
Value of Embedded Training - Future Combat Systems Example

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Agenda

- Introduction and Purpose.
- Background:
 - Definitions of Embedded Training (ET).
 - Training and Embedded Training Metrics
 - Future Combat Systems (FCS) Training Concept.
- ET Concept is Not Uniform: Training Anywhere, Anytime.
- ET and ARFORGEN/Modular Brigades – Different Paradigm for Army.
- ET – Valuing ET Requires New Thinking
- Way Ahead.

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Army Embedded Training

Introduction

Embedded training is the Army's required option of training for the FCS at the Soldier, leader, and unit levels. It has been included as a required capability in the Future Combat Systems.

Purpose

To develop an analytic approach to determine the value of embedded training as it is introduced in the FCS System of Systems (SoS). *Propose the idea of training as a consumable and postulate some metrics for cost value estimates.*

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Background: Embedded Training - Definitions

- **Department of Defense**

Embedded Training. Capabilities built into, strapped onto, or plugged into operational materiel systems to train, sustain, and enhance individual and crew skill proficiencies necessary to operate and maintain the equipment.

- **US Army:**

- “A function hosted in hardware and/or software, integrated into the overall equipment configuration. Embedded training supports training, assessment, and control of exercises on the operational equipment, with auxiliary equipment and data sources, as necessary. Embedded training, when activated, starts a training session, or overlays the system's normal operational mode, to enter a training and assessment mode.”

- **US Navy:**

- “Training that is provided by capabilities built into or added onto operational systems, subsystems, or equipment, to enhance and maintain the skill proficiency of fleet personnel.”

- **US Air Force:**

- “A training capability which is designed into or added onto operational equipment.”

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Embedded Training.....

a DoD plan ; an Army Commitment

“Build an **Integrated Live, Virtual, and Constructive Training Environment**. The ultimate goal is to develop a transformed training capability that provides accurate, timely, relevant, and affordable training and mission rehearsal in support of specific operational needs. **Training must be a living process with the ability to adapt and respond quickly to the dynamic challenges of the national security environment**. This will require the ability to identify potential crisis situations in real time; conduct course-of-action analyses; utilize **continuously available networks for mission rehearsal, simulation and just-in-time training**; and **measure performance systematically to improve operational effectiveness.**”

Expanded training capabilities to enable training anywhere, anytime

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Training Enhancements Current Force vs Future Force

Current Force	FCS Equipped BCT
Infrequent doctrine/TTP updates	Ability to rapidly update doctrine/TTP for deployed forces
Slow to adapt to needed changes	Respond quickly to the dynamic challenge
Constrained training capability when deployed	Ability to train 24/7 with no appended equipment while deployed or at Home Station
Appended TESS	Embedded TESS capability
Limited training support packages	Fully embedded Live, Virtual, Constructive, Multi-mode training capability
Limited Battle Command Training Capability	Embedded Battle Command Training capability
Custom SW for each application	- Product line approach to system development - Collective training capability - Basic load of Training Support Packages

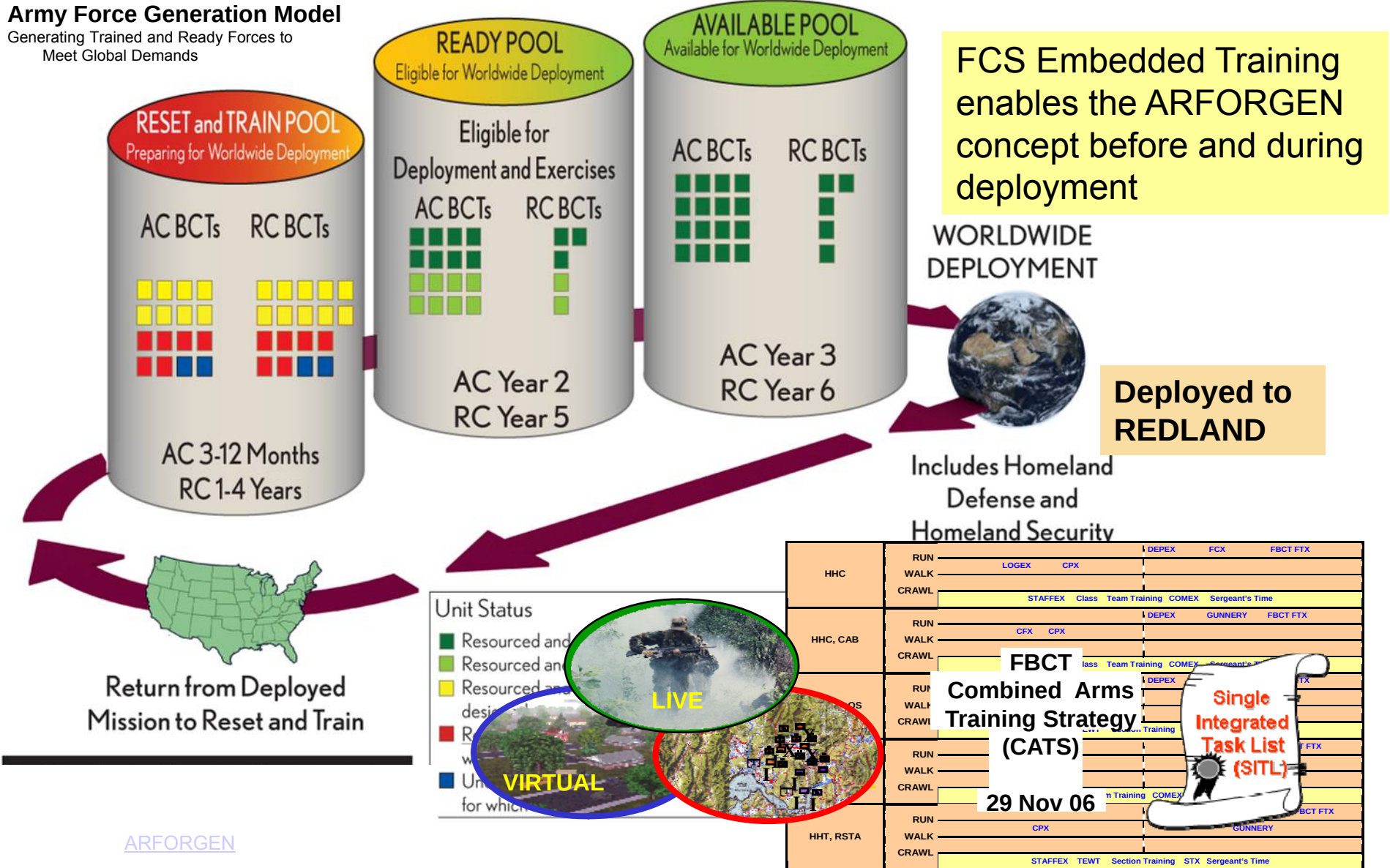
FCS is providing a new capability that takes Training to the Soldier anywhere, anytime

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Training in Context of ARFORGEN

Army Force Generation Model

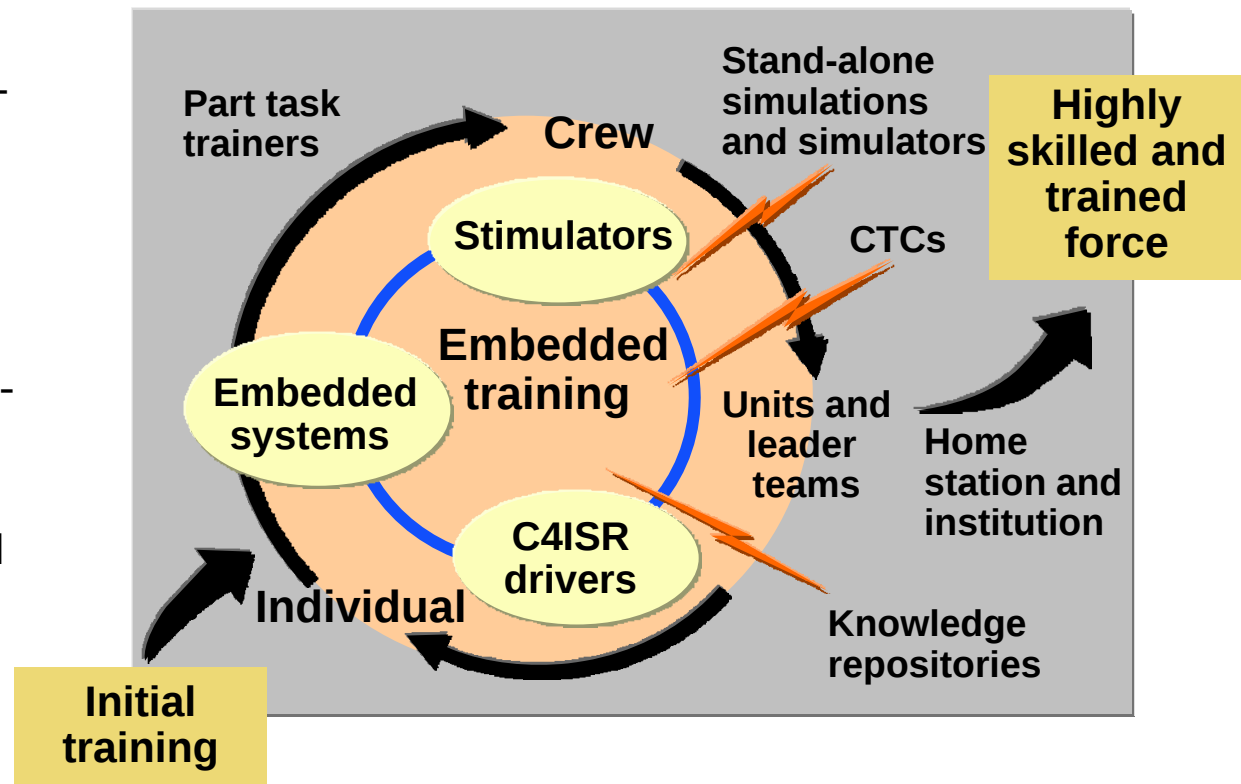
Generating Trained and Ready Forces to Meet Global Demands



