

Combat Hunter Curriculum Design

Applying HSI principles to
Military Curricula Design: A
Combat Hunter Use-Case

Schatz, Nicholson,
Vogel-Walcutt, & Bolton



This work was supported in part by the Office of Naval Research. The views and conclusions contained in this document are those of the authors and should not be interpreted as representing the official policies, either expressed or implied, of the ONR or the US Government. The US Government is authorized to reproduce and distribute reprints for Government purposes notwithstanding any copyright notation hereon.

Applying HSI Principles to Military Curricula Design

HSI* Principles?

Focus on the human element

- Human-centered design focus
- Top-down, rather than bottom-up
- Quantification of people variables
- Multidimensional views of design
- Integration of people, systems, and technology
- Considers cognitive, physical, and sensory system facets

“dramatic organizational benefits are *most likely* to be achieved through focus on people”
(Booher, 2003, p. 2)

*AKA Human Factors Integration (HFI), Army’s Manpower and Personnel Integration (MANPRINT), Navy’s Hardware/Manpower Integration (HARDMAN), USAF’s Integrated Manpower, Personnel, and Comprehensive Training & Safety (IMPACT), etc.

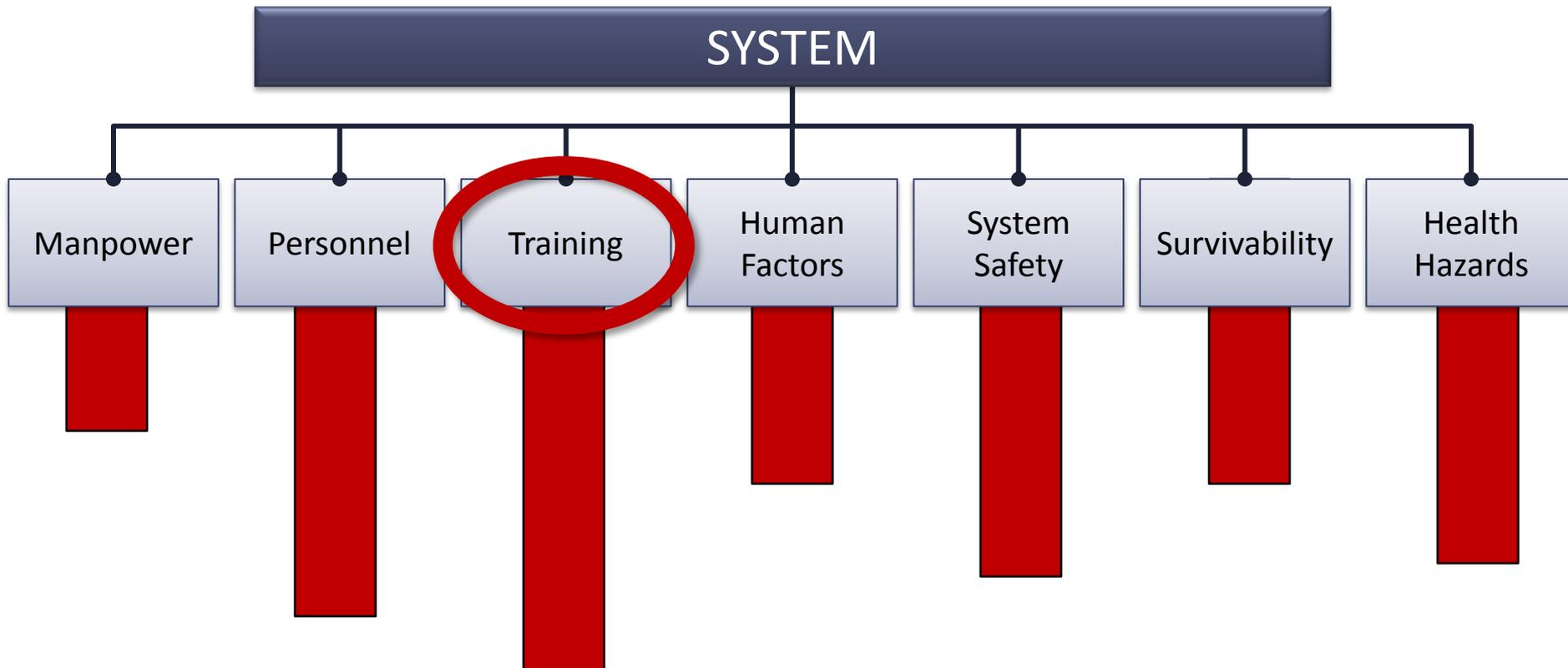
HSI* Principles?

In practice, is usually...

- Operational systems focus
- Applied to the highest system level
- Applied to a technology system
 - Emphasizes human–machine interfaces
 - Emphasizes systems affordability
 - Emphasizes tradeoffs (e.g., manpower vs. design vs. materiel)

