



EO STRI



Multinational Standardization of Live Training Solutions

U.S. Army Program Executive Office Simulation,
Training & Instrumentation / Project Manager
Training Devices

and

Defence Equipment & Support, Training &
Simulations Systems Programme

ITEC 2013



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Vision



The American Army and British Army must be able to accomplish live training rapidly, effectively, and efficiently to meet mission requirements in peace, crisis, and war.

To that end, PEO STRI / PM TRADE and TSSP seek to identify potential collaboration opportunities that might inform and influence Training Systems acquisition decisions for both nations.



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Agenda



PEO STRI and TSSP Perspectives on...

- Acquisition Models
- Standardization
- Implementation Models
- Live Training Capability & Technology Gaps
- Interoperability Considerations



Acquisition Models: a PEO STRI Perspective



- Total Life-Cycle Systems Management (TLCSM)

- a system development approach of managing a system from inception to disposal
- Program Manager (PM) is the single point of accountability for accomplishing program objectives for TLCSM

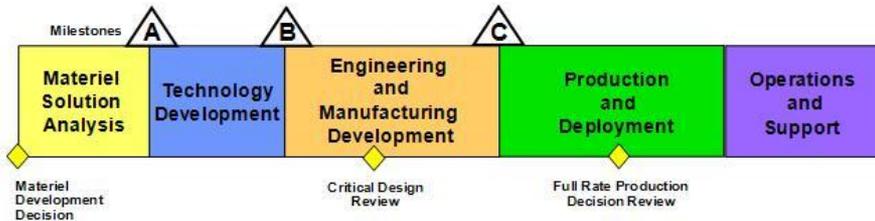
- Performance Based Services Acquisition (PBSA)

- a system that is owned, operated and maintained by the contractor with government oversight and approval



PEO STRI has a program within its portfolio that is a long-term, contractor-provided simulation service consisting of

simulators, reconfigurable collective training devices, and a training support & management oversight capability



- Supports collective training, interoperability & standardization
- Influences industry business models & technology
- **Process can be time consuming and cumbersome**

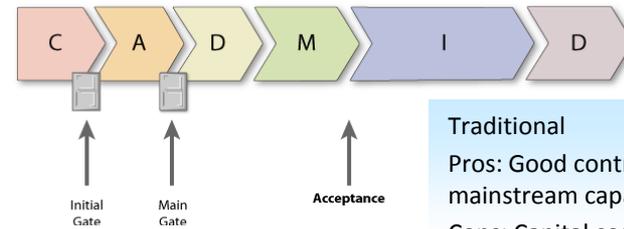
- Provides on demand or turnkey capability quickly
- Less bureaucracy & fewer acquisition hurdles (i.e. maintenance, tech concurrency, L/C support, etc.)
- **Interoperability between capabilities difficult**



Acquisition Models: a TSSP Perspective



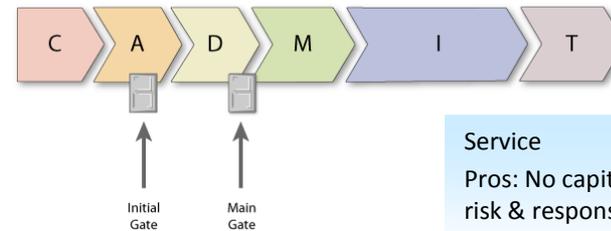
- Many TSSP acquisitions follow a modified traditional model based upon systems availability demands
 - TSSP buy kit it, loan it to a contractor, they support it and provide services to the Army with it
 - Dispose of it at the end
- Some recent TSSP acquisitions use a “full service” approach
 - TSSP spec what effect wanted, when & where, expect a contractor supply & support their kit plus provide a service to the Army with it.
 - Terminate when done
- Which is “Horses for Courses”, determined by value for money considerations informed by Investment Appraisal & dependent upon factors including:
 - Anticipated longevity
 - Available funding
 - Other resources
 - Involvement by “others”



Traditional

Pros: Good control, use as needed, ideal for mainstream capability

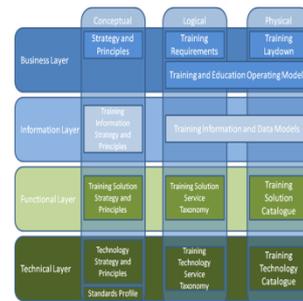
Cons: Capital costs, full risk & responsibility



Service

Pros: No capital expenditure, transferred risk & responsibility, suitable for a share !