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Background: FCS BCT Training Concept

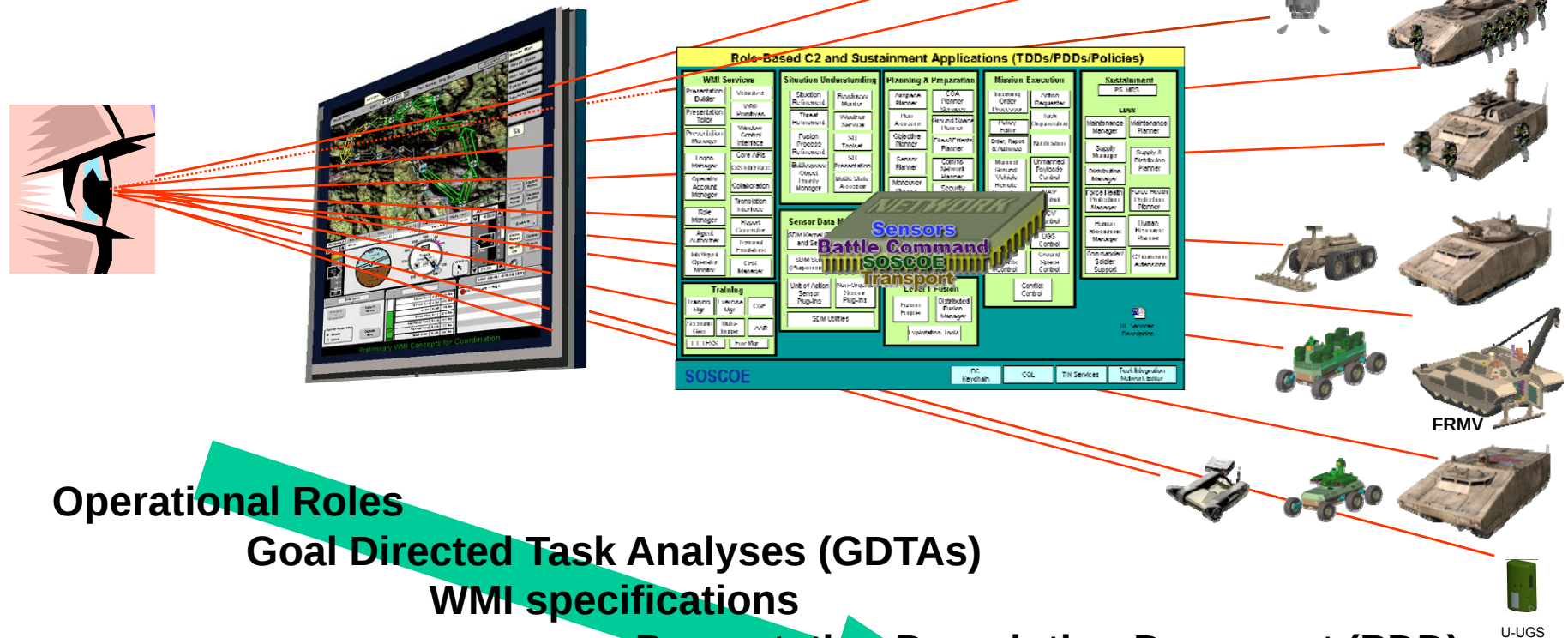
- Expanded training availability using organic, integrated, embedded systems - Training, Operations, and Mission Planning/Rehearsal - for full spectrum training including Joint, Interagency, and Multinational (JIM).
- Full range of training task representation - individual, crew, collective, and leaders - embedded or 'reach' via C4ISR system.
- Reduced training burden and cost resulting from product line design approach - maximum commonality between operational and training systems.



FCS will provide the first Army embedded training capability that supports individual, crew, collective, unit, and leader training.

Training is an integral part of the operational system

BCS (TDDs)



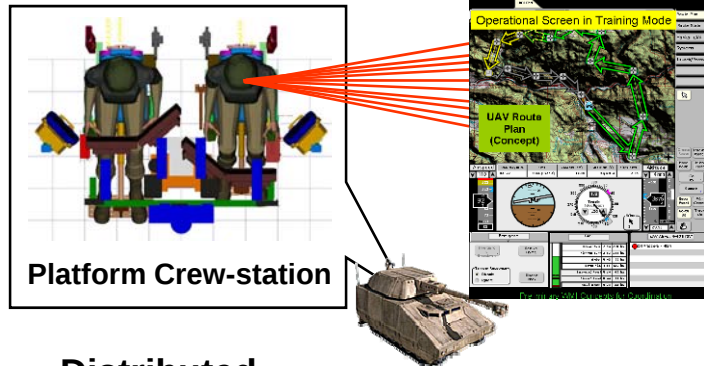
Integrated Software

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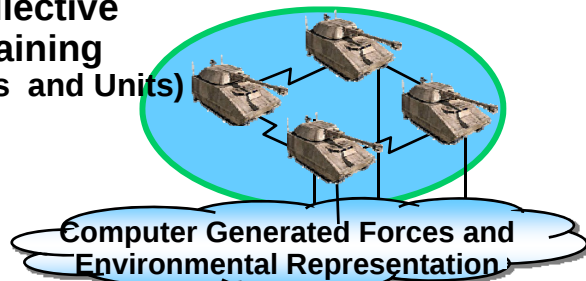
FCS Embedded Training

The User Requirement for FCS

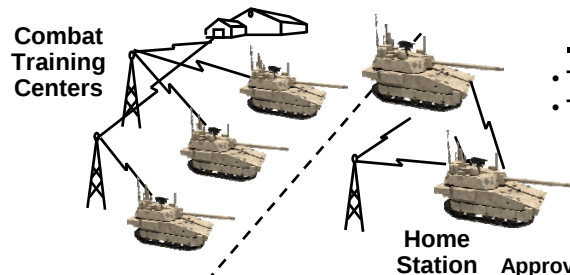
Embedded Training (Crews and Soldier)



Distributed, Collective Training (Leaders and Units)



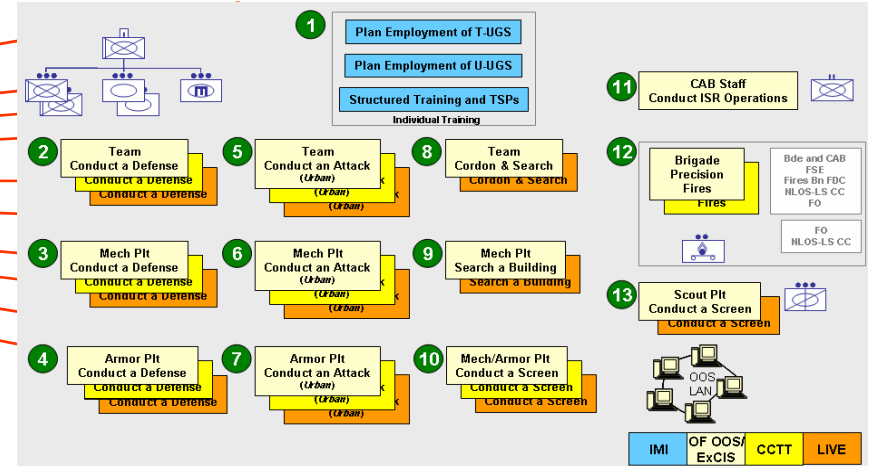
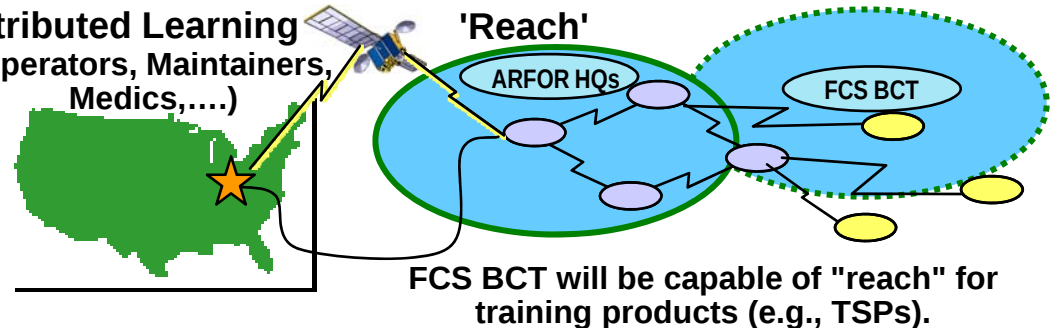
Live Training (Embedded Tactical Engagement Simulation System (TESS) and CTC Instrumentation Interface)