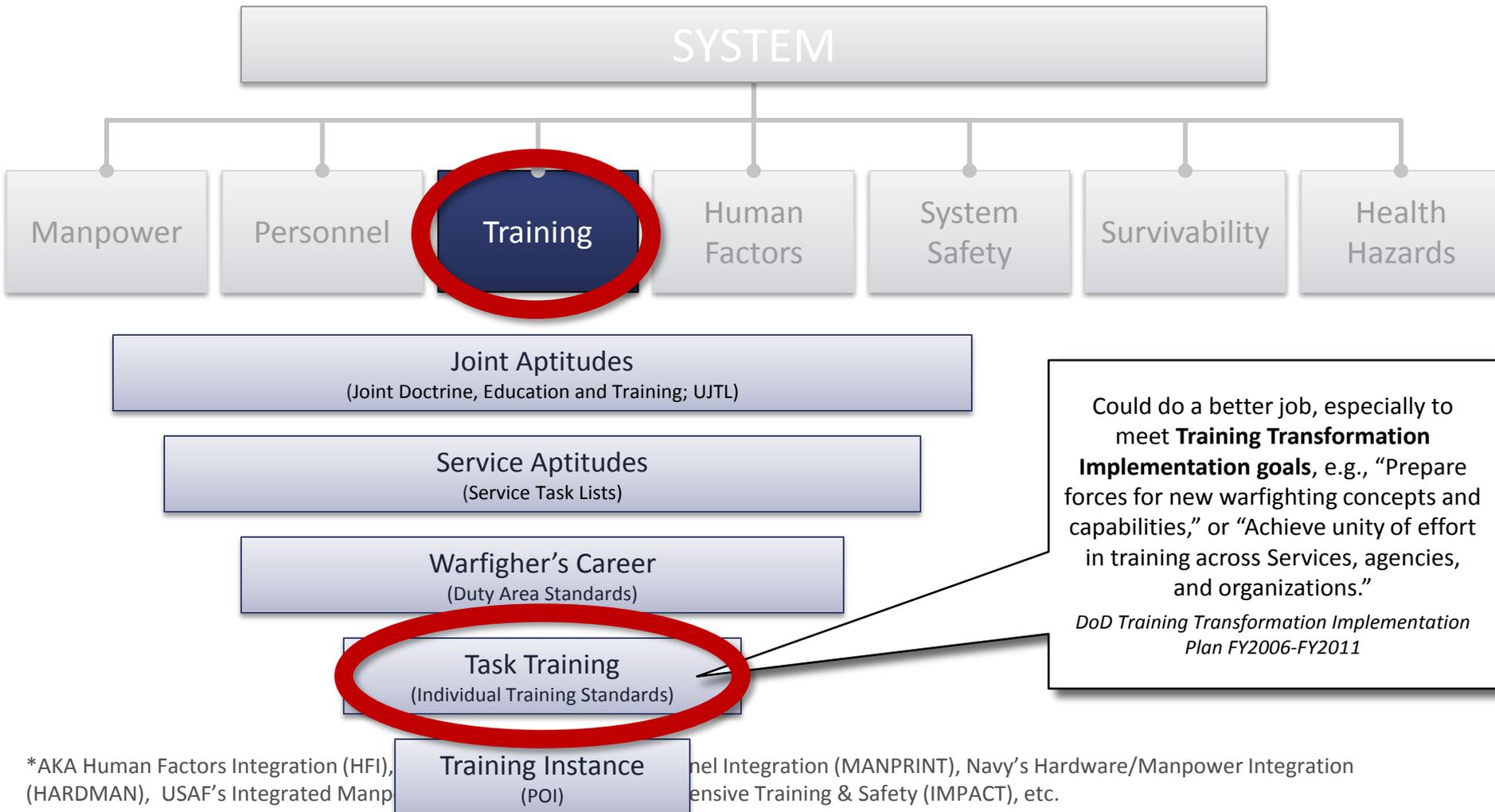
*AKA Human Factors Integration (HFI), Army's Manpower and Personnel Integration (MANPRINT), Navy's Hardware/Manpower Integration (HARDMAN), USAF's Integrated Manpower, Personnel, and Comprehensive Training & Safety (IMPACT), etc.

HSI* Principles?



*AKA Human Factors Integration (HFI), Army's Manpower and Personnel Integration (MANPRINT), Navy's Hardware/Manpower Integration (HARDMAN), USAF's Integrated Manpower, Personnel, and Comprehensive Training & Safety (IMPACT), etc.

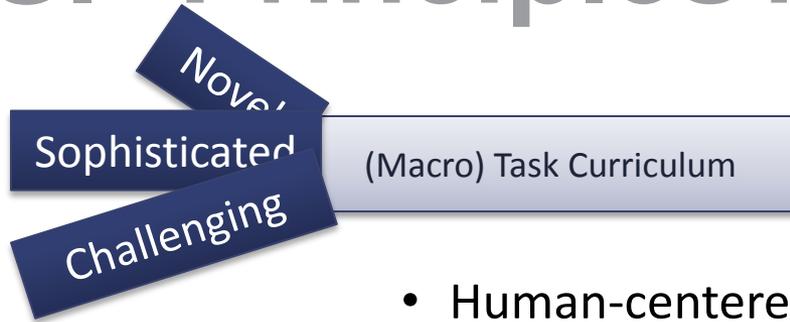
HSI* Principles?



HSI* Principles?



HSI* Principles?

