Presentation to the Defense Acquisition Performance Assessment Project

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**Office of the Director,
Operational Test and Evaluation**

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Operational T&E Results
Generally Good News, But. . .

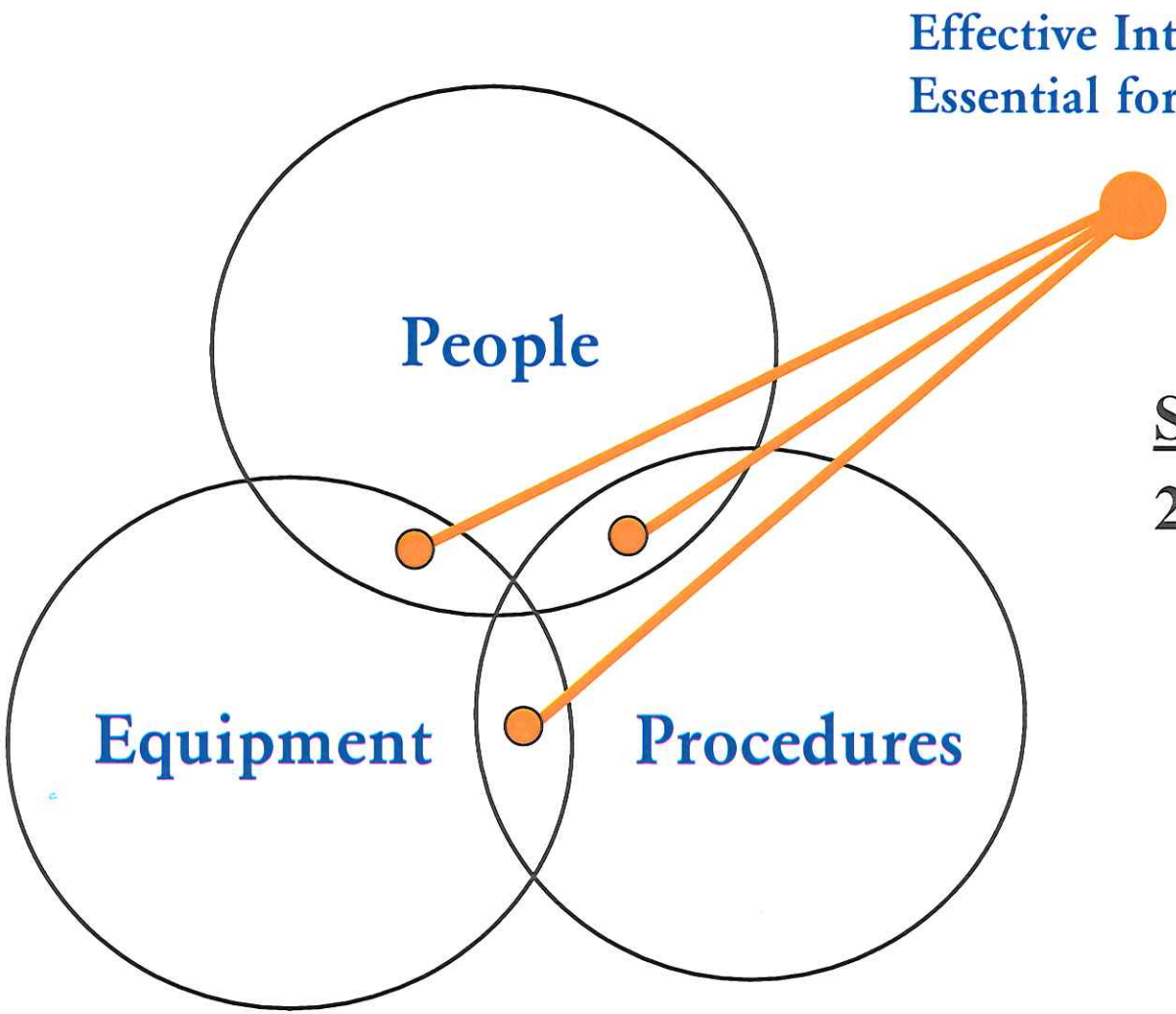
- 1984-1994—57 Systems
  - Effective—77%
  - Suitable—67%
- 1995-1999—33 Systems
  - Effective—81%
  - Suitable—76%
- 2000-2005—36 Systems
  - Effective—94%
  - Suitable—55%

- **Field Test**
- **Realistic Conditions**
- **Typical Users**

Key Question: Can a unit equipped with these systems accomplish its mission (task)?

