Safety Technology Insertion in DoD Acquisition Programs

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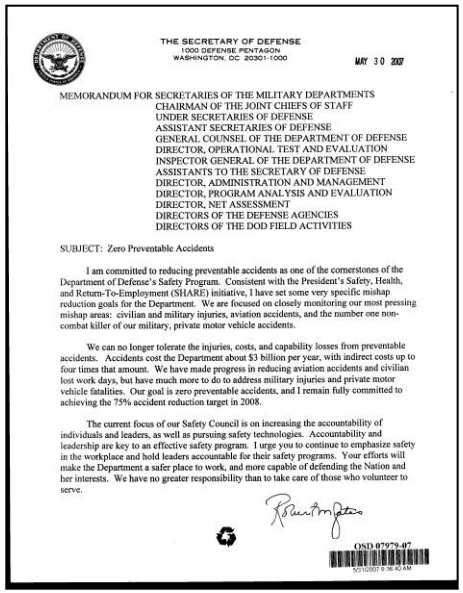
Overview

- Secretary of Defense Guidance
- DoD Response
- DSOC ATP TF Policy Initiatives
- DSOC ATP TF Tool Development Initiatives
- Implementation Gap – Technology Insertion
- ATP TF Technology Insertion Study
  - Roadblocks
  - Recommendations
- Summary
- Contact Information

Secretary of Defense Guidance

- **"We will fund as a first priority those technologies and devices that will save lives and equipment. We will retrofit existing systems, and consider these devices as a 'must fund' priority for all new systems." – Secretary Rumsfeld, June 22, 2006**
- **"We have no greater responsibility than to take care of those who volunteer to serve" – Secretary Gates, May 10, 2007**

"DoD Components will pursue the following accident reduction and prevention initiatives: emphasizing safety in the workplace and hold leaders accountable for their safety programs; … and achieving a 75 percent accident reduction target by 2012 from a 2002 baseline in military and civilian injuries, private motor vehicle fatalities, and aviation accidents." - Guidance for the Development of the Force 2010-2015, April 2008



THE SECRETARY OF DEFENSE
1000 DEFENSE PENTAGON
WASHINGTON, DC 20301-1000

MAY 30 2007

MEMORANDUM FOR SECRETARIES OF THE MILITARY DEPARTMENTS
CHAIRMAN OF THE JOINT CHIEFS OF STAFF
UNDER SECRETARIES OF DEFENSE
ASSISTANT SECRETARIES OF DEFENSE
GENERAL COUNSEL OF THE DEPARTMENT OF DEFENSE
DIRECTOR, OPERATIONAL TEST AND EVALUATION
INSPECTOR GENERAL OF THE DEPARTMENT OF DEFENSE
ASSISTANTS TO THE SECRETARY OF DEFENSE
DIRECTOR, ADMINISTRATION AND MANAGEMENT
DIRECTOR, PROGRAM ANALYSIS AND EVALUATION
DIRECTOR, NET ASSESSMENT
DIRECTORS OF THE DEFENSE AGENCIES
DIRECTORS OF THE DOD FIELD ACTIVITIES