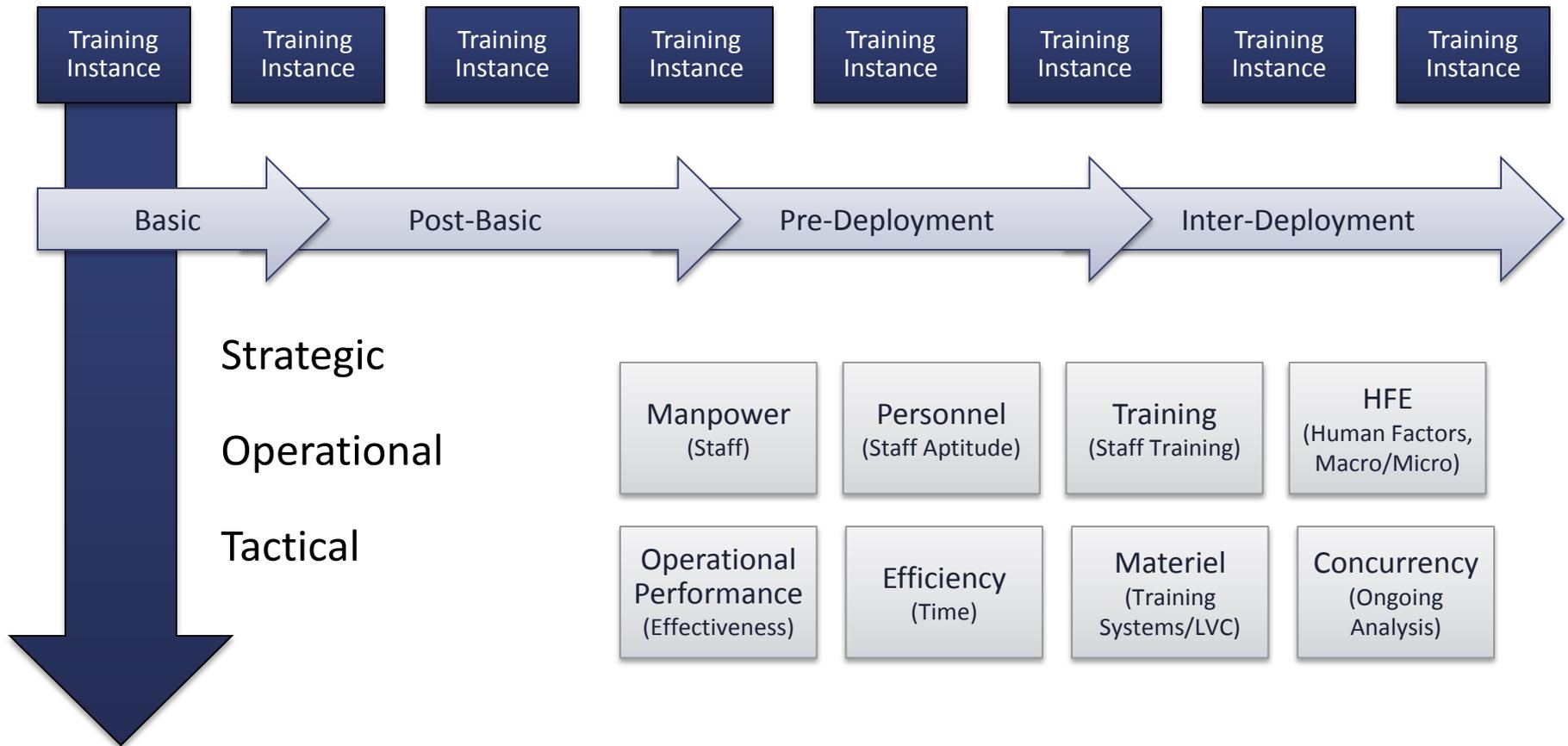


- Human-centered design focus on the curriculum
- Top-down, design of the curriculum
- Quantification of the overall task performance
- Multidimensional views of design
- Integration of people, systems, and technology
- Considers cognitive, physical, and sensory system facets

*AKA Human Factors Integration (HFI), Army's Manpower and Personnel Integration (MANPRINT), Navy's Hardware/Manpower Integration (HARDMAN), USAF's Integrated Manpower, Personnel, and Comprehensive Training & Safety (IMPACT), etc.

HSI + ISD = Curriculum Design

Functional Task



Process Input

- Customer Needs/Objectives/ Requirements
 - Missions
 - Measures of Effectiveness
 - Environments
 - Constraints
- Technology Base
- Output Requirements from Prior Development Effort
- Program Decision Requirements
- Requirements Applied Through Specifications and Standards

Requirements Analysis

- Analyze Missions and Environments
- Identify Functional Requirements
- Define/Refine Performance and Design Constraint Requirements

System Analysis and Control (Balance)

- Trade-Off Studies
- Effectiveness Analyses

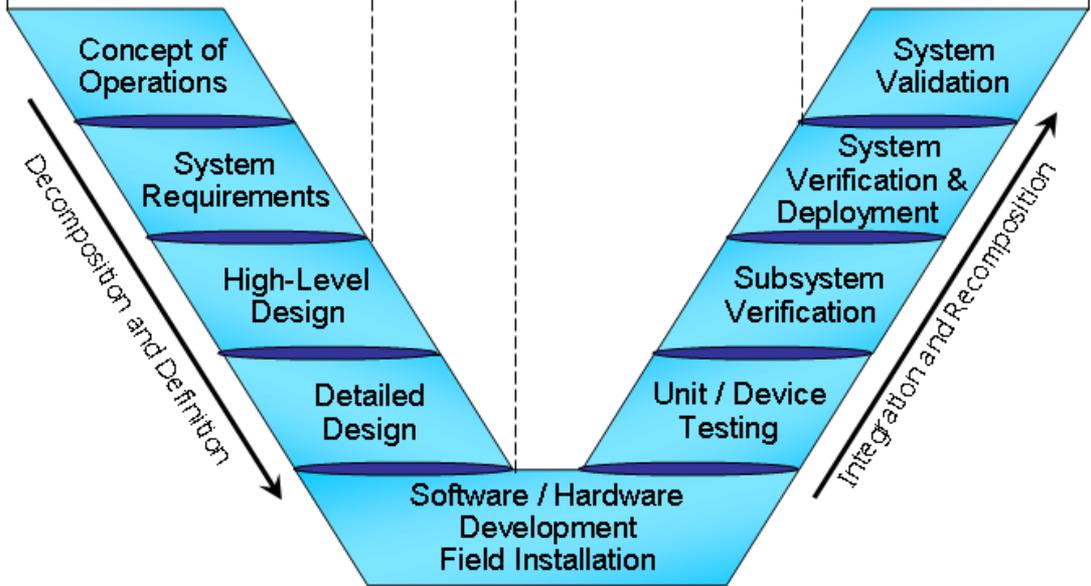
Requirements Loop

Functional Anal

TECHNICAL MANAGEMENT PROCESSES



Project Initiation	Preliminary Engineering	Plans, Specs, & Estimates	Construction	Project Closeout	Operations & Maintenance
--------------------	-------------------------	---------------------------	--------------	------------------	--------------------------