"If it doesn't have to work, we can ship it tomorrow."

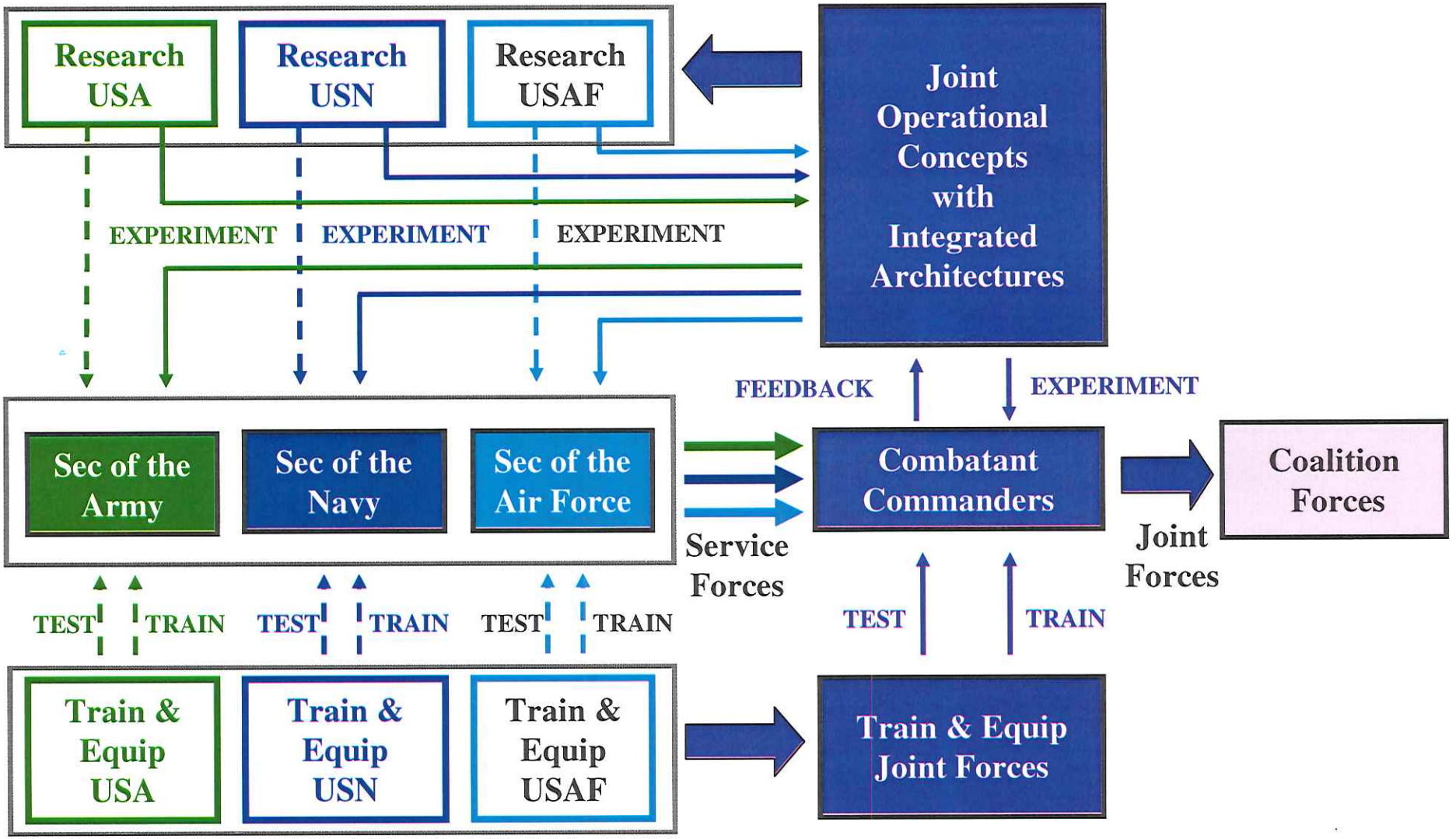
Making Things Happen in a Joint Enterprise