On-board TSP Catalogue

- TSP in Catalogue
- TSP On-board

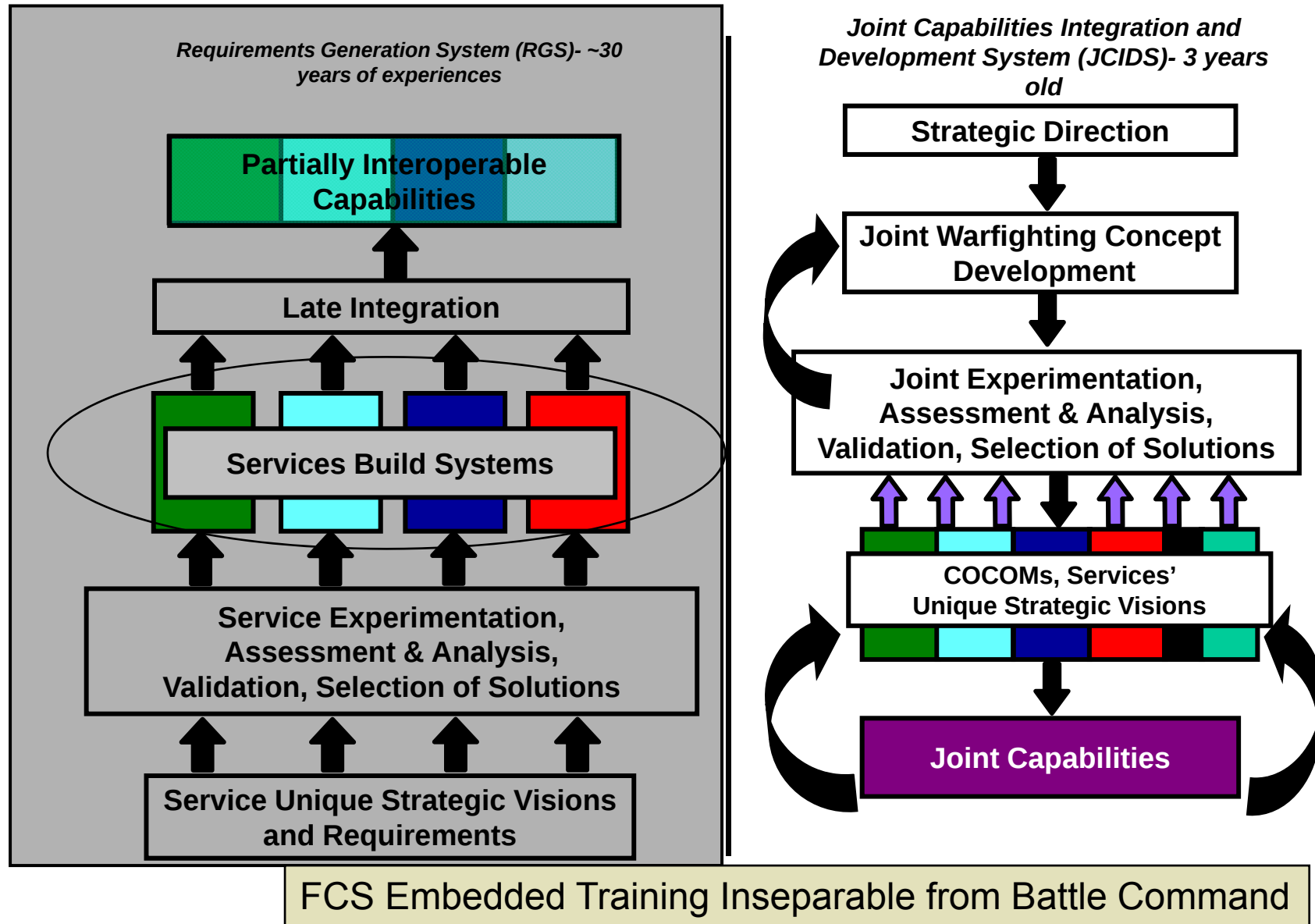
Distributed Learning (Operators, Maintainers, Medics,...)



FCS BCT

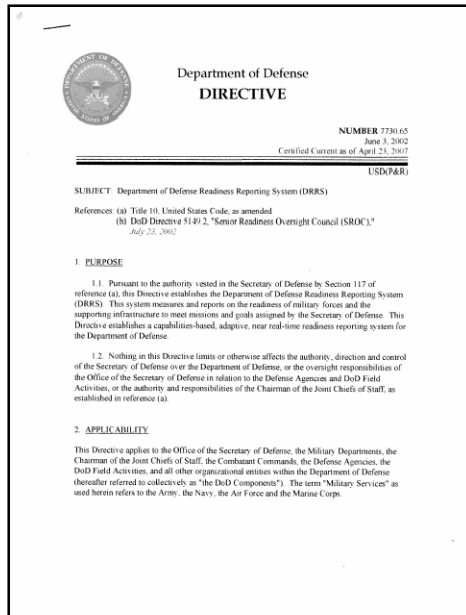
- Ability to rapidly update doctrine/TTP/Training for deployed forces
- Training accessible 24/7 with no appended equipment – readiness is enhanced
- Embedded instrumentation permanently affixed and configured concurrent with design changes
- Embedded Live, Virtual, Constructive, Multi-mode training capability
- Embedded Training access to Battle Command for realistic representation
- Realistic training on operational equipment – anywhere - anytime
- Eliminates separate development of part task simulations

The World has Changed - Threat vs. Capability Based Planning



Value of Embedded Training and Application to Operational Environment

Joint Staff/OSD



DoD Directive

...capabilities-based, adaptive, near real-time readiness reporting system..

...Senior Readiness Oversight Council... Joint Quarterly Readiness Review..

...identify critical readiness deficiencies, and develop strategies for rectifying these deficiencies...

... metrics to measure readiness to execute essential tasks.

KEY DOCUMENTS to TRAINING Situational Awareness

GAO Rp

...”goals to guide training not mandatory

... Army training strategy lacks metrics

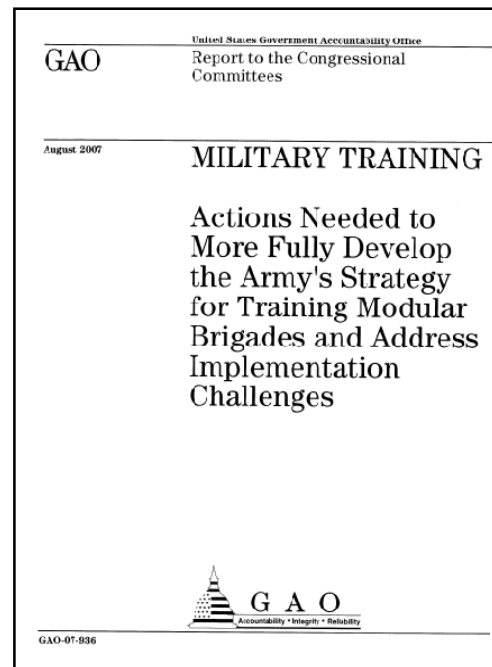
...Army relies on professional assessment

...new collective training metrics ..FY 08

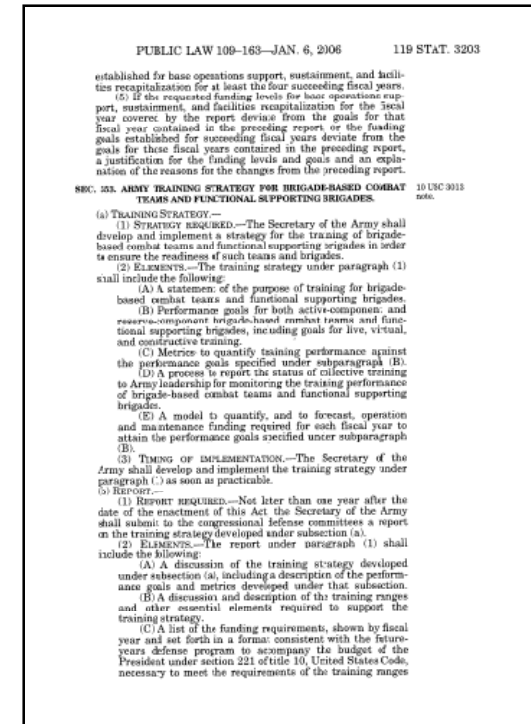
...Army’s training strategy ...support ARFORGEN

...ARFORGEN..Reset/Train..READY...AVAILABLE

GAO Mandated Analysis



Congress



“Metrics to quantify training performance”...

“Performance goals for training

...live, virtual, and constructive training”

“ A model to quantify, and forecast O&M funding to obtain performance goals...