Implementation

Engineering "V" model

- Risk Management
- Interface Management
- Technical Data Management

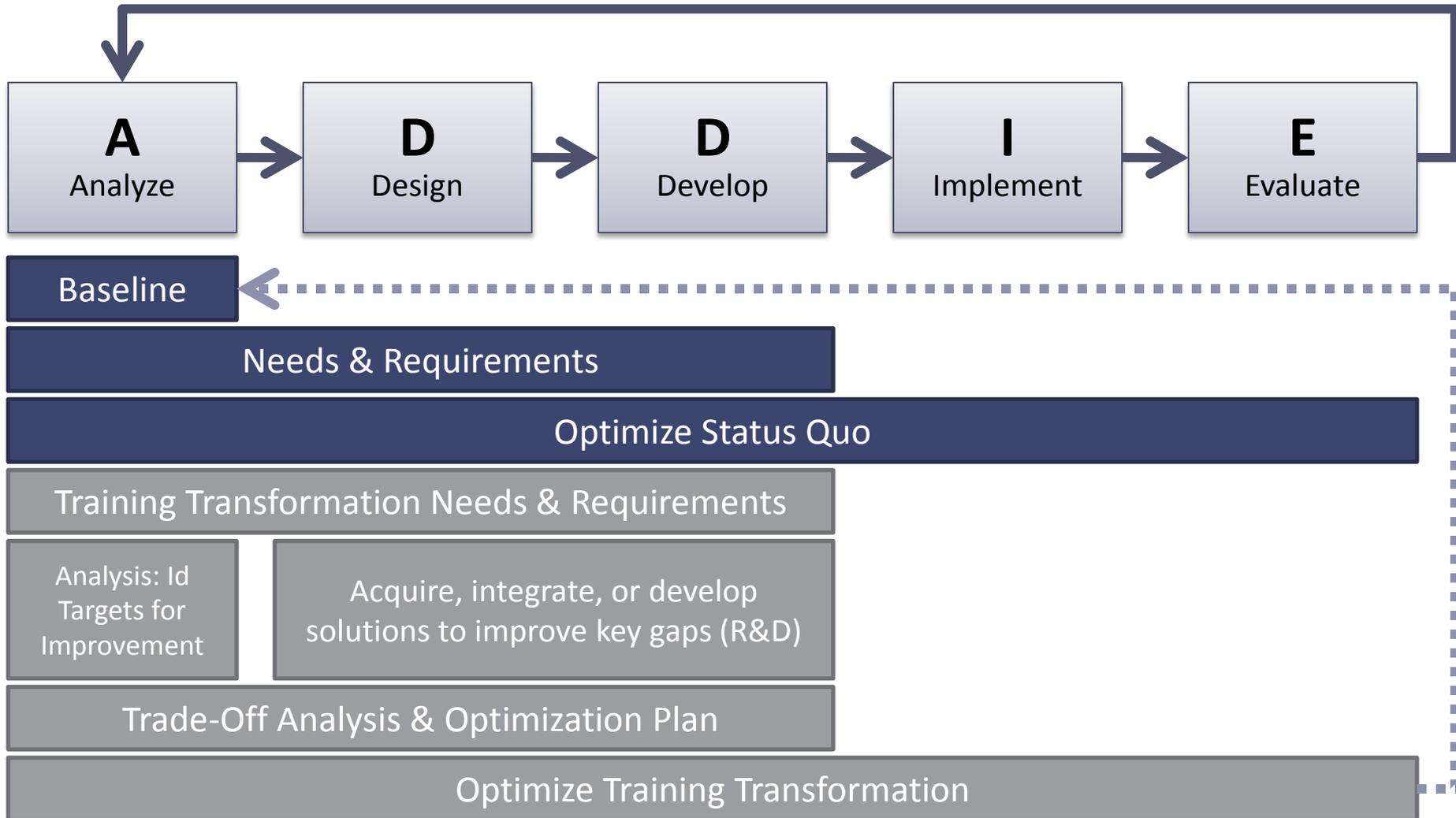
Transition

Validation

ation

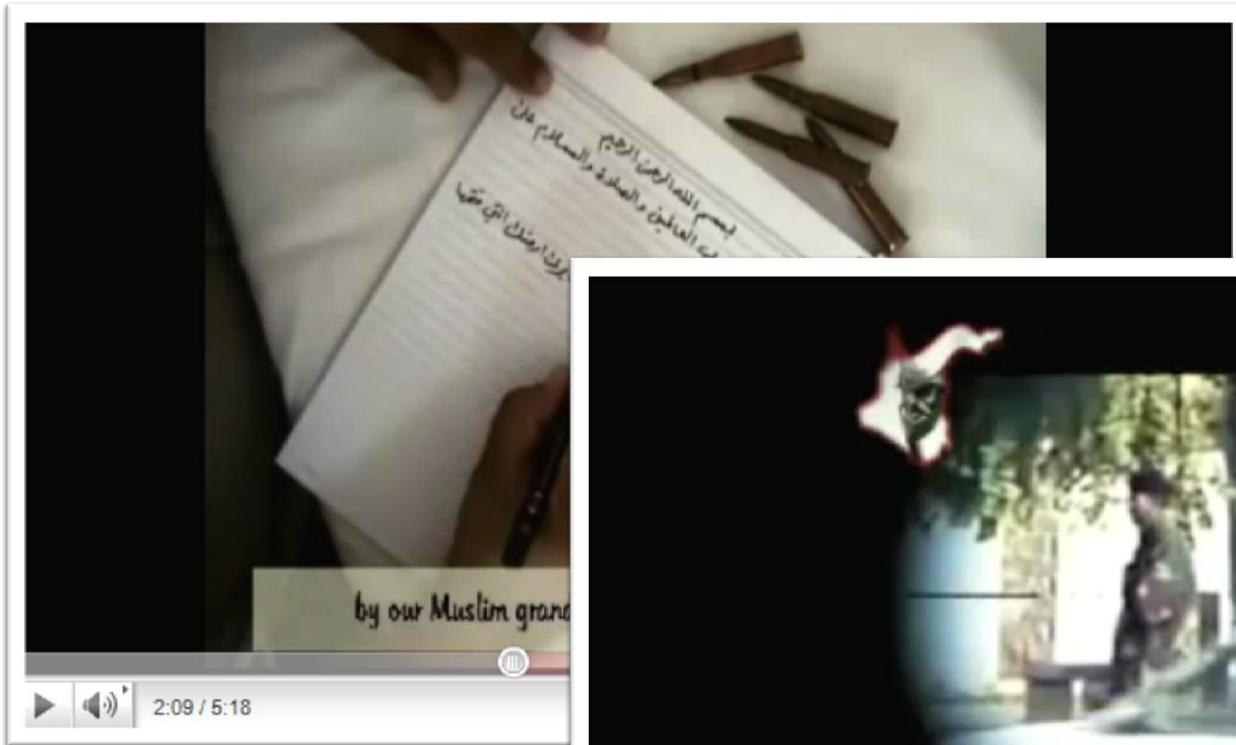
Engineering Process Model

Our Process (Roughly!)



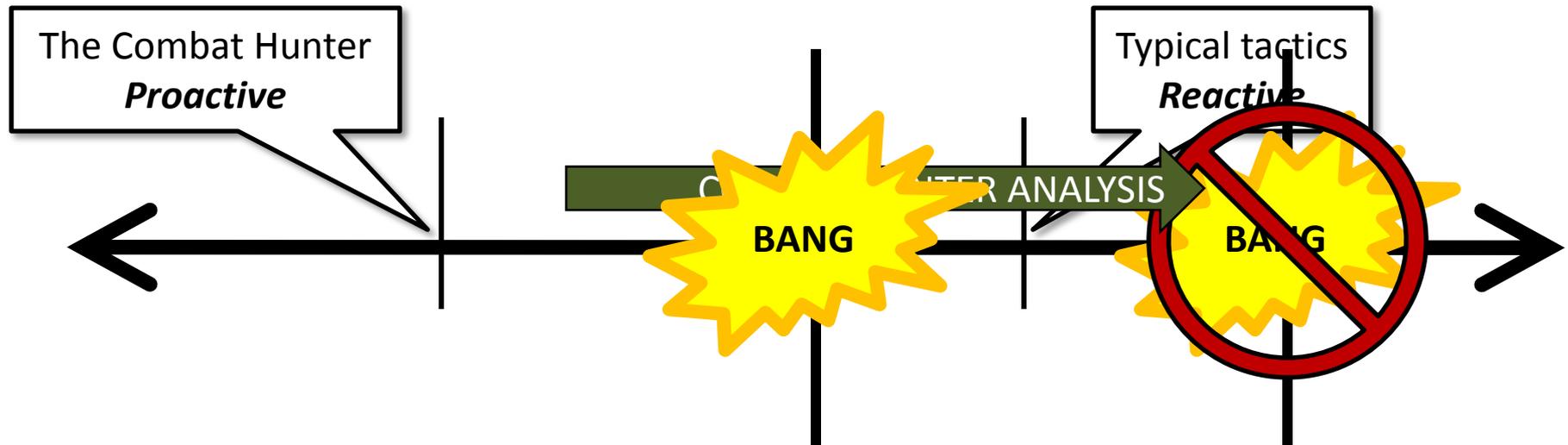
Combat Hunter (Curriculum HSI Example)