SECDEF's Priorities

2. Strengthen Joint Warfighting Capabilities

Increased Emphasis On Joint Warfighting Capabilities



Procedures
Test and Evaluation Involves Rigor

- Compare collected data to a standard
  - Operational Requirements (now Joint Capabilities) documents—paper
  - Existing Capabilities—demonstrated fleet/field performance
  - Contract specifications—paper
- Services and JROC provide standards
  - Suitability is not a requirement—just buy more—affordability issue
  - Key Performance Parameters—necessary but not sufficient—JROC
  - Basis for some standards are not understood—significance issue
  - Some standards are added or changed—difficult to resource
  - **Translating warfighting needs into contract specifications is key/hard**
- Without standards provided, the T&E community must search for or develop evaluation criteria (Can be viewed as additional, back-end requirements)

"What brought the . . . Program through its initial difficulties is the priority afforded the program; . . . strong leadership; . . . and continued testing, testing, and-dare I say it again-more testing."

Senator Sessions, R-AL

Procedures
Poor Prior Planning . . .

- T&E community early involvement—JCIDS, RFI/RFP, contract inputs?
  - The T&E community does not create back-end, new requirements when integrated upfront and throughout so test resources are planned, programmed, and budgeted as part of the program strategy
  - Without early T&E planning T&E funding is "wedged" and becomes management reserve for uses other than T&E and T&E does not occur.

- Lack of adequate test planning for reliability testing and reliability growth during DT, is an early predicator of poor operational reliability

- DOT&E and USD(AT&L) released a new Reliability, Availability, and Maintainability guide to assist PMs with Systems Engineering
  - Approved in August and posted on the OSD SE web site: http://acq.osd.mil/ds/se/ed/publications.htm

Procedures
Development Needs Discipline

- DT results generally better than OT results
  - *"The PM's rationale is that they will tell me that in past tests they have never had that problem before. Well, you never had that problem before because we, the soldiers, use the equipment in the mud, and in the rain and we use it every day by the average soldier."*

    BG Honore'

    1st CAV

- Reluctance to look for the truth early?

- Early discover of problems permits fixes sooner—cheaper

- OT Readiness Reviews
  - Is the system ready to work with legacy systems?
  - Is the system ready for combat—mud, countermeasures, etc.?
  - OT&E is not a closed book exam—mission accomplishment
  - DAE—certify ready for OT&E in a Joint environment

Rigorous, robust testing – adequate by any standard, focused on mission accomplishment and total life-cycle suitability.