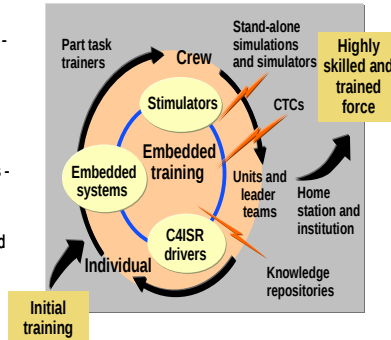
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Army, Navy, USAF Approaches to Training

Army

- Expanded training availability using organic, integrated, embedded systems - Training, Operations, and Mission Planning/Rehearsal - for full spectrum training including Joint, Interagency, and Multinational (JIM).
- Full range of training task representation - individual, crew, collective, and leaders - embedded or 'reach' via C4ISR system.
- Reduced training burden and cost resulting from product line design approach - maximum commonality between operational and training systems.



FCS will provide the first Army embedded training capability that supports individual, crew, collective, unit, and leader training.

Navy

Blurring of Lines Between Training and Operations

- Navy is moving toward virtual simulation to certify proficiency and mission readiness.
- Battle Force Training Tool (BFTT):
 - Each unit is provided the scenario, using Wide Area Network (WAN).
 - Each unit joins a Synthetic Theater of War (STOW) at the gaming area.
 - Training accomplished in-port, but interacts as if underway in the STOW.
 - Scenarios may be transmitted from a land-based site.
 - Battle Force/Group Commanders participate.
- Allows participation from various unit types.
- Utilizes Wide Area Training Network that is independent of tactical data links.



3 April 2006

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Air Force



Modeling & Simulation Strategy

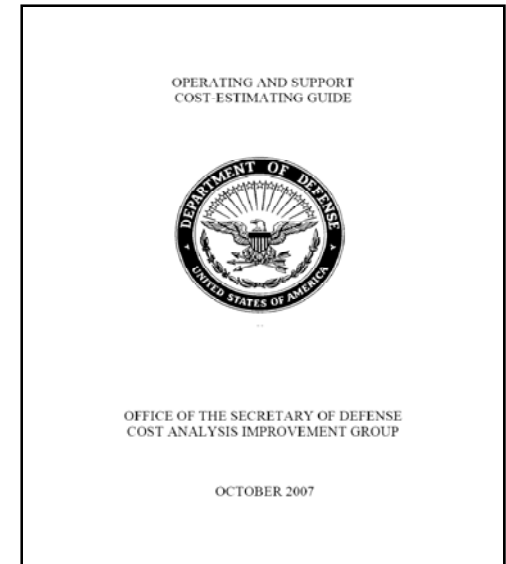


NET 3 - NDIA

Integrity - Service - Excellence

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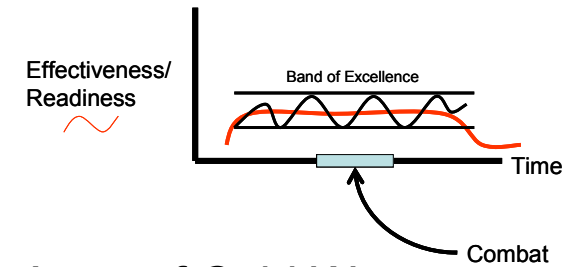
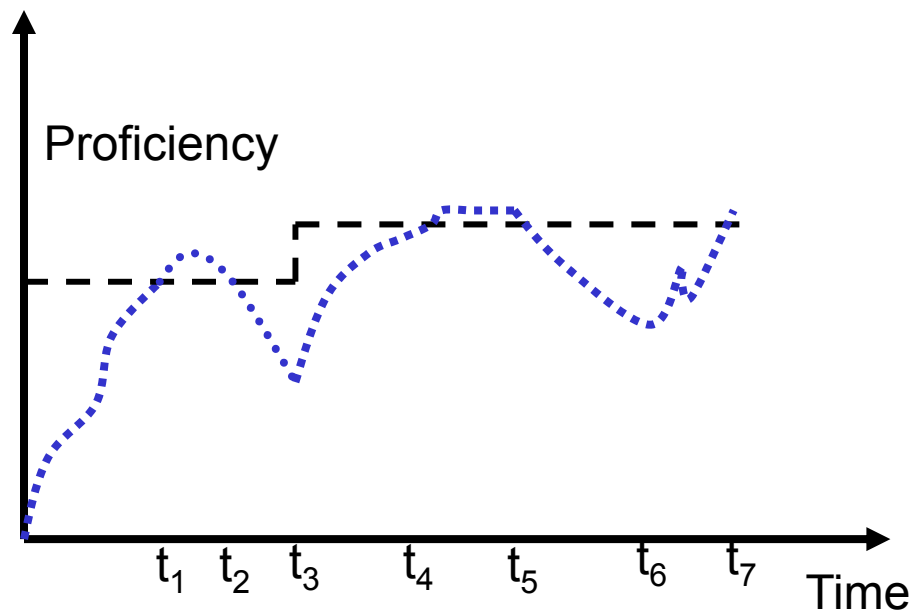
Army, Navy, and USAF have different cultures of training. Simulations have fostered joint training. Readiness metrics must leverage simulations. The cost benefit of Embedded Training and Simulations in current LCCE needs modification.



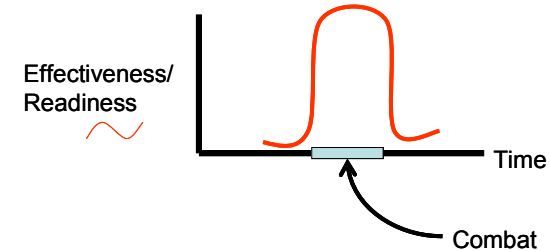
VALUE of TRAINING is aligned with READINESS

- (What We Report)
-
- TC, Gunner, Loader, Driver** → **Tank Crew** → **Platoon/ Company**
- Tank Tables & Manning Level**
- Operators (MCS, GCCS-A, etc.)** → **Staff Section, Cell and Element** → **Command Post**
- Staff Tables & Manning Level**
- People Equipment & Training**
- From AR 220-1**
- New Regulatory Requirement**
- | Type | Key Individuals | Full manning/daily manning levels | Notes |
|---------------|----------------------|-----------------------------------|----------------------|
| WT | TC & gunner | 40 | number 1 |
| MD | Vehicle CDR & gunner | 3MA | number 1 & number 1S |
| M3 widemounts | Vehicle CDR & gunner | 54 | number 1 & number 2 |
| M3 widemounts | Vehicle CDR & gunner | 54 | number 1 & number 2 |

Forgetting and Relearning Curves



Army of Cold War



Army of Modular Brigade

[ARFORGEN](#)

Application to Individual, Team, and Unit Training
(Underlying theory of Combined Arms Training Strategy)

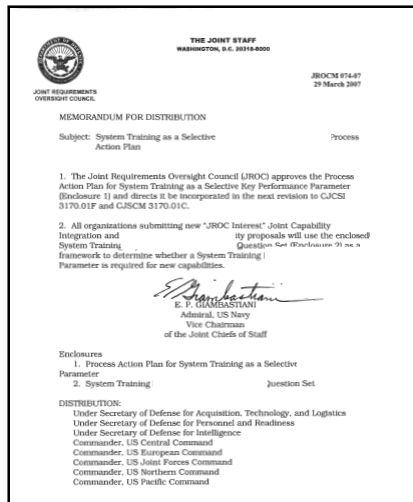
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- Utilizes Wide Area Training Network that is independent of tactical data links.



The Army with the FCS Brigade Combat Team should eventually move to virtual simulation to certify proficiency and readiness.

System Training (ST) Question Set



- Availability
- Adaptability
- Realism
- Efficiency¹

1. Is the system intended for Joint, multi-Service, reserve component, interagency, or coalition use?
- 2. Is the service life projected to be greater than five years, or extend beyond the initial warranty period, if applicable?**
3. Is the program a designated acquisition special interest?
4. Is successful application of the system critically dependent on a rigorous training process early-on to maximize system capability with first unit equipped (FUE)?
- 5. Are total life cycle training costs projected to be a significant part of total life cycle costs?**
6. Is a stand alone system training device part of the program?
7. Will there be "negative training" if early ST is not synchronized in the program?
8. Was the program designated a Joint Urgent Operational Need (JUON) or transitioning from a technology initiative like an ACTD or experiment?
- 9. Are there significant program inter-dependencies?** (Note: "significant" is defined as three or more programs.)
10. Is the system (or cross system (meaning between systems)) operation or maintenance concept complex (specifically, the man-machine interface; **is a schoolhouse required**)?
11. Does the Commercial Off-The-Shelf (COTS) hardware or software integral to the program require an ST solution that is not part of the COTS product?
- 12. Is embedded training or embedded instrumentation feasible and appropriate?** (Reference: DODD 1322.18 "Military Training" definition.)
- 13. Will realistic live training be restricted by cost, environmental, or safety, increasing the reliance on virtual or constructive training capabilities?**

Readiness implications....

How do you determine?

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OSD Operating & Support Cost Estimating¹

- Current O&S Cost Models are not System of System estimates.

“affordability assessments required at Milestone B and C.” (p3-2)

“Typically, one method to evaluate the O&S affordability is to compare the estimated O&S costs for the new system to the projected **O&S costs of the system** being replaced (if there is one).” (p.3-2)...compare IAW format in Appendix B.

