



Training and Testing for Acquisition

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Theater Battle Management Core System *- T B M C S -*



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Overview

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- **Background**

- *What is TBMCS, and what does it do?*

- **Past**

- TBMCS 1.0.1 Training Review FY02

- **Present**

- In Response to the Warfighter -- Sep 11th

- **Future**

- Acquisition Challenges



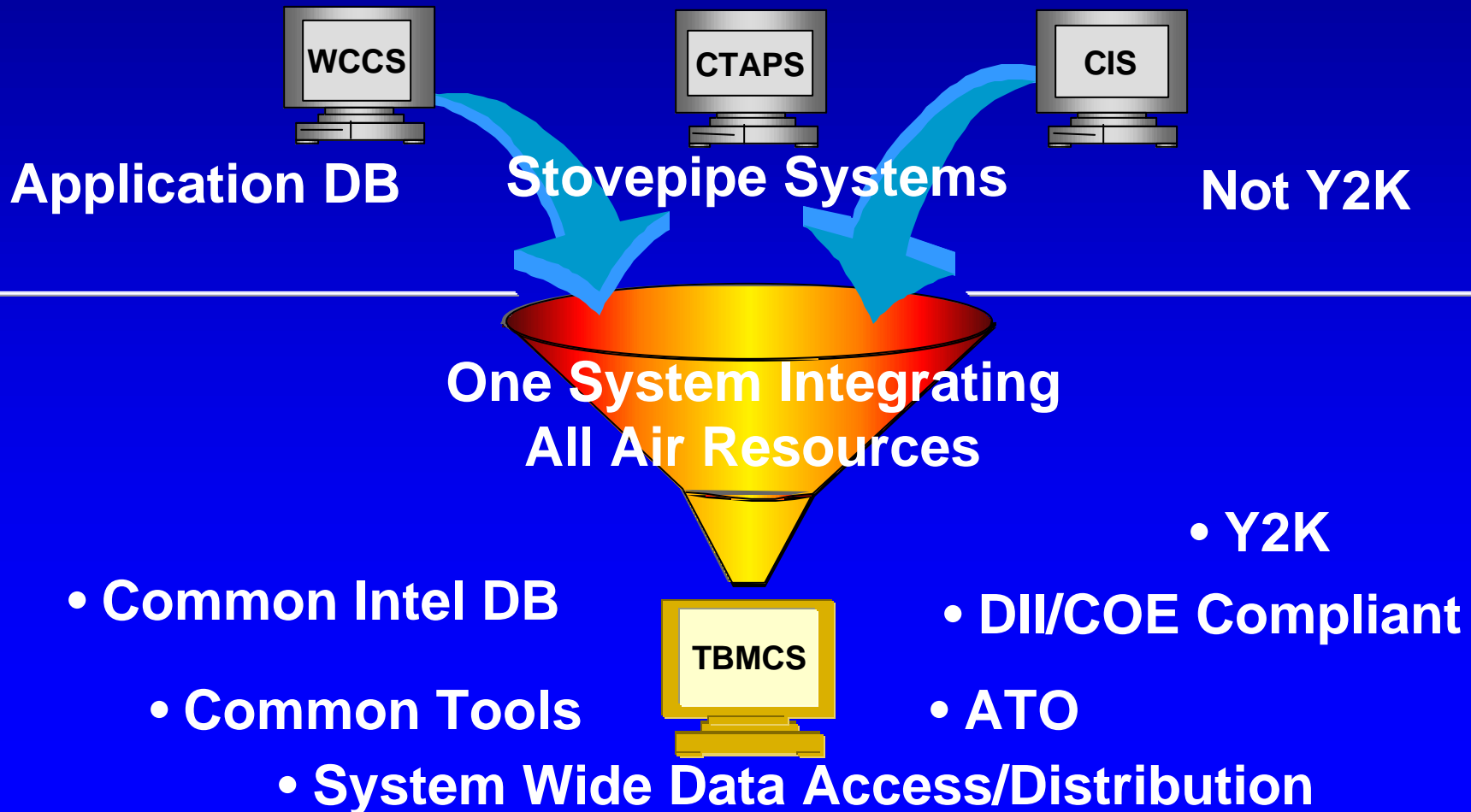


Background

What Is TBMCS?