Procedures
Life-Cycle of Evaluations

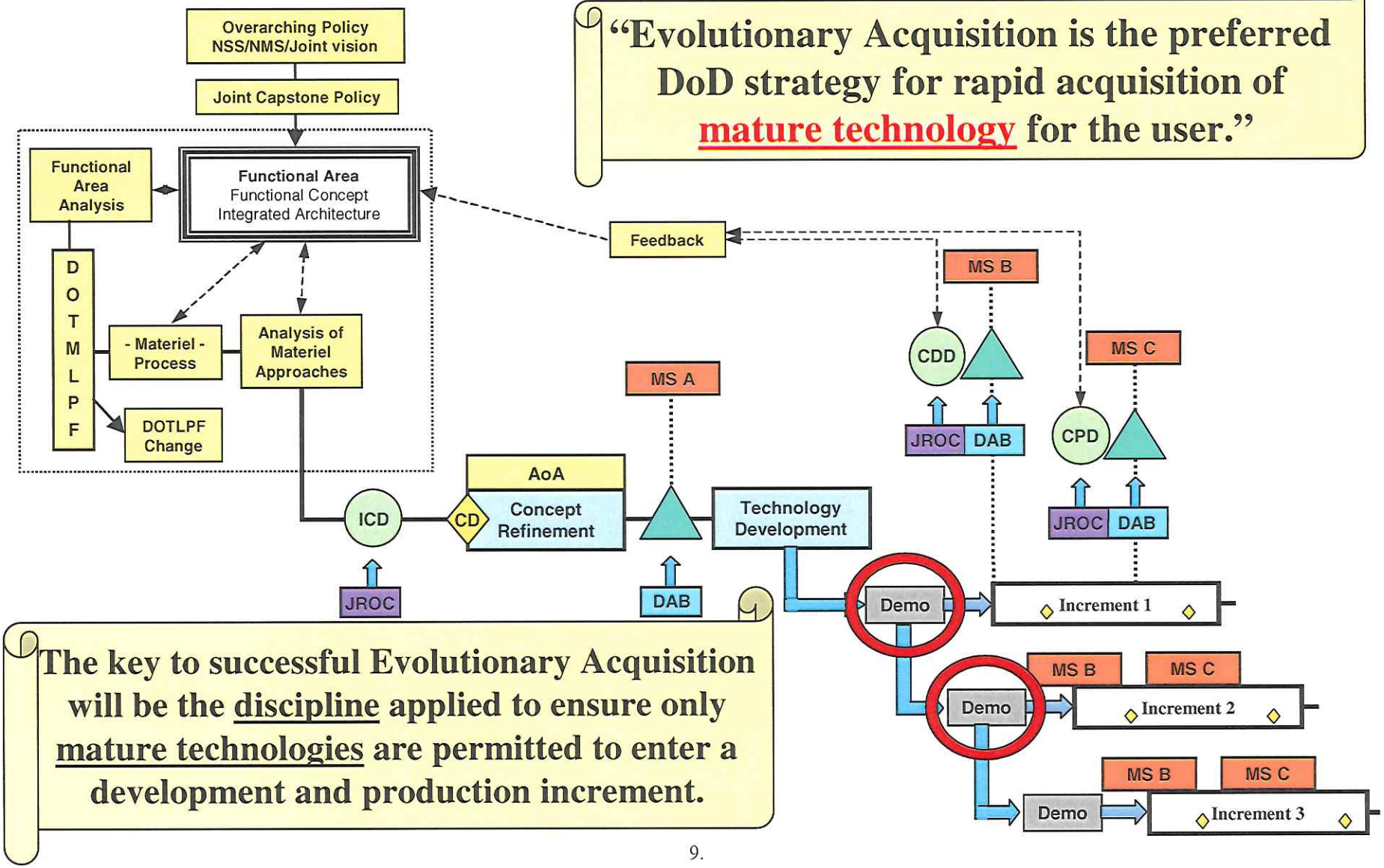
- Prototyping—Performance and Competition
  - Demonstrate performance on competing prototypes—OAs
  - Down select means sole source—loss of bargaining power
  - Platforms vs. mission packages
  - Multiple suppliers—but get it right—system can be gamed
    - Form, Fit, and Function but . . .
    - Only works if using cards from one supplier—logistics impact

- Demonstrate capabilities in a Joint environment during development
  - Mandatory periodicity—come as you are—learn, prioritize, fix
  - Make adjustments across programs to deliver Joint capability
  - Live/virtual/constructive stimulation—T&E in a Joint Environment Roadmap

- Government needs access to contractor performance data
  - Contracts not written in best interest of the government
  - Government must be able to protect proprietary information

- Frequent Evaluations—appropriate scope/scale
  - IOT&E is not a final exam—acquisition decisions, capabilities, & limitations
  - Accountability for fixing performance deficiencies

Evolutionary Acquisition And Technology



Equipment
Is it time for a DoD Joint Enterprise?

- Test and Training Infrastructures—distinct
  - *Air, Land, and Sea space is priceless—weapon footprints*
  - *Instrumentation—embedded, at a minimum mobile*
  - *Targets and control systems—any range, any time*
  - *Encroachment—flora, fauna, folks, & frequency spectrum*
  - *Major Range and Test Facility Base—composition and use*
  - *Facilities—government, contractor, distributed, linked*

- Look to the future—Joint, Net-centric, Unmanned
  - Top-down investment strategy consistent with SECDEF goals
  - Directed Energy and Hypersonics—huge distance very fast
  - T&E in a Joint Environment Roadmap—DEPSECDEF approved
  - M&S standards, protocols, and ownership—1994 SECDEF vision
  - Information Assurance—evaluating legacy systems today

Equipment Complexity Costs Money

- Technical Complexity—one example—targets for sensor testing
  - Targets used to be shapes—Visual sensor—eyeball
  - Targets with hotplates—IR sensor—heat seeking
  - Targets with IR emitters—IR sensor—classification
  - Targets with EO/IR emitters—EO/IR sensor—multi-spectral