SUBJECT: Zero Preventable Accidents

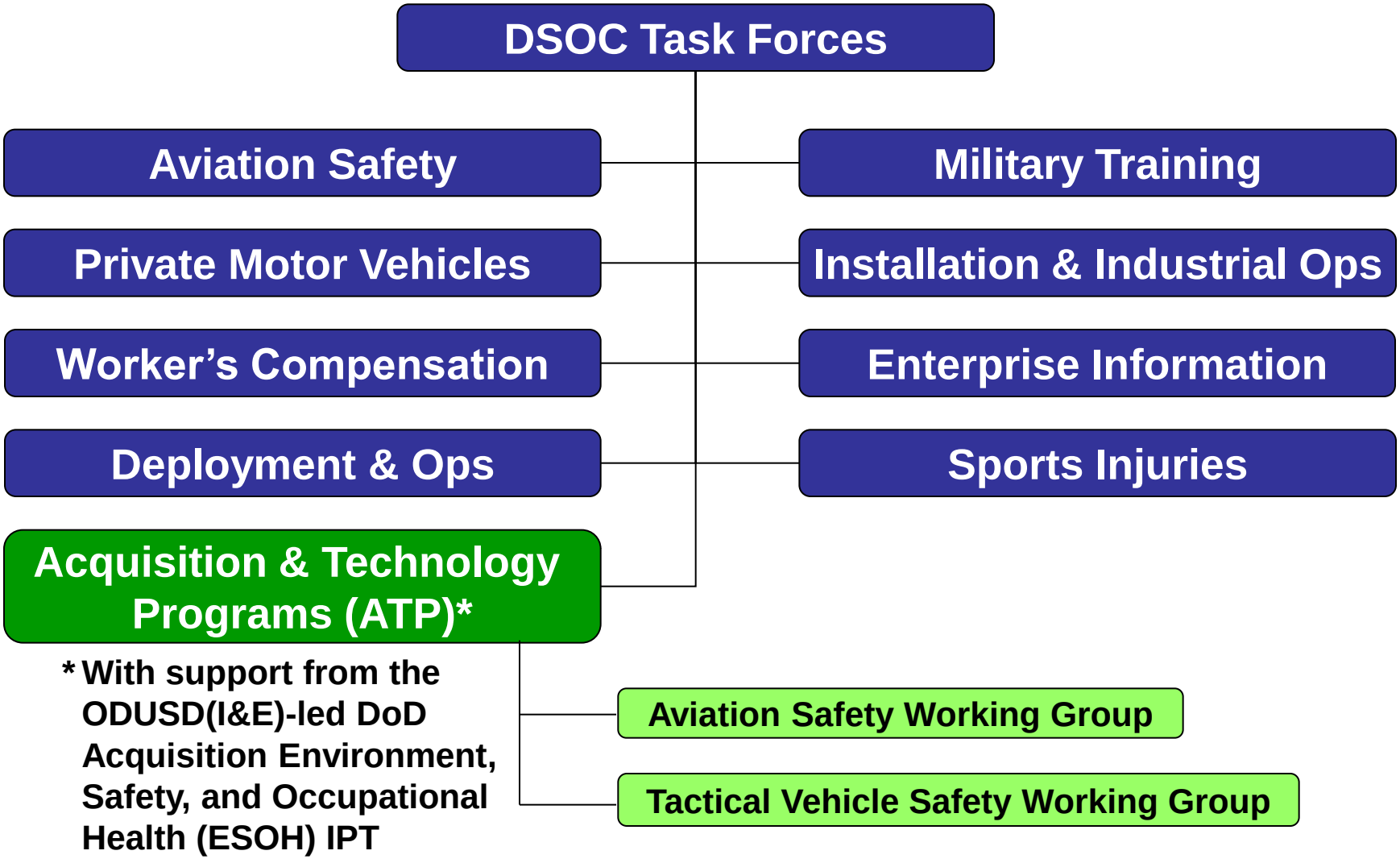
I am committed to reducing preventable accidents as one of the cornerstones of the Department of Defense's Safety Program. Consistent with the President's Safety, Health, and Return-To-Employment (SHARE) initiative, I have set some very specific mishap reduction goals for the Department. We are focused on closely monitoring our most pressing mishap areas: civilian and military injuries, aviation accidents, and the number one non-combat killer of our military, private motor vehicle accidents.

We can no longer tolerate the injuries, costs, and capability losses from preventable accidents. Accidents cost the Department about $3 billion per year, with indirect costs up to four times that amount. We have made progress in reducing aviation accidents and civilian lost work days, but have much more to do to address military injuries and private motor vehicle fatalities. Our goal is zero preventable accidents, and I remain fully committed to achieving the 75% accident reduction target in 2008.

The current focus of our Safety Council is on increasing the accountability of individuals and leaders, as well as pursuing safety technologies. Accountability and leadership are key to an effective safety program. I urge you to continue to emphasize safety in the workplace and hold leaders accountable for their safety programs. Your efforts will make the Department a safer place to work, and more capable of defending the Nation and her interests. We have no greater responsibility than to take care of those who volunteer to serve.