- Army is no longer in Cold War – ARFORGEN applies – Cost for Deployed

“Much of the CARD’s – Cost Analysis Requirements Description – content will be used in O&S cost estimates.” (p4-2)

“The expectation is that the CARD should be sufficiently comprehensive in program definition to support a life cycle cost estimate.” (p4-4)

Areas in CARD impacted by FCS Embedded Training concept

- Risk areas associated with O&S or sustainment
- System Support Concept (System training concept)
- System activity rates
- System milestone schedule
- Facilities requirements
- Special support (unique infrastructure)

Army presentation to OSD CAIG concerning O&S costs will include:

- O&S Cost Summary
- Estimating Methods for Major Cost Elements
- Sensitivity and/or Quantitative Risk Analysis
- **Time- Phased O&S Display (Home Station, Deployment, In Theater)**
- **Annualized Steady-State Costs for Typical Unit**
- Cost Track to Prior Estimate

- O&S Cost Estimating Process Must Accommodate Readiness Level Reqt.s.

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OSD Operating & Support Cost Estimating Process

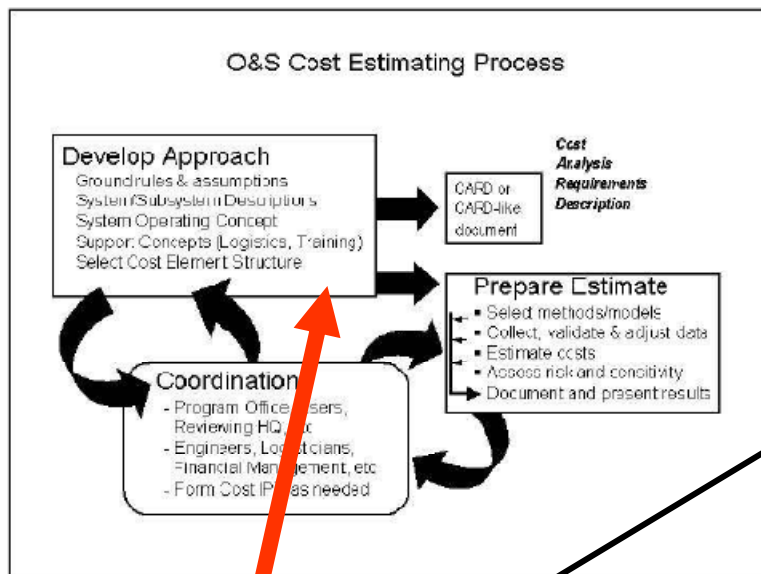


Figure 5-1. Recommended Analytic Approach for O&S Cost Estimates

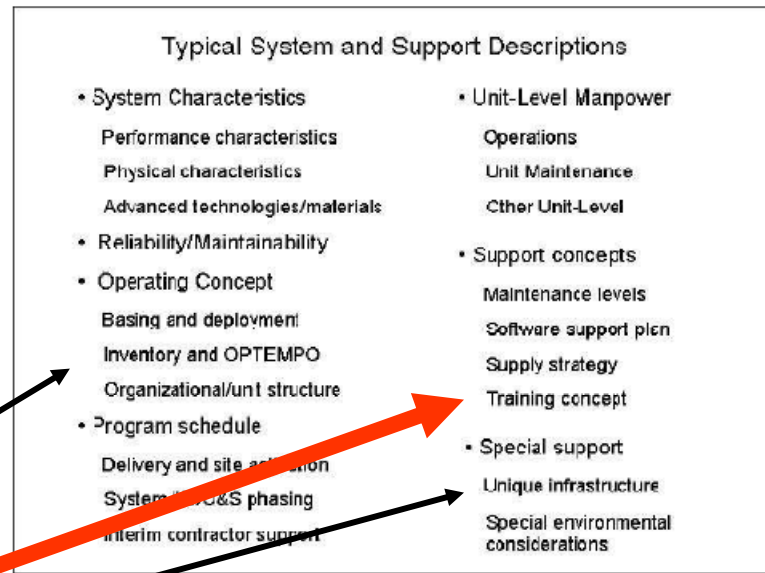


Figure 5-3. Typical Program and System Content

FCS Training IPT RDTE/Proc focused – Army must define ET O&S concept. Concern...CAIG methodology is for a “system”...Must compare with HBCT/SBCT for O&S.....

FCS is a “system of systems” and more like an ‘aircraft carrier group’ than a F-22. O&S methodology must address ARFORGEN and persistent conflict requirement of 21st century.

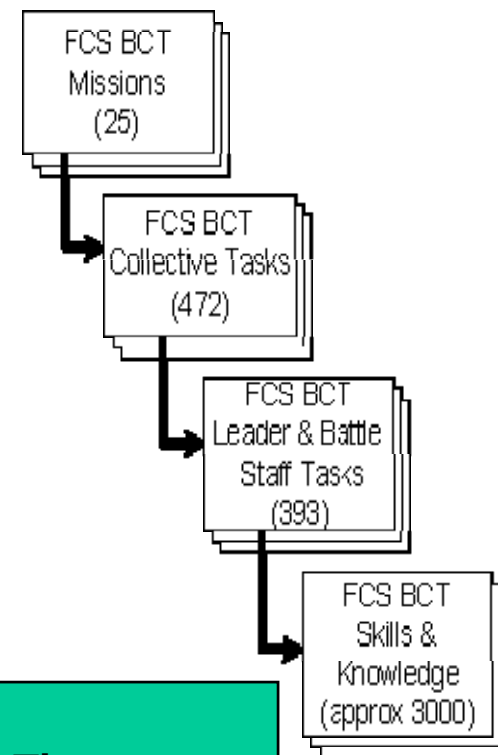
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Availability Metrics

- ❖ *Measure Equipment Required for Training¹. Combat Systems are measured for their readiness and availability. Key training systems will allow for proficiency and practice to ensure mission readiness need to be measured in like manner to the key combat and support platforms.*

-- Available hours per soldier

- ❖ *Measure Individual Personnel Training Proficiency. Tag a Proficiency Level with date for key individual skills. Determine refresh rate.*
- ❖ *Measure Key Team Training Proficiency. Tag a Proficiency Level with date for an individual with skill proficiency. Determine a refresh rate.*
- ❖ *Measure UNIT Training Proficiency. Tag a Proficiency Level with a date and determine shelf life if “refresher” proficiency not obtained.*



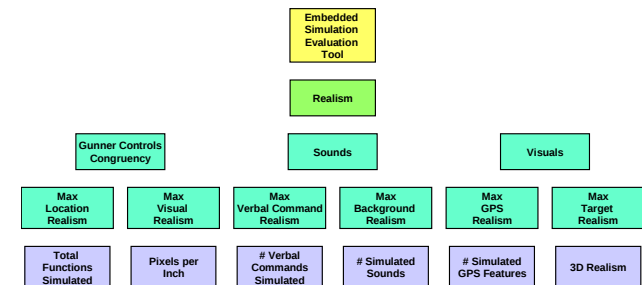
Availability of proficiency training must extend to ‘operational environments’ for skills which require timely ‘refresher’ training. The benefits of embedded training availability is significant in these ‘operational environments’.

¹ **Decrease in relative availability of training facility resources.** Although ongoing modularity initiatives are expected to increase the number of BCTs by 30 percent, we see no commensurate increase in the number of maneuver ranges, simulation centers, CTC capacities and other training capabilities. Nor are increases in facilities and capacities being undertaken as a result of the increased requirements likely to be generated by BCTs' greater envisioned operational capabilities and concepts. As a key example, enhanced ISR and effects capabilities generate a need for a greater maneuver area for live training. RAND Study, "Assessing Options for Future Training Strategies for Brigade Combat Teams Equipped with FCS Technologies, MG538-A, Shawley, Crowley, Lewis, Masi, Leuschner, Straus, and Angers, 2006. Permission obtained from James Crowley.

Realism Metrics

Realism as a metric must measure the conditions of the training stimuli across several dimensions –

- ✓ Task coverage – Does the training require the training audience to perform all the required tasks?
- ✓ Difficulty of the task – Does the training require the training audience to perform the required tasks at the level of difficulty as actual operations?
- ✓ Response Level – Does the training require the training audience to experience the same effects as in ‘actual operations’?



Suggestion – Develop a Five Level Training Realism Standard (Idea)

<i>Task Coverage</i>		<i>Difficulty of Tasks</i>	<i>Response to Tasks</i>
Level 1 –	Individual	Crawl	Low
Level 2 –	Individual	Walk	High
Level 3 –	Team	Crawl	Low
Level 4 –	Team	Walk	High
Level 5 --	Unit	Run	High

Adaptability Metrics

Adaptability in training events is the potential to allow changes to a range of missions, enemies, conditions, and environments. Metrics to measure military training system adaptability should include at least the following three dimensions:

- Forces – Enemy Actors (Behaviors and Equipment)
- Forces - Friendly (Behaviors and Equipment)
- Environment – Terrain, Weather, Complexity of Operations

Each dimension should be quantified and used as a measure for comparison against competing training alternative.

Efficiency/Persistence Metrics

There should be a cost per training hour metric developed in conjunction with all ACAT 1/1A programs. There should be comparison at all program milestones on embedded training versus all other feasible training strategies.

All Training O&S Costs

- o Software
- o Hardware
- o Infrastructure
- o Unique Support Stuff (Ammo, etc.)