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An Integrated Planning and Execution System Providing the JFACC Command and Control of All Air Operations To Include Theater Missile Defense





Background

What Does TBMCS do?

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Air Planning and Execution Cycle





Section I -- The Past TBMCS Training Review



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Goals for TBMCS 1.0.1 Training Evaluation FY02

- Provide an in-depth analysis in assisting future System Program Directors in determining *what conditions distributed learning is likely to be effective for C2 systems*
- Provide a holistic view of TBMCS training that shows the impact of training, not only on the individual but on the USAF as well



TBMCS Training Review

ISD Process



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● Analysis

- Best Practices-Training covers 2,140 tasks from force to unit processes
- Lessons Learned-A TASA is a critical component of the ISD process—all future strategies are based upon the results.

● Design

● Best Practices

- Spiral development costly for paper based materials. Considerable savings resulted in using HTML materials to support spiral testing and fielding
- Material available anytime, anywhere, anyplace

● Lessons Learned

- Limited communities of practices to compare web design techniques due to new technology



TBMCS Training Review

ISD Process, cont.



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- **Development**
 - **Best Practices-Quick conversion to web and availability to students**
 - **Lessons Learned-Lack of technology planning. Need for: infrastructure assessment, necessary bandwidth, and AFCA involvement in local computer security.**
- **Evaluation of Training**
 - **Preliminary assessment users disliked self-paced and web-based environment**
 - **Customer Expectations High**
 - **Affected system of record decision**
 - **ESC required to revert to instructor led hands-on approach and maintain web development**
 - **Very costly decision**
 - **Material development per student \$2471.25**
 - **Cost of MTT's per cost of student \$6046.37**
 - **Cumulative cost per student \$8517.62**



TBMCS Training Review Data Collection



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- **Kirkpatrick Level IV**
 - **I – Reaction**
 - End of Course Questionnaire
 - Focus Groups
 - **II – Learning**
 - Pre/Post Test
 - **III -- Transfer**
 - Self-assessment “ability to perform task”
 - **IV – Business Results**
 - Not Collected
- **Total Trained 812 (Operator, SA, and PSS)**
 - Air Force 443
 - Marine 307
 - Navy 34
 - NORAD 38



Findings Question #1

Were the Majority of Students Satisfied at the Completion of Training?

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	Ops	SA	PSS
Did not Respond	24.07%	19.9%	30%
Agreed tng met expectations	53.57%	69.76%	65.7%
Disagreed tng met expectations	22.02%	10.23%	4.26%

- Agreed range is low, there is room for improvement in the courses
- Focus groups and observations revealed:
 - Pre-conceived and/or negative attitudes by students against TBMCS system and/or against LMMS
 - Students showed resistance to learn without the instructor (web)
 - Persistence and voluntary engagement in task was seldom noticed.

*Exception was 152, 157 ANG. Students were motivated, eager to learn, great attitudes and disposition. Facilities were also the most prepared.



Findings Question #2

Will there be a difference in the student test scores after completing the training?

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	Ops	SA
Pre Test	54.87%	45.5%
Post Test	87.62%	87.5%
Avg Gain	32.7%	42%

- With all students shifting from a below average score (<75%) to above average (>75%) data suggests that learning objectives were met as a result of the instruction AND a knowledge transfer took place.