Cons: Potentially higher TLC, less flexibility



DTEC Enterprise Architecture will be consistent with Systems of Systems Approach (SOSA) Domain Approach and Defence Information Reference Model (DIRM) 12 box model

At the enterprise level, future UK acquisitions seek to adopt a “Pan Defence” approach – the Defence Training and Education Capability (DTEC) Architecture aims to support enterprise decisions to achieve value for money and underpinned by: conformance to agreed standards; commonality & re-use of data, models and platforms; via consistent, enduring, accessible, agile and adaptable solutions using open system plus clearly identified test and evaluation requirements



Standardization a PEO STRI Perspective



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



PEO STRI Live Training Standards Initiatives (sample)

- 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

Government and industry work together to establish Live Training standards to promote systematic reuse of software and interoperability solutions



Standardization: a TSSP Perspective



In support of the DTEC Programme, a **Defence Training & Education Capability Modelling & Simulation Standards Profile (DMSP)** exists & is published

DMSP is designed to be aligned to the **NATO M&S Standards Profile** but tailored to suit the specific requirements of the MOD and to promote interoperability more

Its purpose; to stress the importance of, and guidance in the selection of standards in M&S for the acquisition, development and management of training systems across defence.

DMSP is intended to cover all M&S standards of relevance to DTEC and is designed to provide benefit to the MOD, Industry and Academia. It is **not** intended to provide implementation guidance which is deemed project business.

Generic Vehicle Architecture (GVA)

- Industry and Government Group
- Appended & embedded training systems will adhere to a common interface
- Currently working on Tactical Engagement Simulation and Life Fire Monitoring Equipment projects within TSSP

Land Training Architecture (LTA)

- Pilot enterprise architecture for one environment (Land) under the DTEC Enterprise Architecture.
- Covers all land training and education
- Will apply to future TSSP acquisitions

The MOD, TSSP and wider defence community recognises that common modelling & simulation standards are required to address issues including communications, interoperability, costs control and re-usability



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Implementation Model: a PEO STRI Perspective



LT2 Product-Line Nonrecurring Engineering (NRE)

Assessment

Initial Investment into Product-Line

Return on Investment

Additional NRE

Investment Leveraging the Product-Line

Today

2nd Generation Product-Line

Training as a Service (TaaS)

The "Cloud"

Benefits

Configuration Control

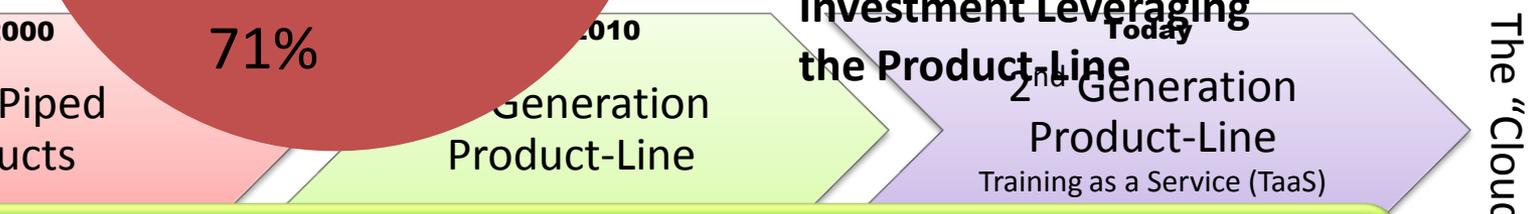
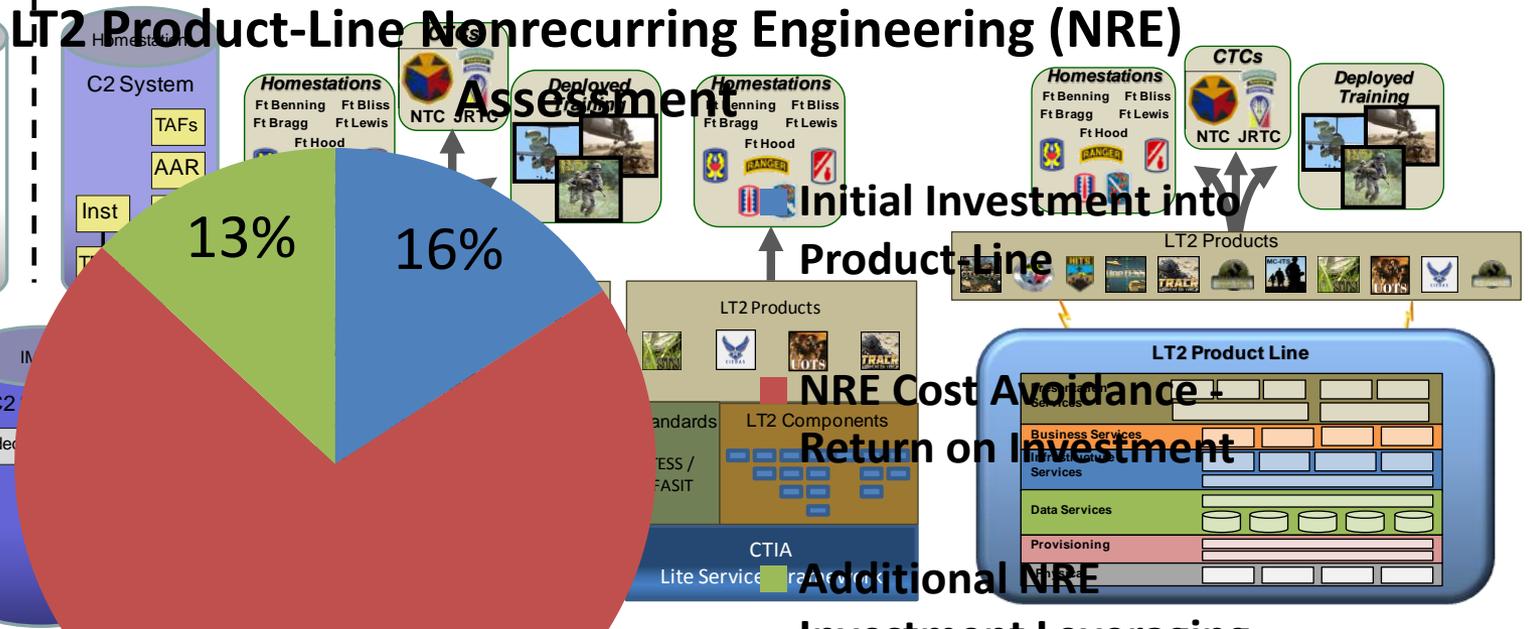
Improved TLCSM