Juba Sniper (2005–2007)



Goal of Combat Hunter

WHAT? = Give our warfighters/law enforcers the ability to make decisions (and act) *left-of bang*



WHAT ELSE? = Give warfighters/law enforcers the ability to analyze situations *left-of-the-next-bang*: To track down insurgents and fugitives, find terrorist and criminal networks, and prevent future threats

Limits of Combat Hunter

- Limited access to the training
- Limited course throughput
- Insufficient support for train-the-trainer
- Insufficient take-home materials
- Lacking performance measures
- Limited understanding of skills by leadership

Border Hunter Endeavor

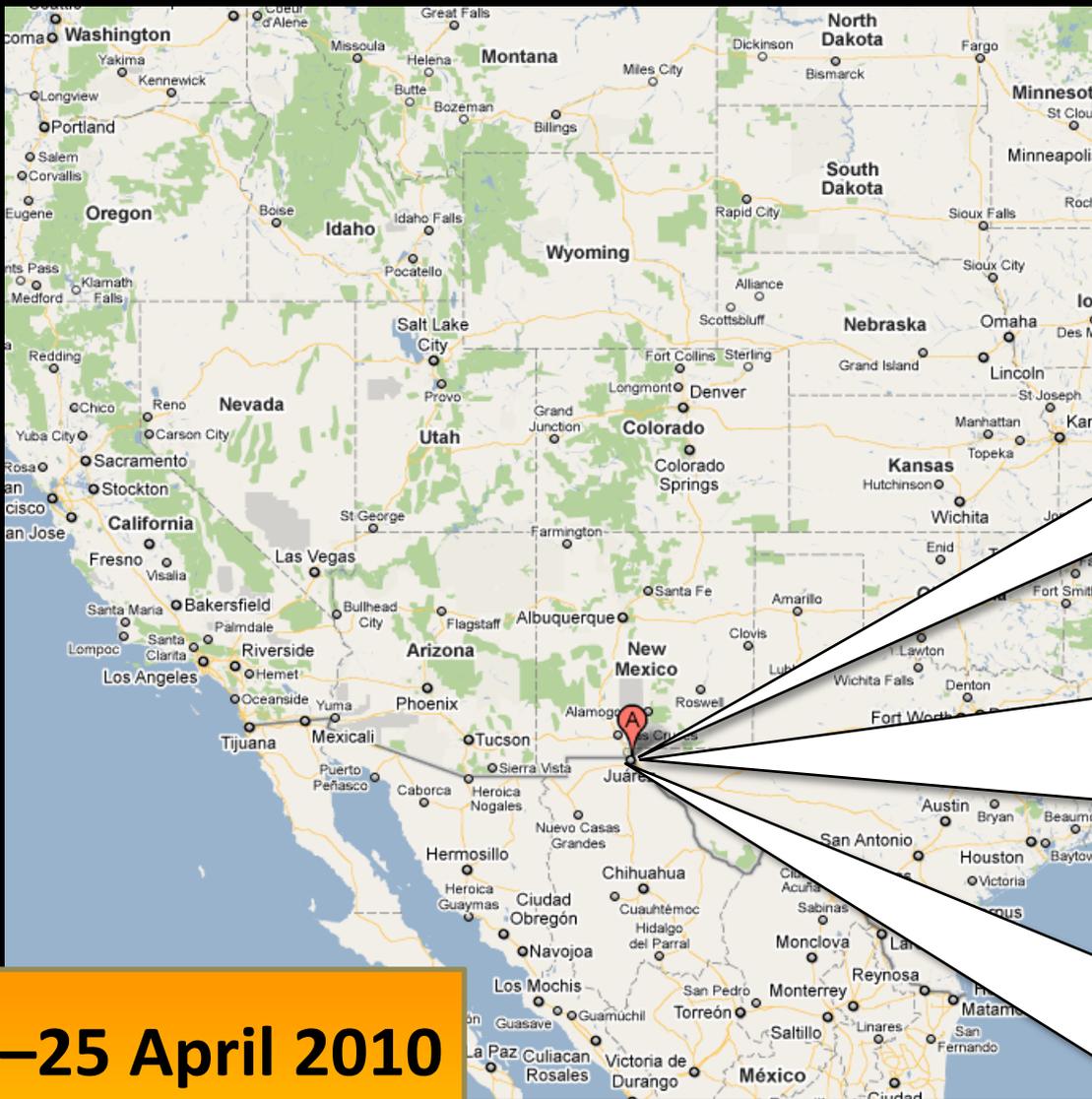
Border Hunter Exercise/Study

Border Hunter Details

- One-off, “graduate level” version of Combat Hunter
- Requested by US Northern Command
- Conducted by Joint Task Force North (JTF–N)
- Researched by US Joint Forces Command (USJFCOM)

Research Goals

1. Capture the course content and package it for greater deployability
2. Assess the instructional outcomes of the course
3. Explicitly articulate the linkages between the course content and underlying scientific principles