Typical System and Support Descriptions

- | | |
|---------------------------------|--------------------------------------|
| • System Characteristics | • Unit-Level Manpower |
| Performance characteristics | Operations |
| Physical characteristics | Unit Maintenance |
| Advanced technologies/materials | Other Unit-Level |
| • Reliability/Maintainability | • Support concepts |
| • Operating Concept | Maintenance levels |
| Basing and deployment | Software support plan |
| Inventory and OPTEMPO | Supply strategy |
| Organizational/unit structure | Training concept |
| • Program schedule | • Special support |
| Delivery and site activation | Unique infrastructure |
| System life/O&S phasing | Special environmental considerations |
| Interim contractor support | |

OPERATING AND SUPPORT COST-ESTIMATING GUIDE



OFFICE OF THE SECRETARY OF DEFENSE
COST ANALYSIS IMPROVEMENT GROUP

OCTOBER 2007

Figure 5.3. Typical Program and System Content

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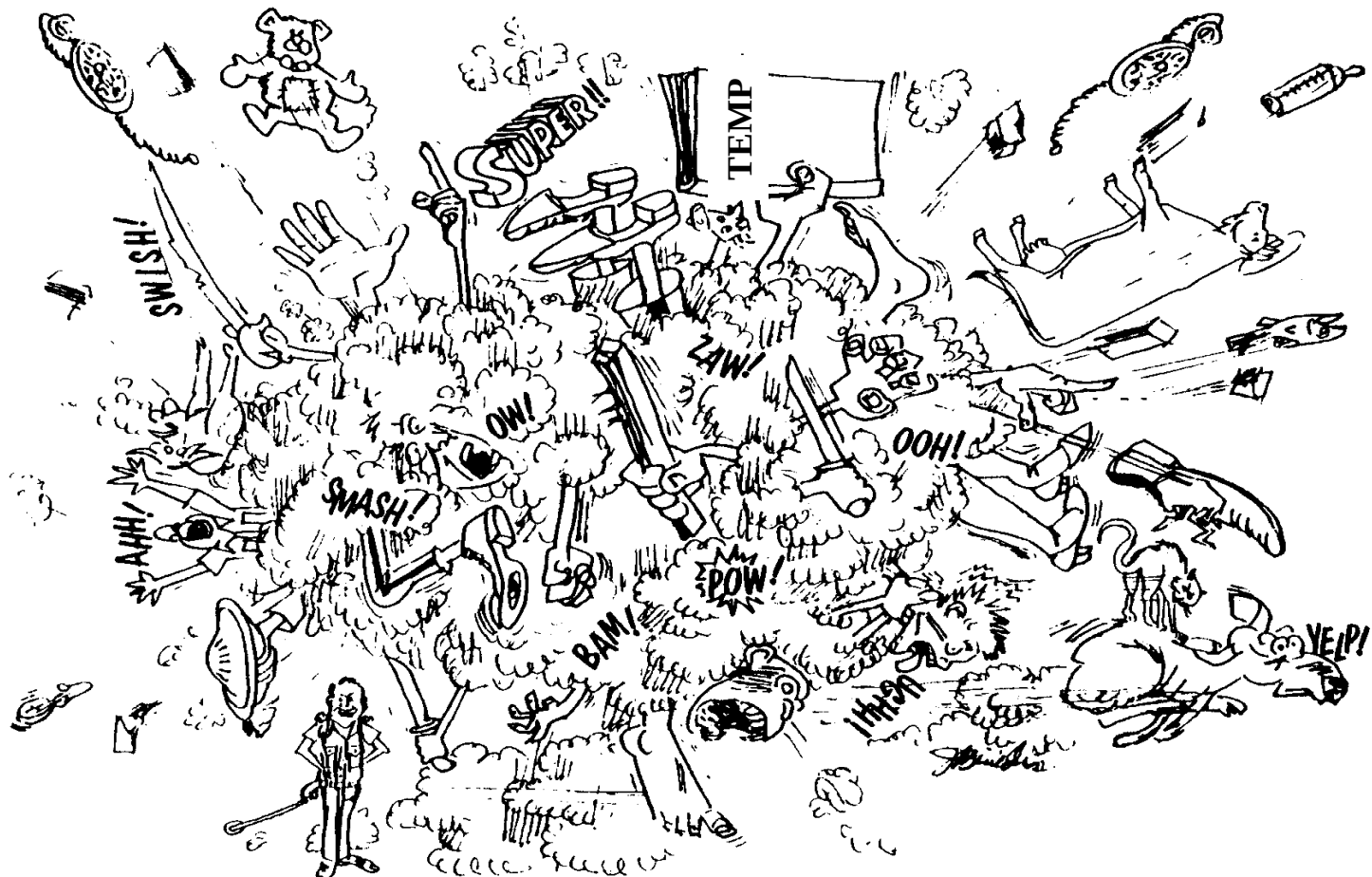
Suggested Metrics for Training Evaluation

- Availability Metrics –
Days/Hours/#Soldiers
- Realism –
Scenarios/Terrain/Environment/Culture
- Adaptability -
Can you change and how rapidly?
- Efficient and Persistent -
What is overhead and will it be obsolete? Cost per hour/training?



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Questions?



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BACK UP



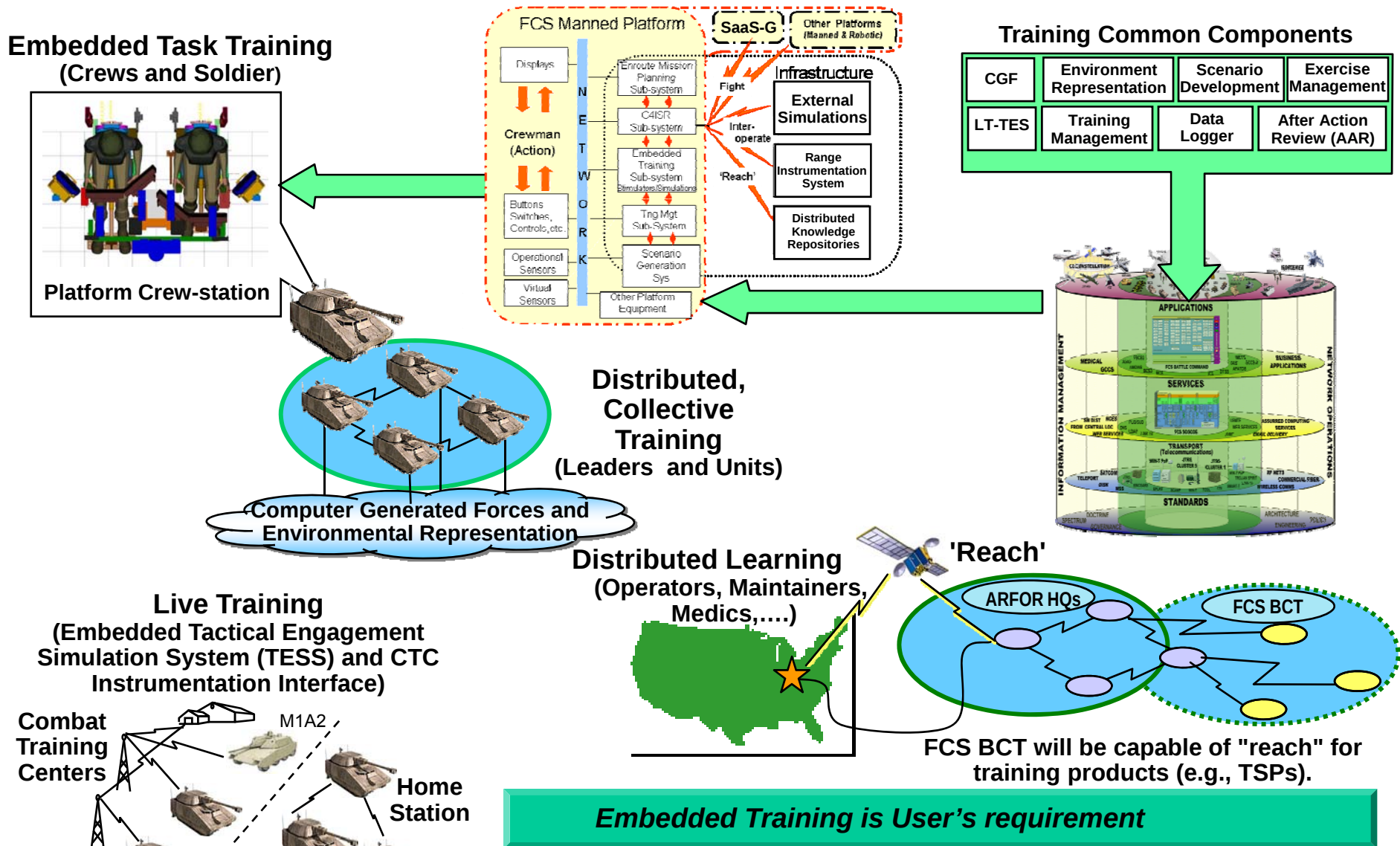
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Events in Unit CATS