OSD 07979-07

DoD Response led by the Defense Safety Oversight Council (DSOC)



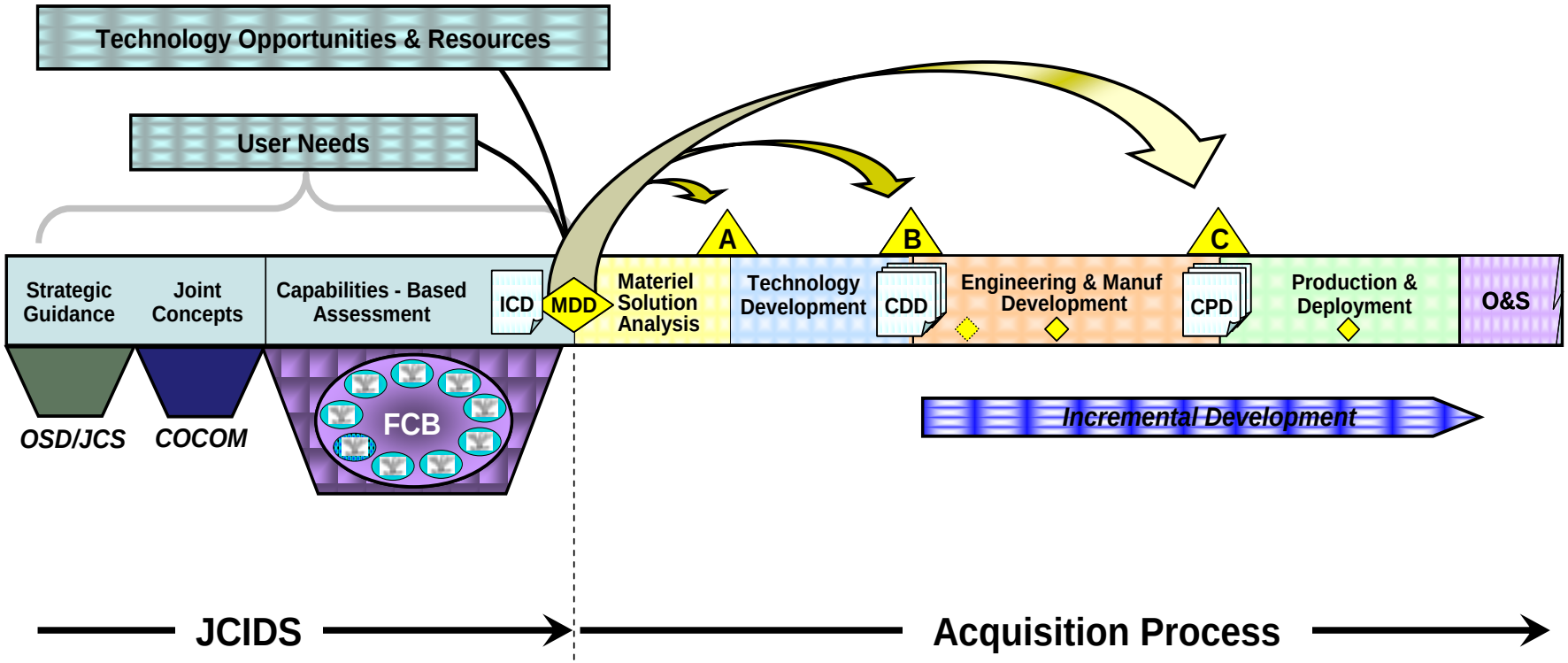
* With support from the ODUSD(I&E)-led DoD Acquisition Environment, Safety, and Occupational Health (ESOH) IPT

ATP TF Policy Initiatives

- ✓ **Program Managers are required to use the structured ESOH risk assessment framework in the DoD Standard Practice for System Safety, MIL-STD-882D, as part of the Systems Engineering process to:**
  - Design out ESOH risks early in the acquisition process, or
  - Mitigate ESOH risks to an acceptable level
- ✓ **Prior to exposing people, equipment, or the environment to known system-related ESOH hazards, the associated risk levels must be accepted by the authorities identified in DoDI 5000.02. The User Representative must:**
  - be part of this process throughout the life cycle and
  - provide formal concurrence prior to all Serious and High risk acceptance decisions
- **Developing a process, "ESOH in Joint Capabilities Integration and Development System (JCIDS)," with recommendations that have potential to cost effectively prevent accidents.**
  - Endorsement of JCIDS documents by Senior-level ESOH leaders
  - NDIA System Safety Sub-Committee is sponsoring meetings to develop training for ESOH participants in JCIDS

ATP TF Policy Initiatives, Cont.