- Operational Complexity—Joint operations require more assets
  - Sensor-to-Shooter kill chain
  - C4ISR through Service/National assets—interoperability
  - Not only Systems of Systems but also Family of Systems—portfolios
  - Moving toward Net-centric operations
  - Evaluating horizontal fusion of C4ISR information—very revealing

- Is DoD getting a good return on its investment in complexity?
  - Troops use only top layer of increased capability

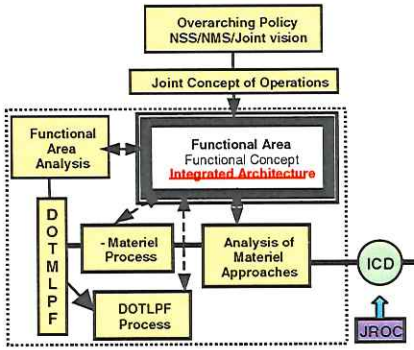
A modern test infrastructure – capable of supporting adequate testing in a timely fashion, responsive to program managers and warfighters.

DOT&E Initiative for Rebuilding the T&E Infrastructure

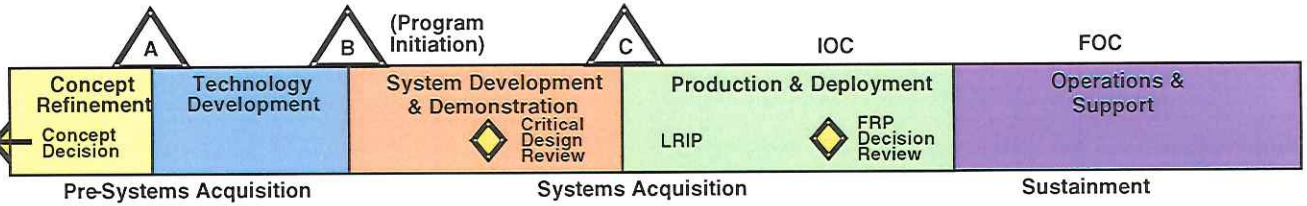
- Testing in a Joint Environment Roadmap
  - DEPSECDEF approved Roadmap November 12, 2004
- Roadmap promotes:
  - Institutionalizing need to test in realistic joint operational environments
  - Defining capabilities in common, measurable, war fighting terms
  - Establishing persistent connectivity between Battle Labs, HWIL simulations, DT facilities, and live force instrumentation
  - Using connectivity to build the environments for joint experimentation, development, test, and training
- Department should:
  - Share test and JNTC capabilities and venues
  - Allow for increased participation of Guard and Reserve forces
  - Revitalize M&S to achieve Department vision

Life-Cycle Evaluation Continuum Needs a Common Language

Concept



Contract



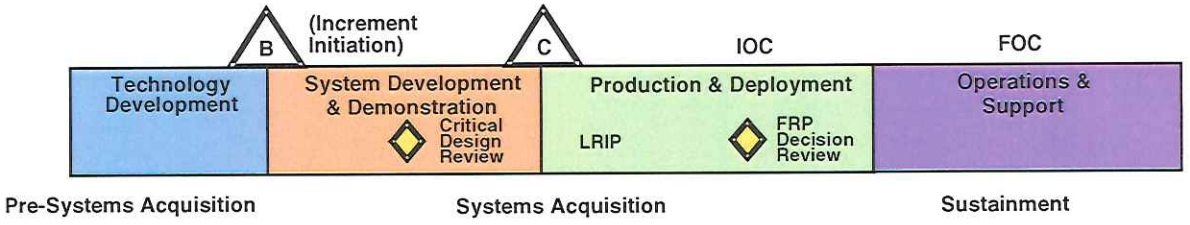
Combat

STUDIES/EXPERIMENTS ACTDs/ATDs/OA CT/DT/LF/OA IOT&E FOT&E JT&E TRAINING

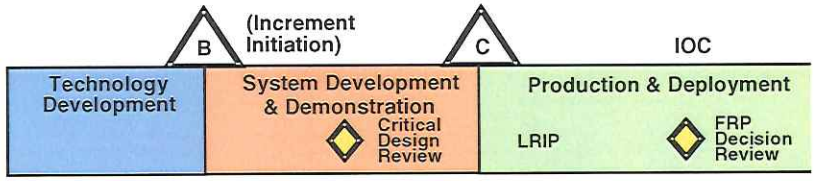
It's All About the Warfighter
- Train as we fight
- Test as we fight
- Refine how we fight