**5-25 April 2010
@ Ft. Bliss, TX**



Location



David Scott-Donelan + 5



Greg Williams + 8

**43 Soldiers/Law
Enforcement
agents as trainees**



Trainees

**22 Soldiers as
role-players
(+30 pros)**

Role-Players



13 researchers in attendance

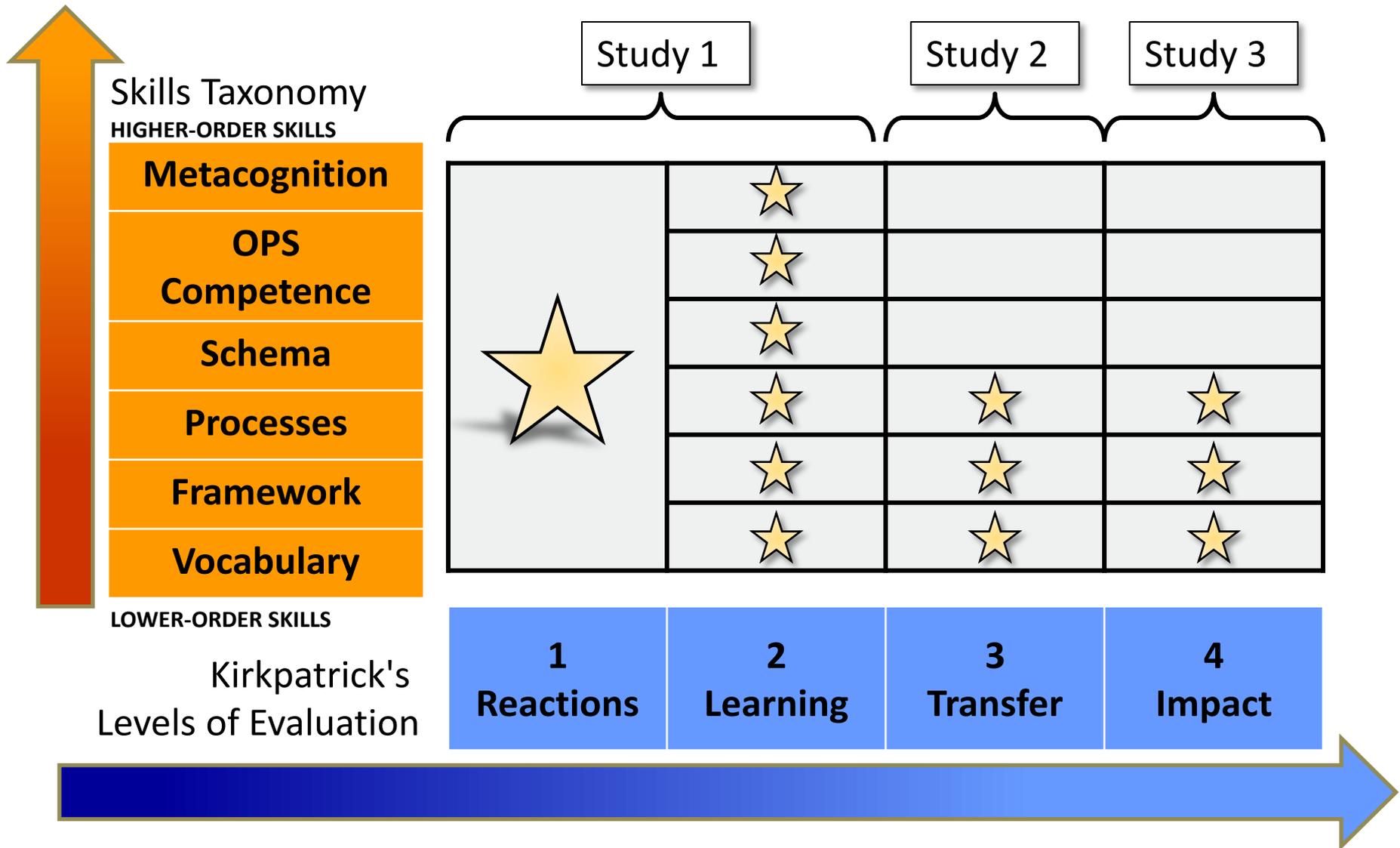
Researchers

**2 (two-man) video
crews + 1 director of
videography**



Videographers

Conceptual Research Design



Actual Research Design

Study 1: Field Study

43 Trainees

- Demographics survey
- Cognitive attributes battery
- Declarative knowledge
- Photo vignettes
- Situated judgment
- Perceptual aptitude
- Level of awareness (HR)
- Behavioral observation
- Reactions surveys

22 Role-Players

- Demographics survey
- Declarative knowledge
- Photo vignettes
- Reactions surveys

14 Instructors (6 & 9)

- Cognitive attributes battery
- CTA / Interviews

Study 2: Longitudinal

12 Trainees

- Declarative knowledge
- Photo vignettes
- Conceptual knowledge essay
- Reactions surveys

Repeated measures (3) over a period of 2+ months

(April 2010 – July 2010)

Study 3: Impact

40 Non-Trainees

- Demographics survey
- Declarative knowledge
- Photo vignettes
- Conceptual knowledge essay

Control = Non-peers

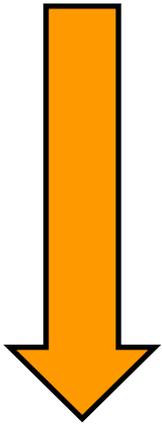
Experimental = Peers

Repeated measures (2) over a period of 2 months

(May 2010 – July 2010)

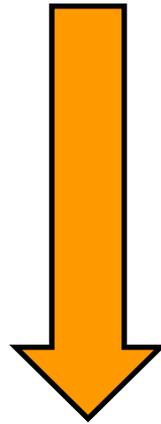
Actual Research Design

Study 1: Field Study



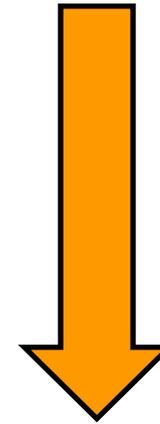
Very **positive reactions** from trainees and role-players; **evidence of learning** in both groups
Development of **expert mental model**

