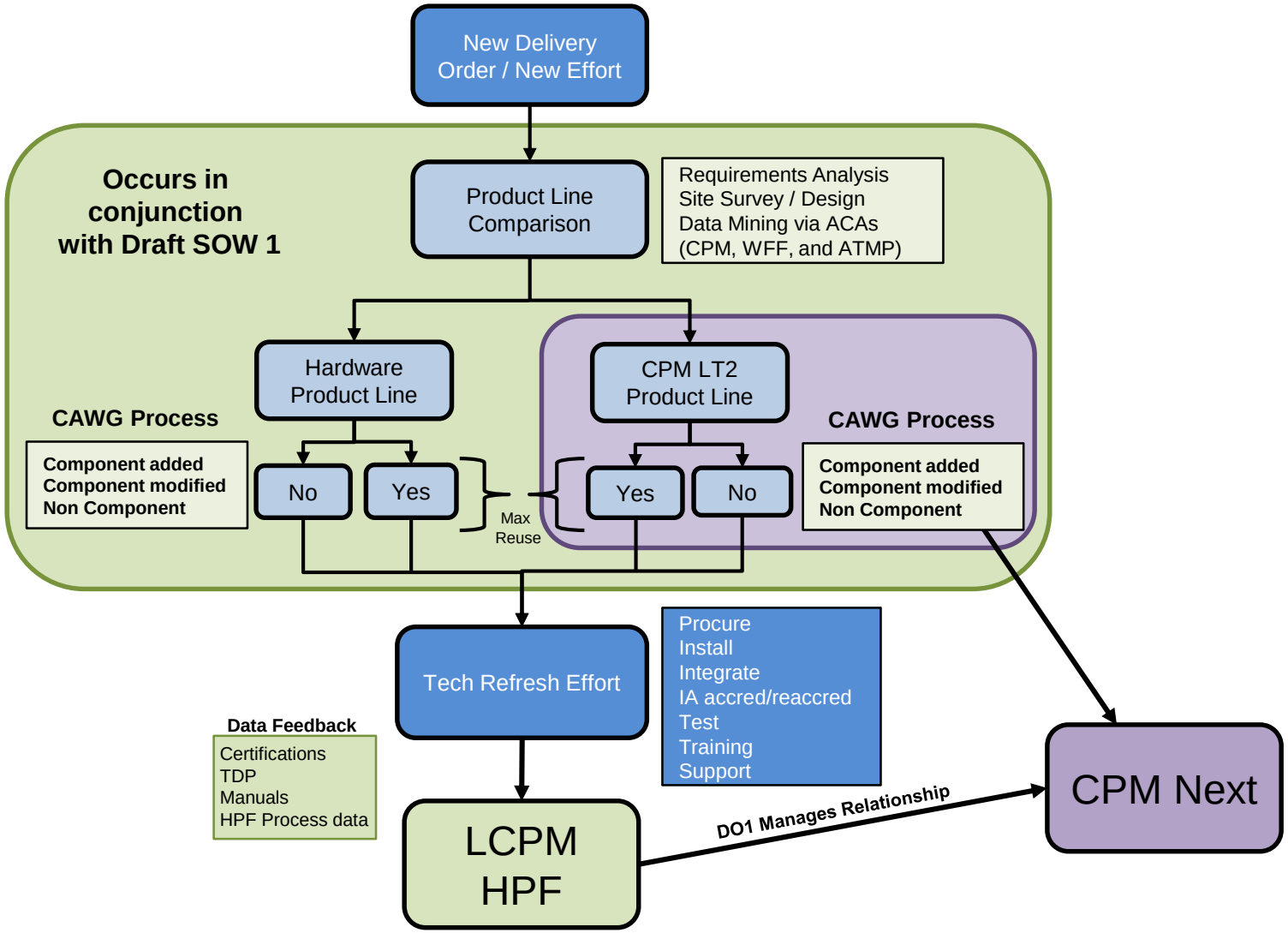
# Draft SOWs 3 - X

- Subsequent efforts (3 - X) will be utilized by the programs to award Delivery Orders for specific efforts
- Each effort will have a unique SOW that will utilize the Draft SOW 1 functions/tools to provide an analysis for impact and application to the HPL as well as providing feedback via the LT2 portal
- Draft SOWs 3 – X will encompass the phased implementation of the developed Hardware Component Agreements (HCAs)