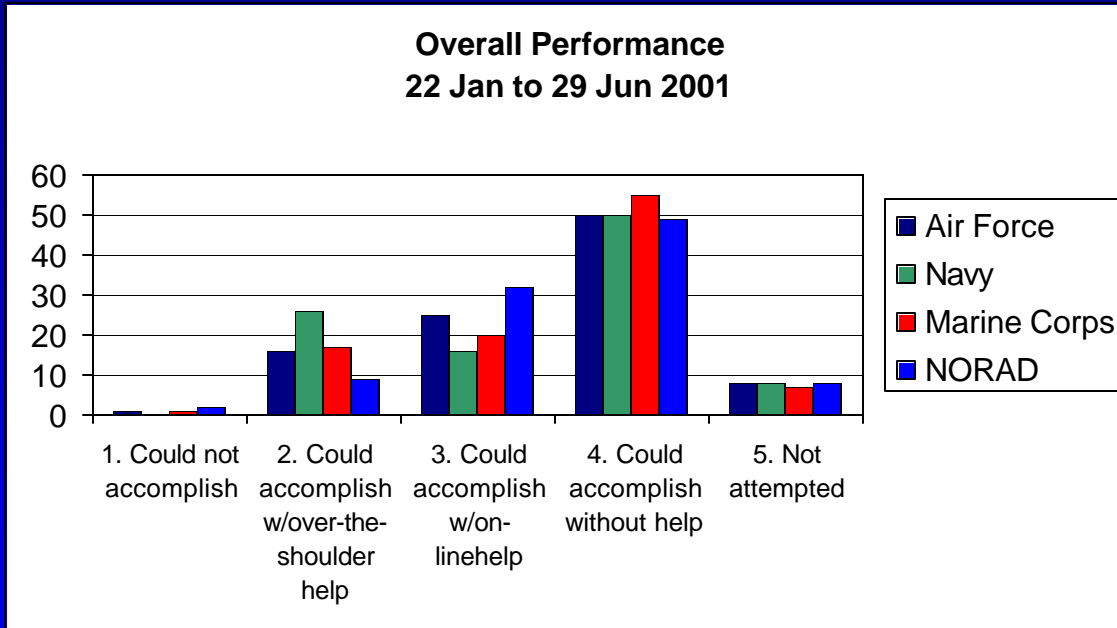
*PSS was a new skill set. Students did not have an experience prerequisite. They were not provided pre/post-tests.



Findings Question #3

Will users be confident in their ability to perform key tasks upon completion of the training?

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1.4% 15.3% 24.1% 52% 7.3%

Total students 248

Total ops/plans tasks evaluated 66

Total possible responses 16,949

Total responses received 7,645

Response Rate=45%

- **With a cumulative total of 91.4% students stating that they could complete the key tasks with over-the-shoulder help, on-line help, or without help vs. 1.4% stating they could not accomplish the key tasks, data suggests the students perception of their ability to perform key tasks is high.**



Findings Question #4

Is there a correlation between user experience and EOC satisfaction?

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Experience	Ops	SA
12 Mo Exp	12.54%	31.43%
Less Than 12 Mo Exp	64.5%	48.96%

Expectations	Ops	SA
Met	53.57%	69.76%
Did Not Meet	22.12%	10.23%

- Data suggests a correlation exists, however without access to raw data a true correlation could not be determined
- Observations and focus groups revealed:
 - Students who did not meet the prerequisite of 12 mo legacy/or TBMCS experience displayed
 - Lack of knowledge of duty position
 - Higher frustration levels
 - Quick to judge instructors knowledge
 - The didactic personality in most SA led to collaboration/ teamwork to resolve problems/differences during training



Findings Questions 5 & 6, cont.

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Findings Question #5. Will the students perceive the facilitator as knowledgeable about the course content?

- **Did Not Respond**
 - 27.38%
- **Strongly Agreed/Agreed**
 - 72.55%
- **Strongly Disagreed/Disagreed**
 - 3.15%

Findings Question #6. Will students perceive the course covered key TBMCS skills specific to their work center?