Study 2: Longitudinal



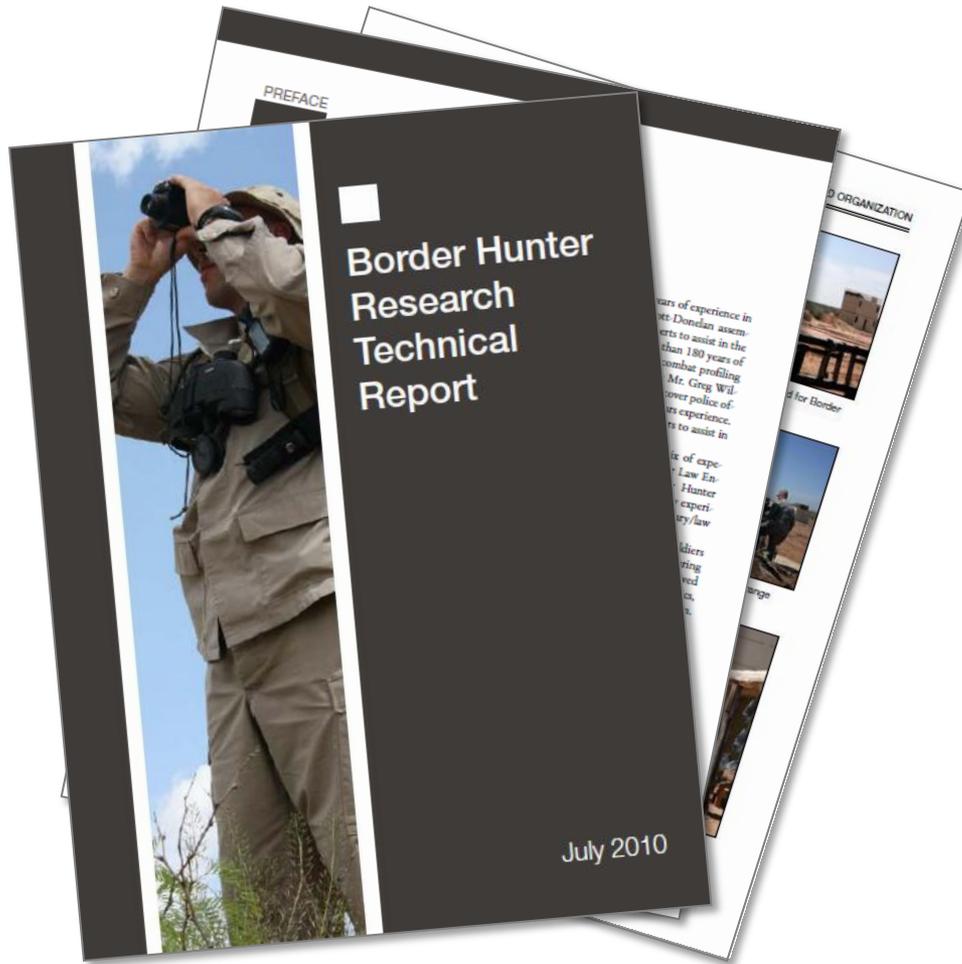
Slight trend, but **non-significant knowledge decay** over time, Continued **positive regard** for the training; report of **use of skills** on the job

Study 3: Impact



Experimental group shows greater knowledge of Border Hunter content than Control group; **evidence of informal organizational transfer of knowledge**

Research Findings



Border Hunter Training Technical Report

This integrated technical report includes sections on course content and execution, experimentation, results, and recommendations.

Includes results from the Field Study (Study 1), Longitudinal Study (Study 2), and Organizational Transfer Study (Study 3).

Deliverables – POI

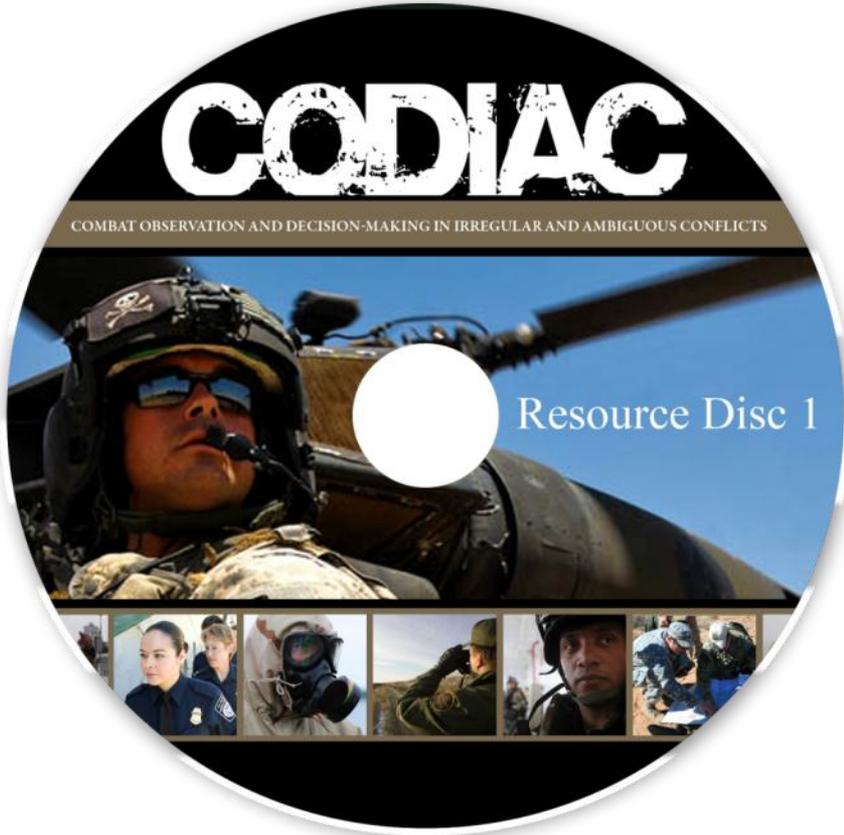


“CODIAC” Program of Instruction

The team developed high-level POI for *Combat Observation and Decision-Making in Irregular and Ambiguous Conflicts* (CODIAC) that includes a detailed syllabus and nine instructional units, based upon observation and analysis of the Border Hunter instruction.