Assets Leveraged by Programs

Increased Productivity

Improved Product Quality

Interoperability & Standardization



- Configuration Control
- Improved TLCSM
- Assets Leveraged by Programs
- Increased Productivity
- Improved Product Quality
- Interoperability & Standardization



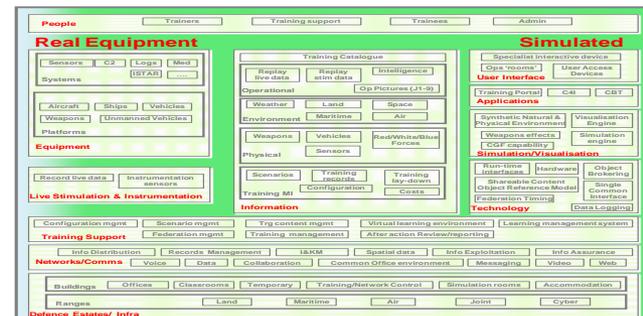
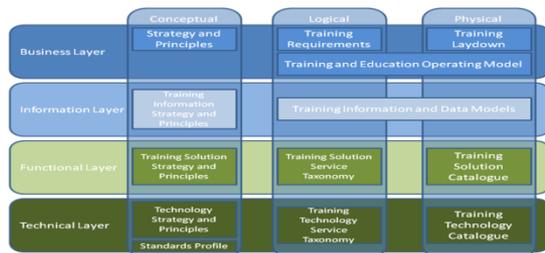
Implementation Model: a TSSP Perspective



TSSP have acquired capability at systems level using a specific set of User Requirement and Systems Requirement Documentation plus underpinning supporting documentation. It has tended to result in inflexible stand-alone systems where in-service change & enhancements is mostly via the original supplier.

We find we have commercial & technical stovepipes, issues responding to fast moving training requirements and demands for integration with other systems. There is a need to develop more modular and composable 'system of systems', create flexibility, reduce costs to integrate new systems and new technologies plus drive down through life and management costs, improve the return on investments and allow a vendor-independent build.

We see the ability to change to this approach is influenced by much including architecting. DTEC / DMSP will assist with the evolving catalogues (Training Solution Catalogue & Training Technology Catalogue).