- **Address ESOH risks early in the acquisition process as part of the "ESOH into JCIDS" & early Systems Engineering initiatives**



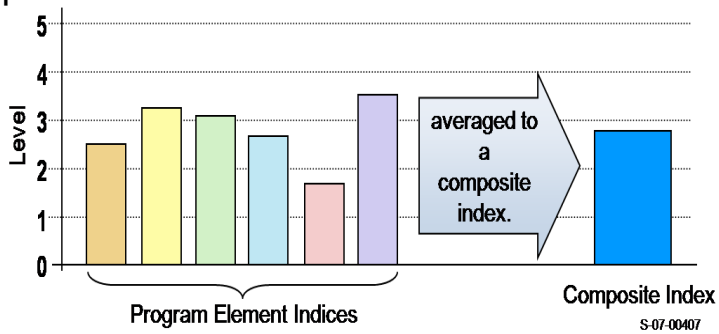
Defense Acquisition Management System

ATP TF Policy Initiatives, Cont.

- **Reporting ESOH Risk and Technology Requirements for Acquisition Program Reviews and Fielding Decisions**
  - Document the status of all ESOH hazards with a current risk category of **High or Serious**
  - ESOH Technology Requirement: Hazard mitigation technology required to eliminate or reduce the risk of systems or equipment failure and associated personnel and environmental hazards which may occur with or without failure of the system.
    - These technologies are not inherent parts of the design of the system, but rather are additions that have the primary purpose of mitigating a specific safety, personnel, or environmental hazard.
    - "Requirement" either specified in a DoD or Component Policy or JCIDS document or derived from a JCIDS requirement
  - ACAT ID, ACAT IAM, and Special Interest Programs shall report to the offices of the Director, Systems Engineering (D, SE) and the Deputy Under Secretary of Defense, Installations and Environment (DUSD(I&E)) via ***ESOH_Risk_Reporting@osd.mil*** at least ten working days prior to the OIPT
  - Reference Defense Acquisition Guidebook (DAG), Section 4.4.7.6 or **www.acc.ESOHRiskReporting**