156 pages long

Deliverables – Resources

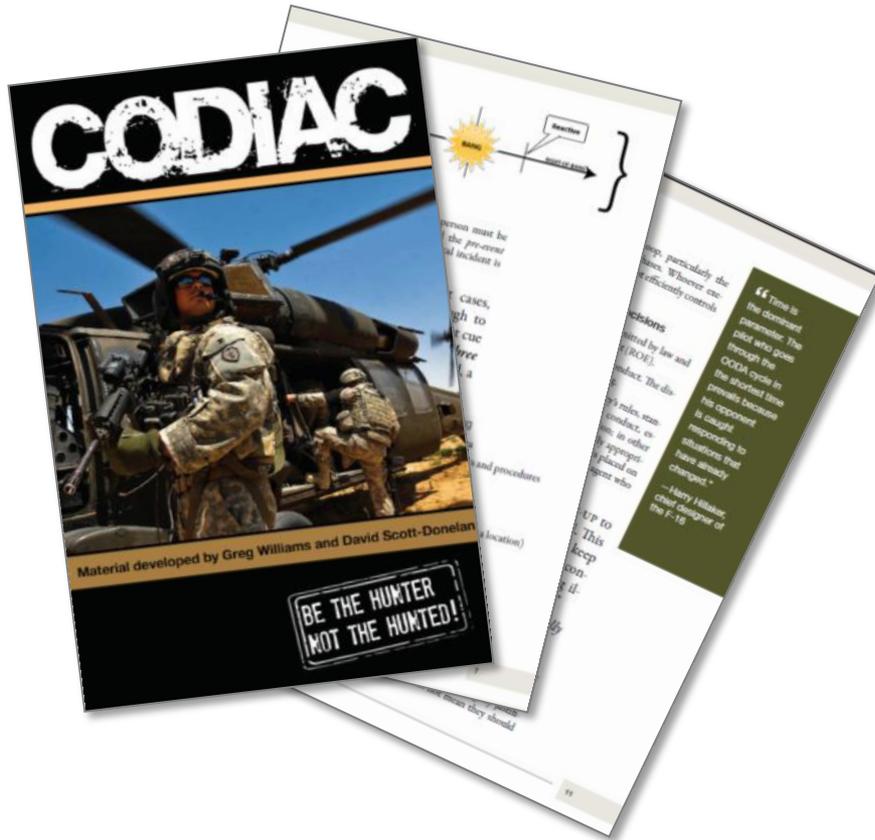


CODIAC POI Resource DVD

Supplementary materials are provided for the POI on an accompanying resource DVD. This DVD includes edited video clips obtained during the Border Hunter instruction and associated with specific modules in the POI.

135 total resources,
including 77 videos

Deliverables – Pocket Guide



CODIAC Student “Pocket Guide”

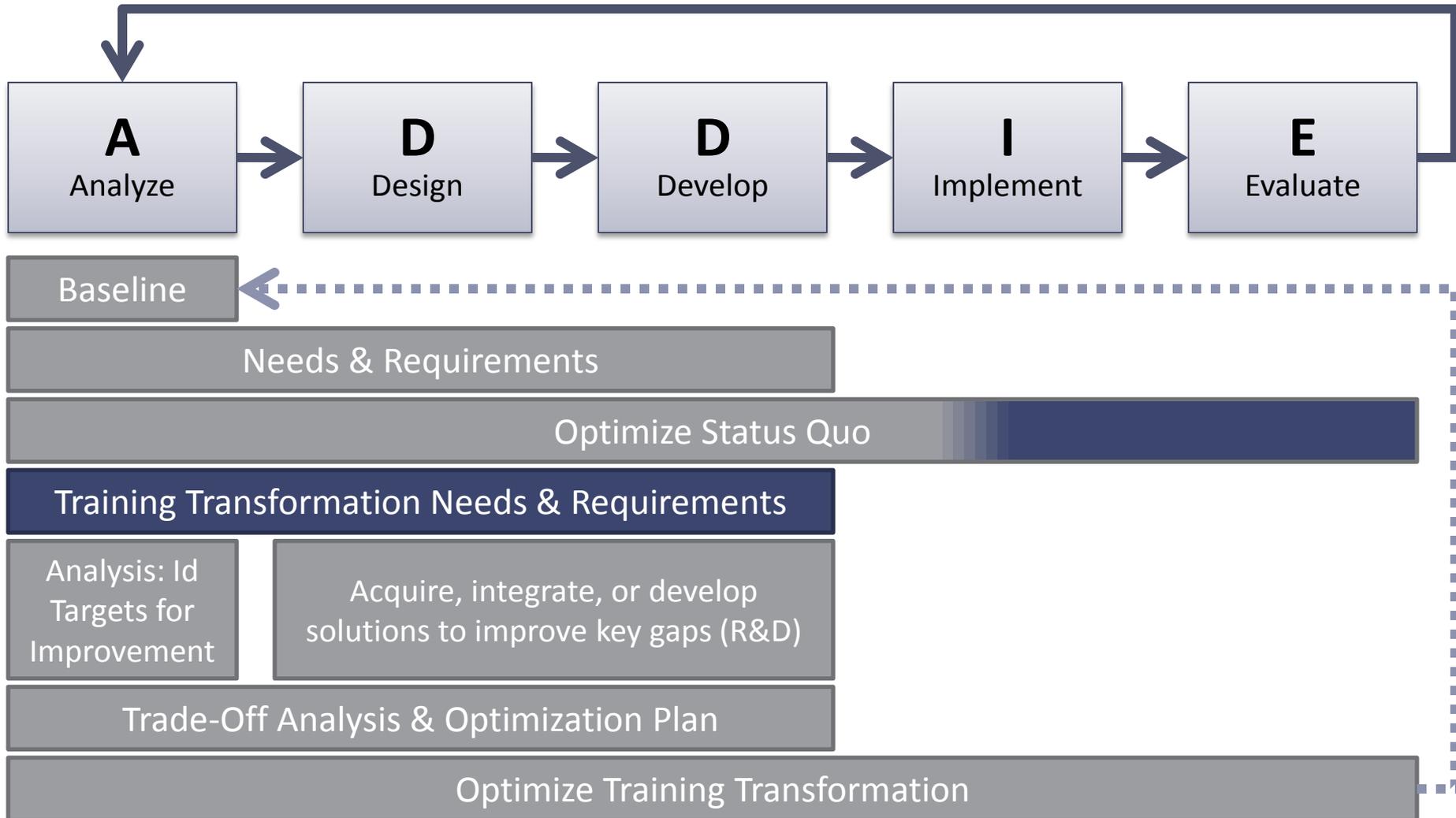
Key CODIAC instructional points are provided in a cargo-pouch friendly “pocket guide.” Content and organization of the student pocket guide corresponds with the CODIAC POI.

104 pages long

Next Steps



Our Process (Next Steps)



Next Steps (FY11)

Optimize Status Quo

- Measure 10-day course against 20-day outcomes
- Analyze USMC POI vs. CODIAC POI

Training Transformation Needs & Requirements

- Analyze range of CODIAC skills, beyond those identified in CH/BH
- Determine current Warfighter CODIAC needs across ROMO/Cycle
- Analyze current training to id gaps in CODIAC training
- Analyze current training technologies to id available tools

Questions or Comments?

Sae Schatz

sschatz@ist.ucf.edu

“We must transform not only the capabilities at our disposal, but also the way we think, **the way we train**, the way we exercise, and the way we fight.”
– (then) Secretary Rumsfeld, 2006