Life-Cycle Communication
- Understand each other
- Use a common language

Mission Essential Tasks
- UJTL/JMETLs/SMETLs
- Translate to Contract Specs



ACTDs/ATDs/OAs CT/DT/LF/OA IOT&E FOT&E JT&E TRAINING



ACTDs/ATDs/OAs CT/DT/LF/OA IOT&E FOT&E

People
Culture Changes With Incentives

- May 2003 DSB report on acquisition system for space systems
  - Cost has replaced mission success as the primary driver in managing acquisition processes, resulting in excessive technical and schedule risk.
  - Acquisition personnel in the 80s said the main emphasis of their jobs was to deliver a quality product to the warfighter – Acquisition personnel in the 90s responded that their job was to control costs.

- Do we have the right acquisition corps—incentives?
  - Military turnover—stability, short term view
  - Best use of military skills—operational experience
  - Career path for civilians—commercial experience, promotions

- Is DAWIA right for today's complex environment?
  - Education and training—DAU 10 weeks for PM?
  - Government & defense industry are victims of declining science & engineering graduates

People
Culture Change Starts With Incentives

- Systems Engineering declined and complexity increased
  - Systems Engineering fostered by OSD
  - Needs to be embedded within program offices
  - Government & defense industry compete for PMs and Systems Engineers in a commercial job market

"Just the ability to manage and anticipate the impacts of the complexity is a real skill, requiring superior systems engineering and program management skills. One of the challenges for both industry and the government is to make sure that we have adequate numbers of people who are both trained and experienced in those two disciplines. There aren't enough of those folks either in government or industry today for the scale of complexity that we are dealing with."

Ronald Sugar

Northrop Grumman

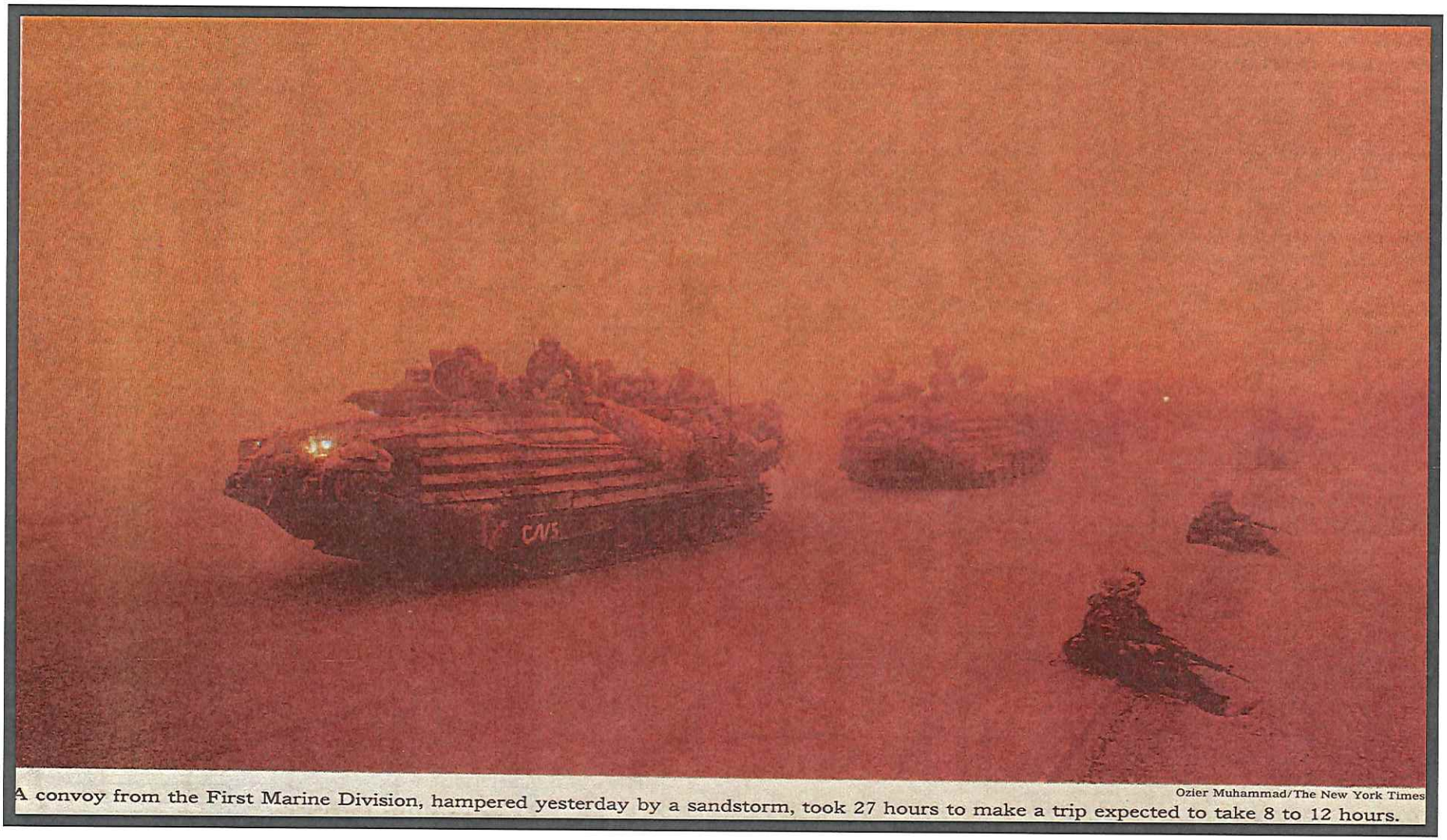
People
Culture Change Starts With Incentives