ATP TF Tool Development Initiatives

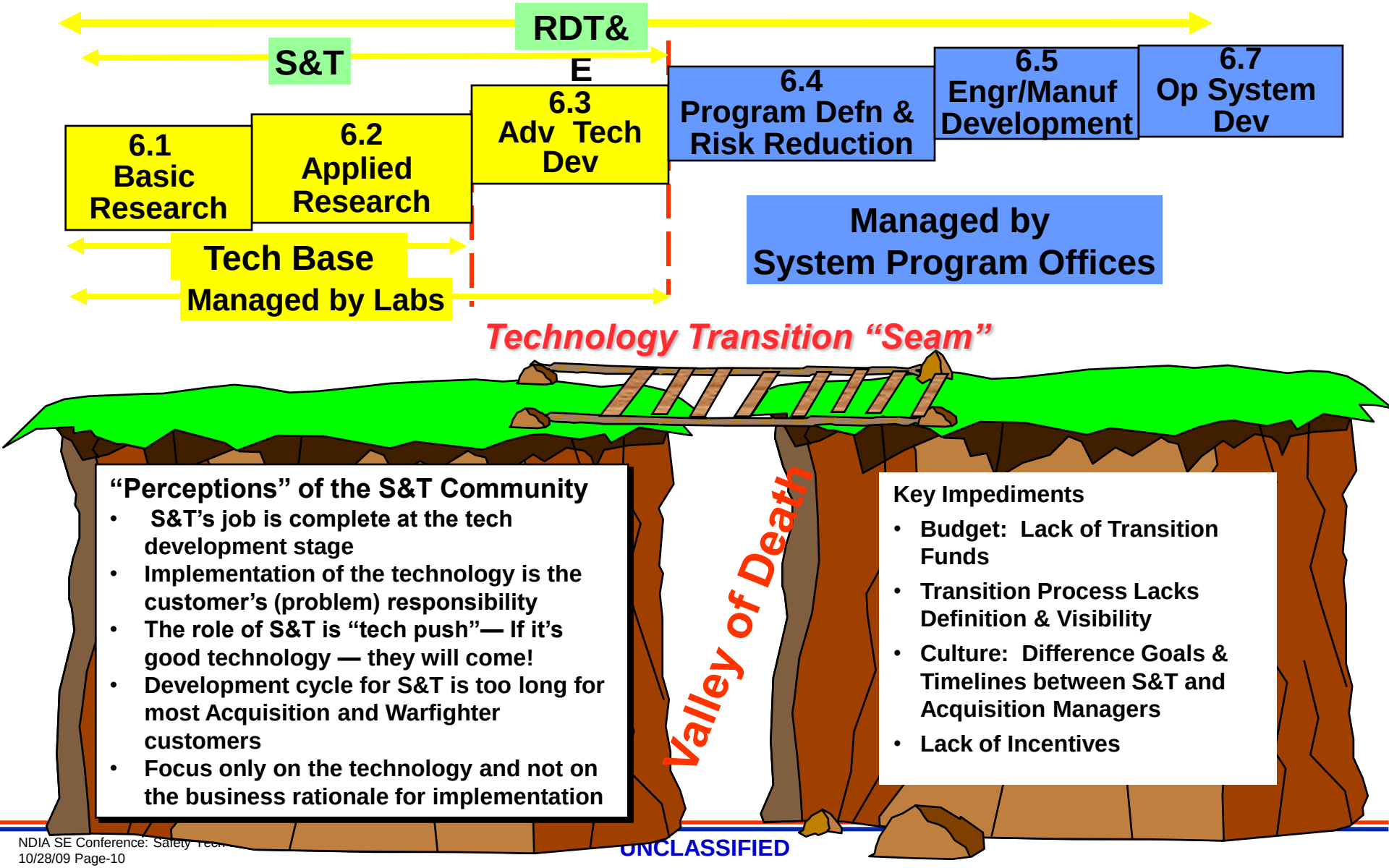
- **System Safety Metrics Method Tool**
  - Development funded by DSOC
  - Tool to gauge the effectiveness of contractor system safety process
    - Separately identifies areas of *specific* strengths and weaknesses
    - In *any phase* of program life cycle
    - At low cost
    - With *fast turn-around* of results — *days, not weeks*
  - Similar to CMMI® model for assessing design maturity
    - Equally applicable by Government or Contractor
    - Improvement guidance available on an internal "No-Fault" basis
  - Can be used at any point in the system life cycle
    - Manager sees Program strengths / weaknesses with *"right-now"* immediacy
    - Can identify safety performance inadequacies and provide feedback to direct positive corrective action
    - Low cost, No special expertise required to administer
    - Gives tight focus of results on specific areas needing improvement
  - Built around responses to series of common-sense interview questions
    - The "System Safety Metrics Model" consists of one composite index supported by 6 element indices. Indices are evaluated by 39 indicators, each evaluated at one of 6 levels.
  - Data is analyzed and assigned metrics to identify areas of concern
    - Enables equitable program-to-program comparisons
    - Leads to improved management of risks / hazards
    - Reduced turn-around supports leading-indicator capability to reduce both number and severity of mishaps
  - US Army Aviation & Missile Command Safety Office conducted Beta test using 17 program practitioners
    - Report and Model: ***http://www.acq.osd.mil/atptf***



ATP TF Tool Development Initiatives, Cont.