- **Did Not Respond**
 - 23.59%
- **Strongly Agreed/Agreed**
 - 61.73%%
- **Strongly Disagreed/Disagreed**
 - 13.92%



Findings Questions 7, cont.

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Findings Question #7. Will students perceive that their units provided a workspace that supported a successful training environment?

- **Did Not Respond**
 - 30.58%
- **Strongly Agreed/Agreed**
 - 57.93%
- **Strongly Disagreed/Disagreed**
 - 11.31%



TBMCS Training Review Barriers and Issues



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- **Inconsistent Funding**
- **Evaluation**
 - Lack of clarity in regulations
 - No established criteria from test community
 - Performance standards not identified at NAF/Service
- **Lack of OJT and Continuation Training Plans**
- **Technology Planning**
 - “hop” on the web bandwagon with out a long range plan
- **Policy and Management**
 - Change agent
 - Enforcement
 - Lack of CONOPS
 - No certification program
- **Changing Roles of Presentation Media, Instructors, and Students**
- **Design of Web-based Training Materials**



Section II -- The Present In response to the Warfighter

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- Training
- Change in Acquisition Strategy
- Testing



*Provided HW, SW, installation support, training, and over the shoulder support for real world events such as **Noble Eagle** and **Operation Enduring Freedom***



In Response to the Warfighter Training



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**Homeland
Defense**

- Just in Time
 - Over the shoulder
 - Subject Matter Experts
- CD/Web



Multi-Service Support



In Response to the Warfighter Acquisition Strategy



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- Loss of funding
- Initial reduction in manpower for testing
- Implemented spiral development earlier than anticipated
- Focused on smaller system builds not requiring reinstallation