- Sergeant's Time Training (STT)
- Map Exercise (MAPEX)
- Situational Training Exercise (STX)
- Staff Training Exercise (STAFFEX)
- Logistical Exercise (LOGEX)
- Gunnery
- Fire Coordination Exercise (FCX)
- Field Training Exercise (FTX)
- Joint Training Exercise (JTX)
- Mobilization Exercise (MOBEX)
- Deployment Exercise (DEPEX)
- Tactical Exercise Without Troops (TEWT)
- Lanes Training Exercise (LTX)
- Command Post Exercise (CPX)
- Live Fire Exercise (LFX)
- Combined Arms Live Fire Ex (CALFEX)
- Command Field Exercise (CFX)
- Combined Training Exercise (CTX)
- Communications Exercise (COMEX)
- Team Training

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FCS Embedded Training Concept

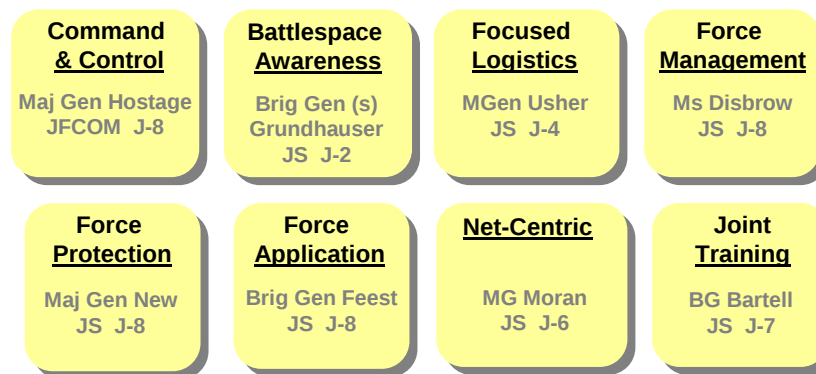


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Key Performance Parameters & Training

- Business Case for Training
 - ✓ Link to Readiness
 - ✓ Availability, Realism, Adaptability, and Efficiency
- Joint Review of Major Acquisitions
- Readiness & Training Models
 - ✓ Metrics
 - ✓ Models – What do I get for my investment?

Functional Capability Boards



FCB Membership: (O-6 level)

Services
Combatant Command Reps
OSD (AT&L)
OSD (I)
USCFAF (Space)

ASD NII/ DOD CIO
D, PA&E
DIA Rep (Threat)
Mission Rqmts Board Exec Sec'y (BA FCB)
Other DoD Agencies as necessary

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Disadvantages of Simulation (V-C) Training/Embedded Training

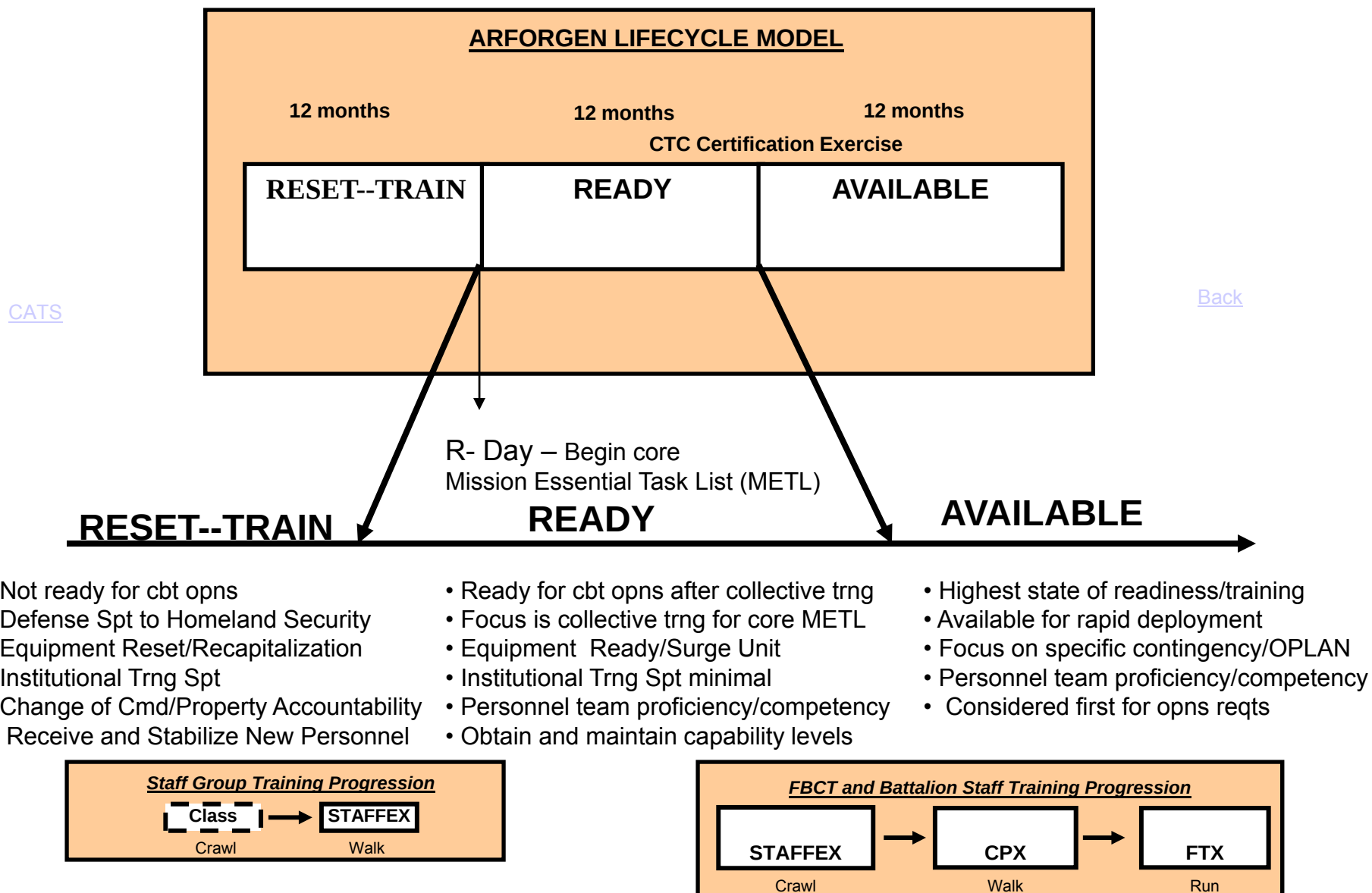
- **Realism of Stimuli** – Effective training requires appropriate stimuli. Some training simulations inject unrealistic stimuli to the training audience. ‘Work around’ these issues often are distracters and may even interject “negative training”. Timely updates to simulation-based training mitigates this disadvantage.
- **Currency** – Complex multi-threat multi-capable adversaries and tactics are difficult to keep current. The tactics of the adversary or environments may change faster than the databases that replicate them. Frequent updates to tactics and scenario databases mitigates this disadvantage.
- **Combat Conditions Replicated** – The stresses and challenges of combat affect the proficiency of soldiers. Simulations are not combat and the physiology impacts, challenges, and lack of sleep, food, shelter are not normally replicated in simulation-based training.
- **Computers Break and Software Crashes** – Complex simulations are prone to casualties and delays occur that inhibit training. The same is true in other training venues (combat vehicles break or weapons fail) which cause delays in training.
- **Multi-tasking of Training Audience** – Simulation-based training has a tendency to be infringed by other garrison tasks by the training audience. Maintenance and other support personnel are often focused on repairs or other support functions. Inspections, other interruptions, and other meetings when training is scheduled must be made of lower priority and training events made the “main event”.

Advantages of Simulation (V-C) Training/Embedded Training

- **Availability** – Simulation-based training can provide immediate feedback to the training audience not normally available in live training. The ability to re-immers training audience in same scenario to apply lesson learned is directly attributable to availability.
- **Adaptability** – Simulated scenarios can be altered, stopped, or paused while a training exercise is in progress. These changes increase the training audience's skill level if applied appropriately to challenge team proficiency.
- **Efficiency/Time Savings** – The ability to reset, pause, and adjust a training scenario via simulations is often more time efficient than live training resets and pauses.
- **Flexibility** – Simulation-based training allows the training audience to receive the cues appropriate to their level of proficiency and progressively build higher proficiency. Adaptability and flexibility are symbiotic.
- **Safety** – High risk training events can be practiced safely prior to certification at a live range.
- **Improves Soldier Quality of Life** – Simulation-based training can be conducted at home station allowing soldiers not be in local training area or deployed for live training. Savings are accrued in Operations and Support dollars because of garrison training vs. "in the field" training.
- **Repetition** – Simulation-based training allows for repetition until proficiency is obtained or the team "get it right".
- **Ability to Freeze** – Simulation-based training is the only training that allows a "freeze" and "play back" of a training event. This is extremely important for ensuring safety procedures are followed and critical processes are followed.
- **Environmentally Friendly** – Simulation-based training normally has little negative impact on the environment.
- **Soldier Friendly** – Simulation-based training is less dangerous and allows soldiers to "spend more time at home".
- **Realism of Environment** – Simulation-based training can train in multiple conditions. The task and standard usually remain constant for proficiency but the impacts of different geography, weather, and other operational conditions have a decisive role in battle-focused training.
- **Complexity** – Complex multi-threat multi-capable organizations are difficult and expensive to create outside of simulation – based training. The ability to challenge the training audience with complex, multi-threat scenarios is a key advantage of simulated training versus conventional live training exercises.