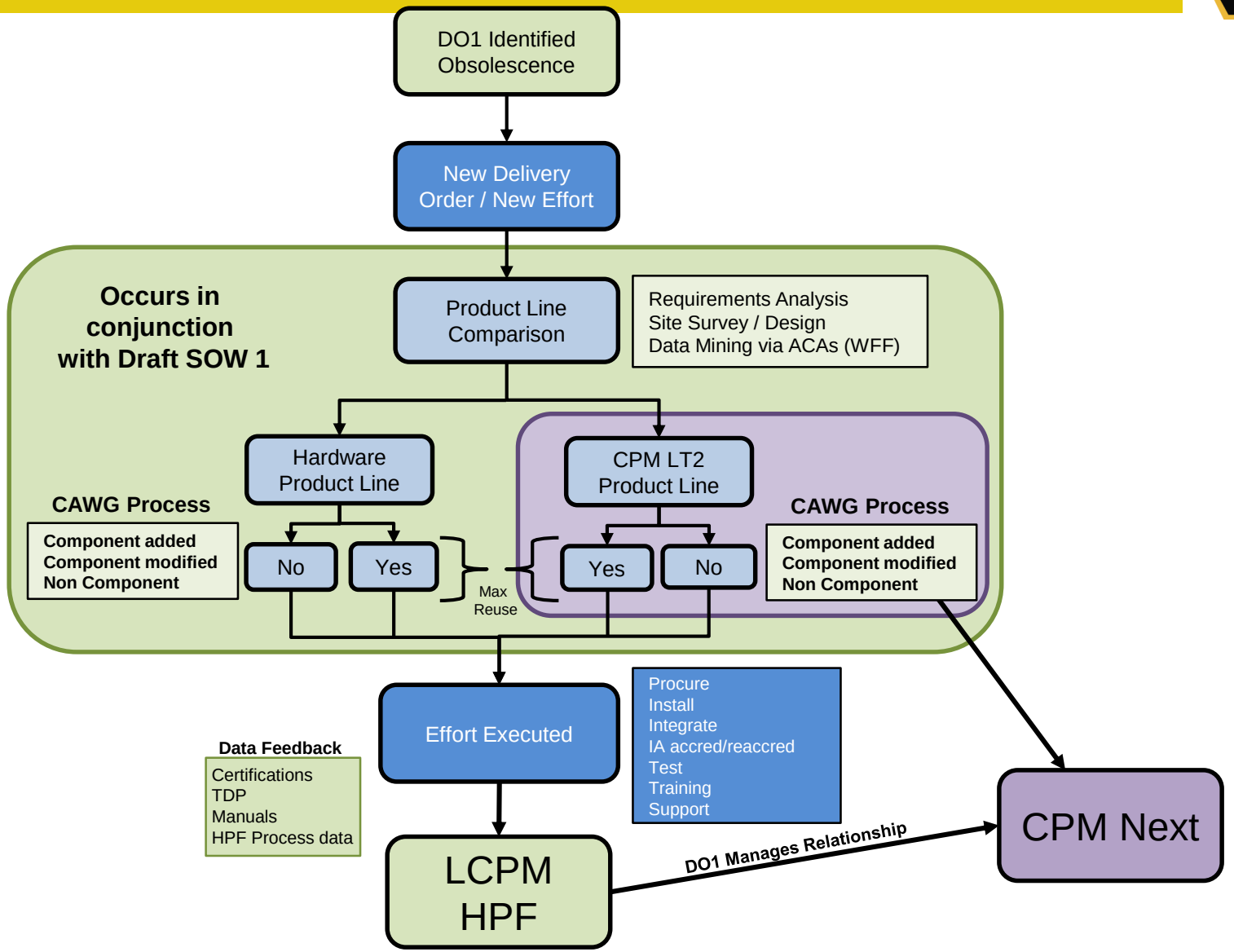
# Potential Users

- Digital Range Training Systems (DRTS)
- Integrated MOUT Training Systems (I-MTS)
- Targetry Range Automated Control and Recording (TRACR)
- Homestation Instrumentation Training System (HITS)
- Joint Pacific Multinational Readiness Capability–Instrumentation System (JPMRC-IS)
- Combat Training Center-Instrumentation System (CTC-IS)
  - National Training Center (NTC), Joint Readiness Training Center (JRTC) and the Joint Multinational Readiness Center (JMRC)
- US Marine Corps or other users