- What if DoD had?
  - Joint capability managers
    - Portfolio perspective of FoS/SoS for joint capability
    - Fiscal/schedule authority and flexibility
    - Work directly for DAE
  - Enterprise contracting capability
    - Standard practices
    - Better trained/larger workforce
  - PPBE system overhaul—Congressional help
    - Use or lose practice discourages efficiency/management
    - Activity-based accounting—foster transparency and truth

- Who owns joint implementation? Who Should?

"Tell-It-Like-It-Is" reports – complete, accurate, objective and timely in support of decision making – accomplished in a mission context - not specification compliance.

Realism is Important
No Lab Coats on the Battlefield



A convoy from the First Marine Division, hampered yesterday by a sandstorm, took 27 hours to make a trip expected to take 8 to 12 hours.

Ozier Muhammad/The New York Times

DAVID W. DUMA

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Operational Test and Evaluation
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On February 1, 2005, Mr. Duma became the Acting Director of Operational Test and Evaluation. He serves as the senior policy advisor to the Secretary of Defense on testing of Department of Defense weapon systems, and prescribes policies and procedures for the conduct of operational and live fire test and evaluation. Mr. Duma also serves as the Principal Deputy Director, the position he held before becoming the Acting Director. In this capacity, he is the principal staff assistant for all functional areas assigned to the office.

Mr. Duma returned to government service from the commercial sector. In private industry he worked a variety of projects involving test and evaluation; requirements generation; command, control, communications, intelligence, surveillance, and reconnaissance; modeling and simulation; and software development.

Mr. Duma previously served as the acting Deputy Director, Operational Test and Evaluation. In this capacity he was responsible to the Director for oversight of the planning, conduct, and reporting of operational test and evaluation for all major conventional weapons systems in the Department of Defense. He supervised the development of evaluation plans and test program strategies, observed the conduct of operational test events, evaluated operational field tests of all armed services and submitted final reports for Congress.

Mr. Duma has 30 years of naval experience. He completed Joint Professional Military Education, the Joint Command and Control Warfare Senior Theater Battle Commanders Course, and was a Joint Service Officer. He served as the Director, Test and Evaluation Warfare Systems for the Chief of Naval Operations, the Deputy Commander, Submarine Squadron TEN, and he commanded the nuclear powered submarine USS SCAMP (SSN 588).

Mr. Duma holds Masters of Science degrees in National Security and Strategic Studies and in Management. He holds a Bachelor of Science degree in Nuclear Engineering. He is a member of the International Test and Evaluation Association and the National Defense Industrial Association.