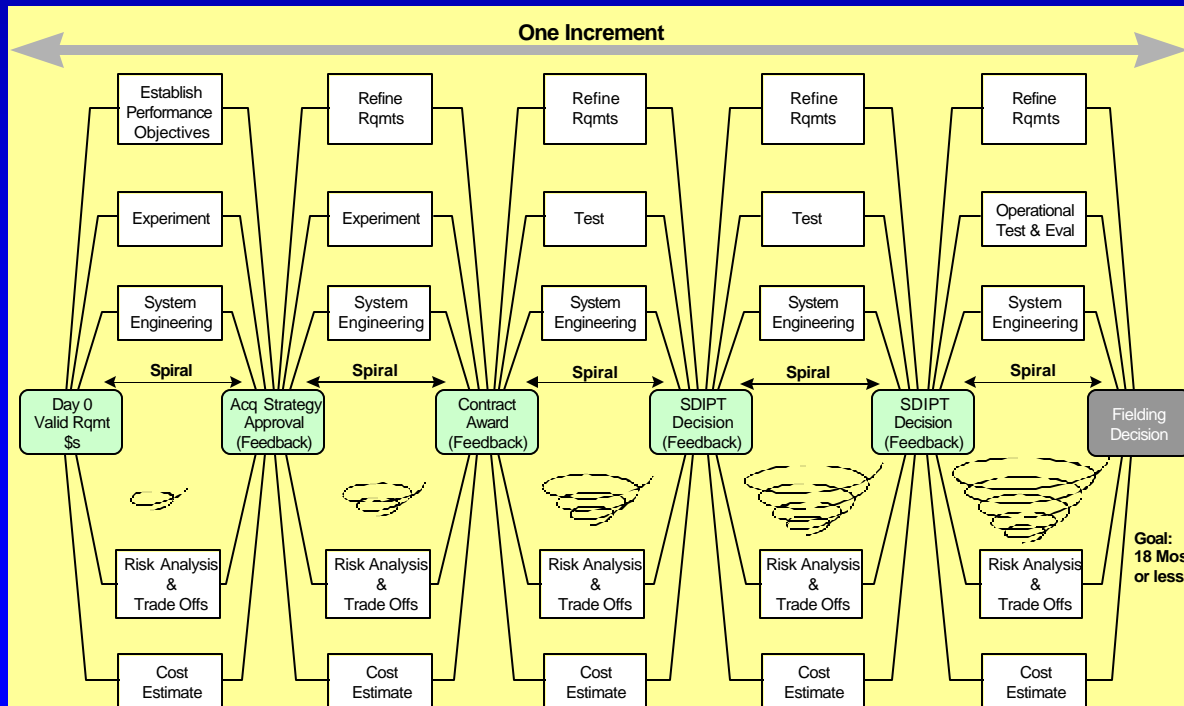




In Response to the Warfighter Acquisition Strategy, cont.

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AFI 63-123 Evolutionary Acquisition “Spiral Development”

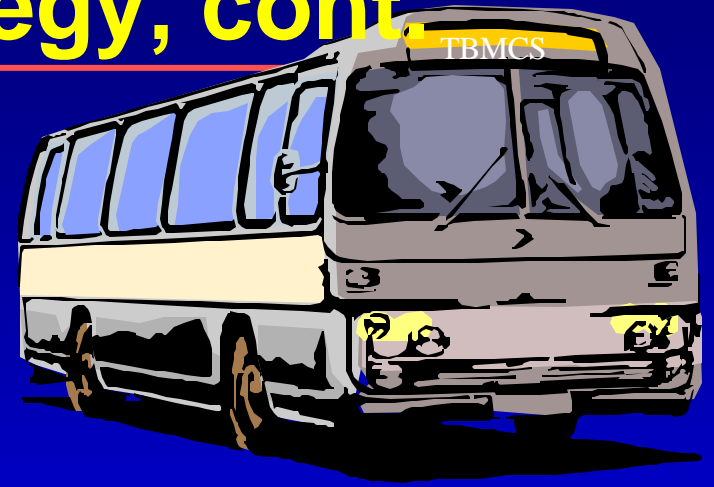




In Response to the Warfighter Acquisition Strategy, cont.

The Bus Stop Schedule

- **Three Spirals, One Increment every Two Years**
 - Spirals; September-March-September
 - 2nd March; an Increment
- **We will schedule back from these dates the required actions to include requirements definition**
 - When requirements will be cut off to meet release
 - Meeting dates will be known months in advance
 - Personnel needed for testing will have plenty of notice
- **If one of the anticipated enhancements is not ready, there will be another “bus” six months later**





Evolutionary Acquisition Testing



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● Pro's

- User Centric
- Less manpower intensive testing
- Less time needed for testing

● Con's

- Service concerns AFI is not a regulation
- Product driven vs. schedule driven
- Fielding too fast to become proficient
- Service Pack Distribution





Section III -- The Future



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Training and Testing for Evolutionary Acquisition





Section III -- The Future Testing & Acquisition



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- **Testing**

- Insure spiral test team members are knowledgeable about the system under test
- Some test manager responsibilities may need to be delegated to “increment program managers”

- **Acquisition**

- Ensure funding, resources, and documentation are in place prior to fielding C2 systems.



Section III -- The Future Training



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- **Training**
 - **Develop and procure training systems (e.g., simulators and trainers) to emulate the characteristics of the system vs. MTT reliance.**
 - **Must incorporate a “train the way we fight” mentality**
 - **Budget for initial qualification training prior to system fielding**
 - **Implement certification program**



The Future Challenges



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- Paradigm change
- Mentoring others on process
- Doing more with less
 - Money
 - People



Summary

Training and Testing for Acquisition

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- Past -- TBMCS Training Review
 - TBMCS Training Analysis, Design Development and Fielding
 - Data Gathering and Findings
 - Barriers and Issues
- Present – In Response to the Warfighter
 - JIT support to deployed locations
 - Program Office response to real world events
 - Training and Testing for Spiral Development
 - Pros & Cons
- Future – The Challenges
 - Training and Testing for Evolutionary Acquisition