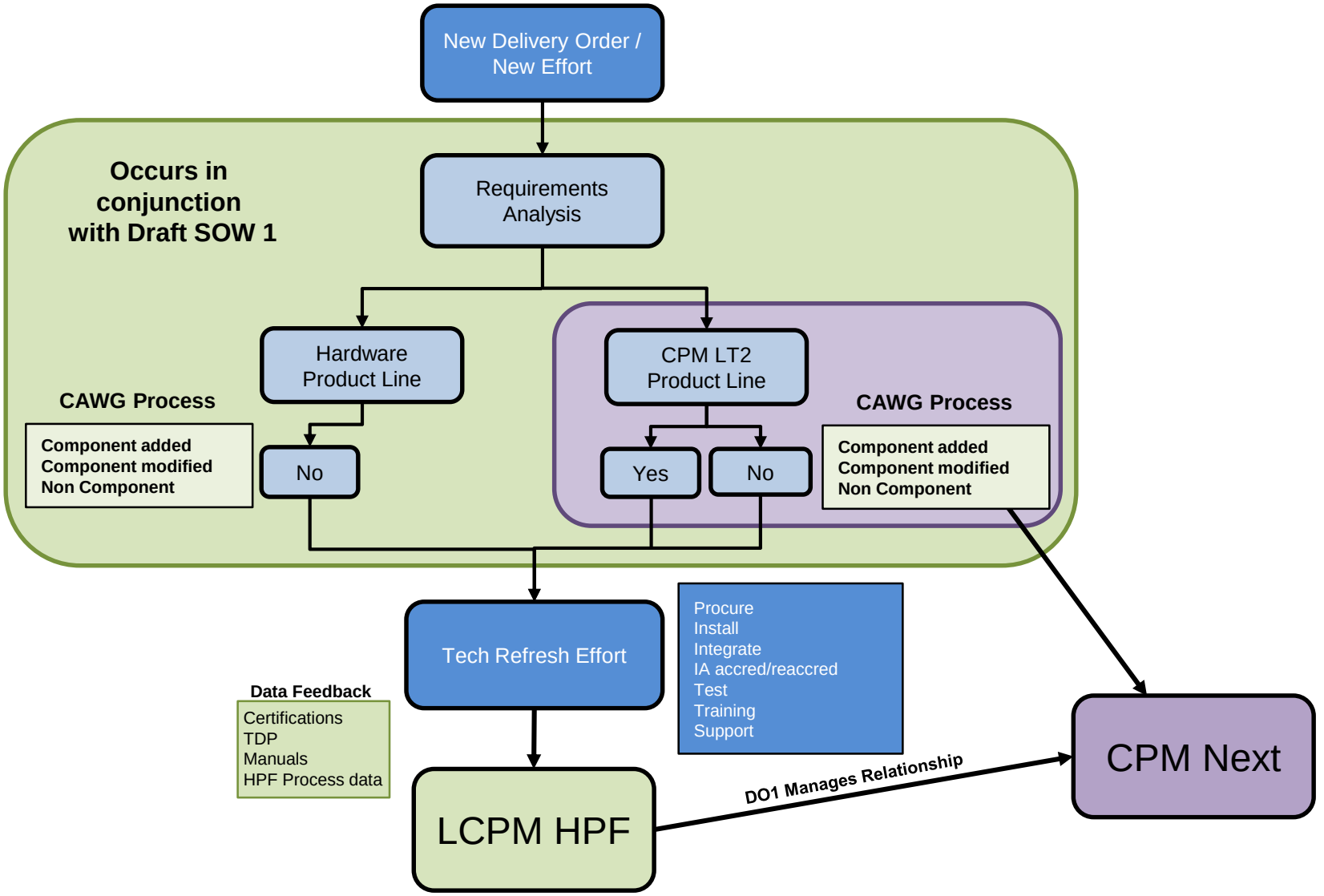
# CTR / Concurrency Flowchart



# Obsolescence Flow Chart



# Technology Insertion Flow Chart



# Draft SOW 3 Specifics

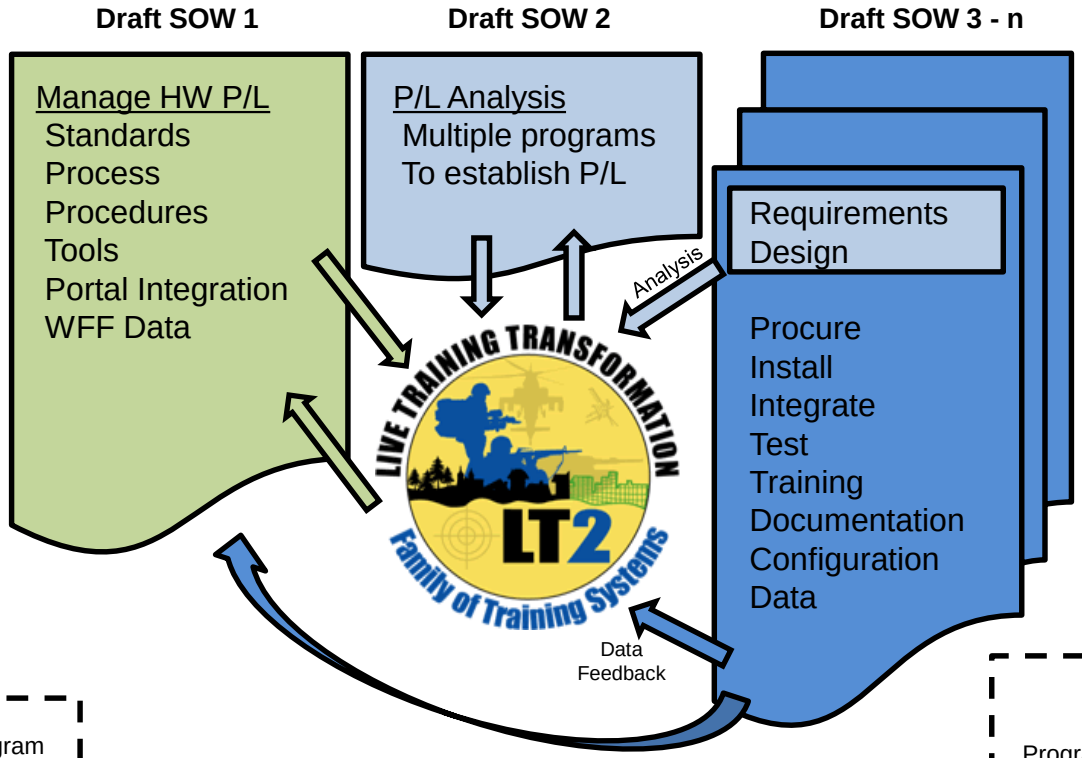
- Continuous Technology Refresh (CTR) for the Integrated Military Operations on Urbanized Terrain (MOUT) Training Systems (I-MTS) program
  - Combined Arms Collective Training Facility (CACTF/ CTF)
  - Shoot House (SH)

# Draft SOW 3 Implementation

- SOW and Technical Specification provided in the RFP
- Anticipated One CACTF CTR location will be identified by the Government for a TBD site as part of the RFP
  - Data package provided
    - Pictures
    - Inventory / WFF data
    - Requirements
  - Location will be made available to contractors for a single combined site survey
- Potential additional sites within the Draft SOW 3

* The above is the Governments current vision for the first program delivery on LCPM and is subject to change*