DTEC Enterprise Architecture

DTEC Services Catalogue



Live Training Capability & Technology Gaps

(Just a sample)



Common Capability / Technology Gaps	U.S. Army	British Army
More immersive live fire training	✓	✓
Live fire visualization & effective AAR	✓	✓
Smarter targets that respond	✓	✓
Effective thermal target representation	✓	✓
Melding Live & Virtual / Augmented Reality	✓	✓
Better laser performance & more data	✓	✓
Tracking in GPS denied environments	✓	✓
Improved instrumentation for Urban	✓	✓
VFM solutions for NLOS, ECM/EW systems		✓
VFM Synthetic Wrap for Simulated ISTAR		✓
Air/Land integration	✓	✓
Embedded Training where appropriate	✓	?
Live medical training-realistic casualty assessment	✓	?



Interoperability Considerations: a PEOSTRI Perspective



- Official policy that recognizes interoperability
 - “The Joint National Training Capability will evolve to encompass a larger training audience, including allies and coalition partners; Federal, State, and local agencies; and international, regional, and nongovernmental organizations.” -- DoD Training Transformation Implementation Plan
 - American, British, Canadian, Australian and New Zealand Armies’ (ABCA) Program
- U.S. Army focus on LVC-ITE
 - What it means to Live training domain
 - Support:
 - unified land operations
 - multi-echelon training
 - training anytime and anywhere



Interoperability Considerations: a TSSP Perspective



For the UK, the ability to conduct operations as part of a Joint and/or Coalition force is recognised as an essential requirement for UK's Armed Forces, reinforced by recent operational experience.

It follows there is a need to train together too. And ABCA & other arrangements enable this.

But technical issues currently prevent easy (thus affordable) integration of national instrumentation assets to maximise training benefits delivered by a holistic & objective after action review capability.

So what ? Significant compromise such as a dilution of own assets due to sharing or unpalatable costs occur. An example of the former is the treatment of French Paras instrumentation in a very recent Ex with British troops in Scotland. Of the later, an example is British exercise run the Joint Multinational Training Centre (JMTC), in Grafenwoehr / Hohenfels. Both deliver but with downsides.

Better interoperability cannot "cost". The solution is likely to come from disparate sources; from initiatives such as the interoperability standards emanating from UCATT (eg laser coding); wider adoption of standards championed by initiatives like DMSP (official, de facto & open); closer working of the training communities (requirements setters and acquisition people) with perhaps joint investments or a multinational acquisition !



Conclusion



- **Acquisition Models**
 - Change is happening with focus shifting to “Enterprise” approach of acquiring capabilities
- **Standardization**
 - There exists opportunities today to enhance joint training through standards like (PM TRADE Live Training Standards, UCATT/SISO, ABCA, JMRC, etc.); however, the acquisition communities need to work together to make it happen
- **Implementation Models**
 - Need to re-focus development on common architectures, standards and interoperable solutions
- **Live Training Capability & Technology Gaps**
 - There exists gaps in both agencies today where joint collaboration may be beneficial
- **Interoperability Considerations**
 - Policy exists, opportunities exists, current fiscal situation requires it...so let’s do it!



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Back Up Slides



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Abstract



The United States Army and the British Army both have the mission to transform live training to meet Army training objectives. For the U.S. Army, Program Executive Office Simulation, Training, and Instrumentation (PEO STRI), through its Project Manager Training Devices (PM TRADE), and for the UK the Defence Equipment organization through the Training & Simulations Systems Programme within the Land Equipment Operating Centre, are in the business of providing equipment & services to support the training of Soldiers and growing leaders. This is done by providing responsive, interoperable simulation, training and testing solutions, acquisition services, and enabling the training continuum through battlefield trainers, synthetic environments and learning technologies.

Within these capabilities is a dynamic set of live, virtual and constructive, embedded and composable products that are used throughout the world, including within the U.S. portfolio the U.S. Army's Live Training Transformation (LT2) product line. In the current economic environment, both Armies must reduce total system life-cycle costs while still deploying the best training capabilities.

Both Armies share a common theme of live tactical engagement and targetry training. There exists potential for opportunity for multinational live training standardization that holds out the promise to reduce total system life-cycle costs, enhance Soldier training, increase technology agility, leverage other organization capabilities, and enable seamless interoperability. Other potential benefits include distribution of training costs in all future contemporary operating environments across different nations without making compromises or disproportionate adding costs.

This presentation will discuss some common live training themes by identifying related live training requirements and capabilities between both allied Armies. Furthermore, it will indicated each organisation's approach to standards and a unified architectures that seek to promote systematic reuse and homogeny across live training solutions, and facilitates interoperability in support of Joint, multinational training.