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ARFORGEN Lifecycle Model



Training Environment in the FBCT during READY/AVAILABLE

"The mix of training environments (L-V-C) included in Future Force training strategies IS driven by embedded training capabilities and the different training needs of the various echelons." – Future Combat Systems Brigade Combat Team (FBCT) Unit CATS, 29 Nov 2006

FBCT TRAINING STRATEGY (Ready/Available Phase)

		1st PERIOD	2nd PERIOD	3rd PERIOD	4th PERIOD
HHC	RUN	CTX	FCX	JTX DEPEX	FCX FBCT FTX
	WALK	LOGEX		LOGEX	
	CRAWL				
		STAFFEX Team Training COMEX Sergeant's Time			
HHC, CAB	RUN	CTX	FTX	JTX DEPEX Gunnery	FBCT FTX
	WALK	LOGEX CFX	CFX	LOGEX	
	CRAWL				
		STAFFEX Team Training COMEX Sergeant's Time			
HHB, NLOS	RUN	CTX	Gunnery FCX FTX	JTX DEPEX Gunnery	FCX FTX FBCT FTX
	WALK	LOGEX		LOGEX	
	CRAWL				
		STAFFEX Team Training Sergeant's Time			
HHC, BSB	RUN	CTX		JTX DEPEX	FBCT FTX
	WALK	LOGEX		LOGEX	
	CRAWL				
		STAFFEX Team Training COMEX Sergeant's Time			
HHT, RSTA	RUN	CTX	FTX Gunnery FCX	JTX DEPEX Gunnery	FCX FTX FBCT FTX
	WALK	LOGEX		LOGEX	
	CRAWL				
		STAFFEX Team Training COMEX Sergeant's Time			

Example CATS for HQ Units in FBCT during Ready Force Pool

"Because of the much larger footprint of FBCTs and the embedded training capabilities resident in each system, it is anticipated that **embedded training will rely heavily on simulation capabilities** – especially virtual simulation for lower echelons and constructive simulation for battalions and above. Training at the FBCT level will require a mix or "hybrid" events that includes all three domains (L-V-C) for different echelons to take advantage of training areas that are much smaller than the tactical footprint of the FBCT. **Live training will continue to be indispensable at company and below.**" FBCT CATS TAB D

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Battle Staff Training

GENESIS: Absence of universally understood battle staff training, equipping, and manning requirements have impaired the Army's understanding of battle command readiness.

GUIDANCE: The Army DCS G-3 issued a verbal directive to develop "Digital Gunnery" as a strategy to better prepare digitally enhanced battle staffs to conduct operations in a modular environment. There were two essential tasks identified in the directive:

1. Treat the Battle Staff (Battalion to Corps level) as a weapons system.
2. Tie training to AR 350-1 and reporting to AR 220-1.



In response to that task, the CAC Commander and integrator of ABCS systems, directed the development of a "Digital Gunnery" concept which resulted a White Paper outlining the concept (which was approved by the Army G3 in April 2006) and an implementation plan which became the basis for an Army G3 OPORD on "Battle Command as a Weapons System" (BCAWS).



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Functional Capability Boards

Command & Control

Maj Gen Hostage
JFCOM J-8

Battlespace Awareness

Brig Gen (s)
Grundhauser
JS J-2

Focused Logistics

MGen Usher
JS J-4

Force Management

Ms Disbrow
JS J-8

Force Protection

Maj Gen New
JS J-8

Force Application

Brig Gen Feest
JS J-8

Net-Centric

MG Moran
JS J-6

Joint Training

BG Bartell
JS J-7

FCB Membership: (O-6 level)

Services

Combatant Command Reps

OSD (AT&L)

OSD (I)

USecAF (Space)

ASD NII/ DOD CIO

D, PA&E

DIA Rep (Threat)

Mission Rqmts Board Exec Sec'y (BA FCB)

Other DoD Agencies as necessary

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CMETL Definitions

General Mission Essential Tasks (GMETs):

Tasks that must be accomplished by all units, regardless of type, in full spectrum operations in support of ARFORGEN, and approved by HQDA.

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Core Capabilities Mission Essential Tasks (CCMETs):

Mission essential tasks that are specific to a type of unit, which is designed and resourced according to its TO&E and doctrine, and approved by HQDA.

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Core Mission Essential Task List (CMETL):

A list of the unit's tasks derived from a unit's capabilities which are based on the unit's TOE mission and doctrine. CMETL is comprised of tasks which the organization was designed to perform and general tasks applicable to all organizations, regardless of type.

All unit CMETLs will contain General Mission Essential Tasks (GMETs) and

Core Capabilities Mission Essential Tasks (CCMETs).

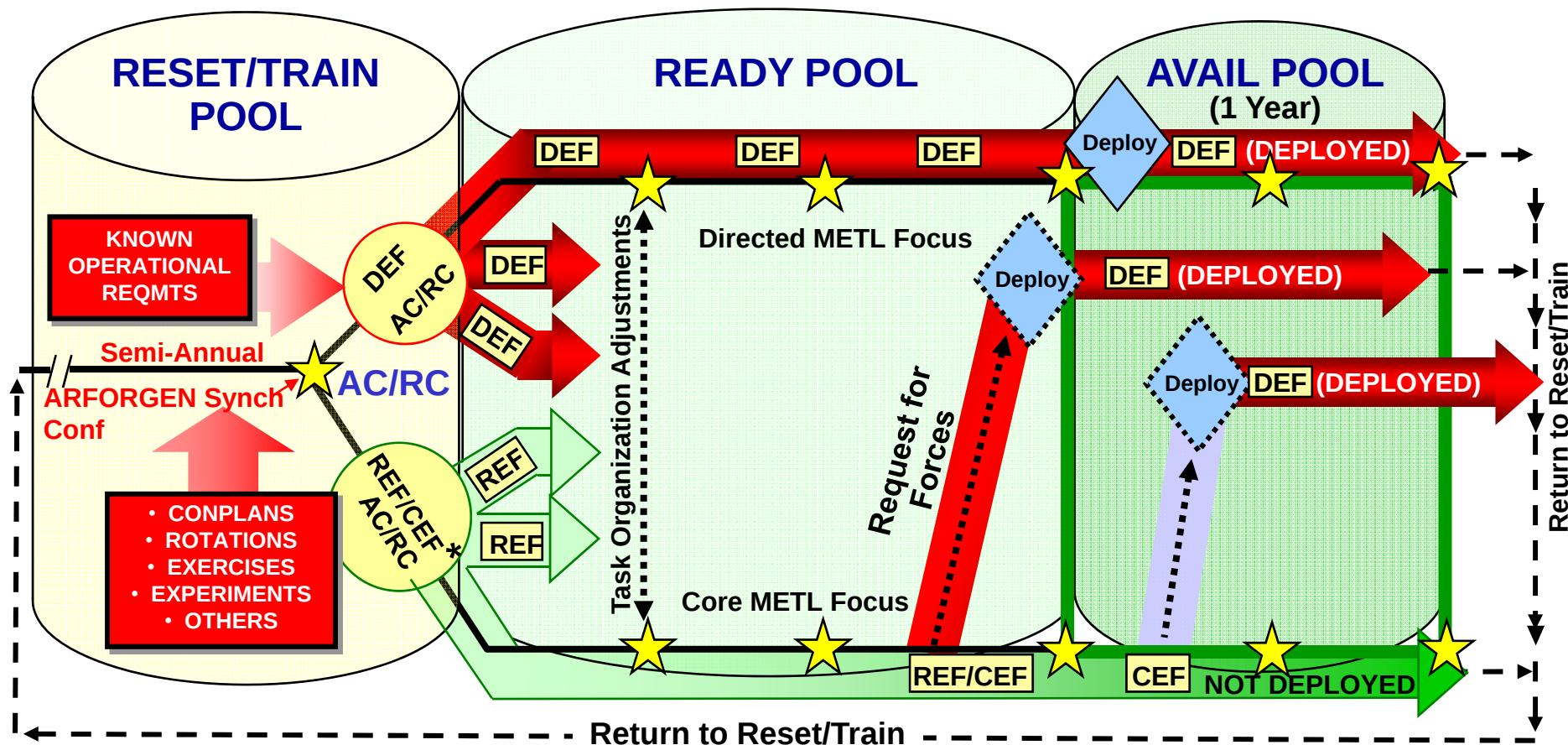
Directed Mission Essential Task List (DMETL):

A list of the unit's tasks required to accomplish an assigned mission. When a unit is assigned a mission, the commander will develop a DMETL by adjusting the unit's CMETL, based upon mission analysis. Once established, the DMETL forms the new foundation and focus for unit training until completion of the assigned mission.

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ARFORGEN (AC & RC) – Capabilities Based Requirements Driven Construct

[Back](#)



DEF: Deployment Expeditionary Force: Task organized units designed to execute named or numbered operational requirements and those currently executing deployed missions to include homeland defense or homeland security. (Note: RC units in a DEF have been sourced against a future requirement, alerted for mob, or are currently mobilized).

REF: Rapid Expeditionary Force: Task organized units designed to execute full spectrum training and prepare for potential contingency operational requirements.

CEF: Contingency Expeditionary Force: Units remaining in the Available Force Pool (not in a DEF) task organized to meet operational plans and contingency requirements.