# Anticipated Execution Methodology

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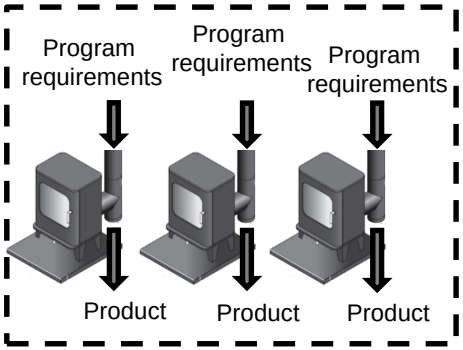
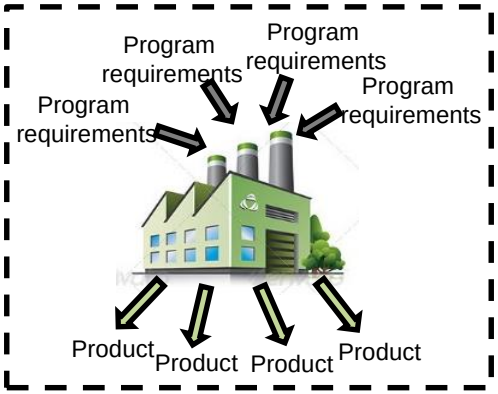



LCPM



# Wrap-up

Thai Nguyen

# Summary

- One-on-one sessions are scheduled for the next 3 days
  - Partnership 2, Room 210
  - Start at 0800 – time slots have been assigned
  - Potential one on one discussion points have been provided in FBO posting for this industry day
  - Request feedback on the draft SOWs and proposed methodology
  - Responses/comments to Industry Day due June 18
  - Send to Thai Nguyen thai.h.nguyen2.civ@mail.mil or Jason Holden Jason.n.holden.civ@mail.mil
  - Will be incorporated into Sources Sought (Anticipate release of Sources Sought Announcement approximately 22 June)
- What's important
- Want to hear from the industry about their capability and experiences in meeting these requirements

Questions?