- **Noise Evaluation Acquisition Tool (NEAT)**
  - Development funded by DSOC
  - Help answer- What does noise cost the DoD?
  - Customizes existing steady-state noise exposure calculation tools resulting in a tool to meet DoD needs.
  - Applies validated research and existing processes to create a balanced incentive for system designers and their external reviewers to include noise control in the design process.
  - Includes detailed guidelines and examples to assist acquisition system managers, technical staff and external program reviewers in estimating realistic costs and risks associated with noise exposures.
  - Calculate life-cycle costs due to hearing loss caused by:
    - Dynamic steady-state noise exposure (military tactical vehicle)
    - Stationary steady-state noise exposure (mechanical room, cockpit)
  - Calculate speech interference levels for noisy environments
  - Illustrate the potential cost savings from integrating noise controls in the acquisition phase of military system procurements

One Significant Gap: Insertion of Technologies to Reduce ESOH Risks



ATP TF Technology Insertion Study

- **Goal: address impediments to incorporating high-payoff safety technologies into major defense acquisition programs.**
- **Focused on two major combinations of weapon system type and hazard as the "case studies"**
  - Tactical vehicles, rollover issue
  - Rotorcraft, brownout issue
- **Study was conducted in three phases:**
  - Conducted Stakeholder Workshop (October 2008)
  - Researched and evaluated existing business processes within the DoD military and commercial industry
    - Interviews with DoD, Military and commercial program representatives were conducted to investigate their business processes and identify how system safety and safety technologies are considered and evaluated.
  - Identified roadblocks and issues to inserting safety technologies
    - Examined the business processes from Phase 2 to determine the gaps in system safety and safety technology related actions and decisions.

ATP TF Technology Insertion Study Conclusions

- **Six categories of roadblocks to the insertion of safety technologies:**
  1. Systems Engineering (SE) and System Safety Roadblocks
  2. Capabilities (Requirements) Development Process Roadblocks
  3. Science and Technology Transition Challenges
  4. Science and Technology Investment Process Roadblocks
  5. Acquisition (Future) Program Challenges
  6. Legacy Program Challenges

NOTE: These are roadblocks to insertion of any technology, not just safety technologies

ATP TF Technology Insertion Study Identification of Roadblocks

- **Systems Engineering (SE) and System Safety Roadblocks:**
  - Safety is not an integral part of systems engineering culture or processes
  - Safety analysis lacks rigor and is not maintained across the product's life cycle
- **Capabilities (Requirements) Development Process Roadblocks:**
  - Lack of safety requirements / capabilities in the JCIDS documents
  - If included, safety requirements are too easily traded during system development activities
- **Science and Technology (S&T) Transition Challenges:**
  - Identifying & sustaining funding sources and Program sponsor throughout life cycle
  - Lack of understanding and communication between the S&T communities and the defense system PMs
- **Science and Technology Investment Process Roadblocks:**
  - S&T community lacks awareness of safety gaps and has no visibility to mishap data
  - No consolidated source that program offices or the S&T community can search to find out what technologies have been, or are being, invested in across the numerous S&T organizations, so there may be duplications across the S&T communities

ATP TF Technology Insertion Study Identification of Roadblocks, Cont.

- **Future Acquisition Program Challenges:**
  - Competing performance requirements within the Program Manager's given cost and schedule constraints
  - Unwillingness to endure the additional risk (cost, schedule and/or performance) associated with inserting new technologies especially safety related technologies
  - Lack of information and cost sharing between program offices of similar product lines, which could reduce the risk and funding commitments for technology transition for an individual program
- **Legacy Program Additional Challenges:**
  - Requirements definition process is less formal and must rely on the strength of their sponsor or PM to sell the "safety requirement" to their leadership and acquire funding during the Planning Programming Budgeting and Execution (PPBE) process
  - Some legacy systems are not assigned to a program office, these systems are rarely examined for improvements or safety enhancements that would eliminate, or mitigate, existing safety design deficiencies

ATP TF Technology Insertion Study Recommendations

1. **Examine the Processes for the Collection, Analyses, and Utilization of Mishap and Epidemiological Data in the Acquisition Process**
   - Analyze the existing processes for collecting, analyzing, and utilizing mishap and epidemiological data from the Services. OSD should examine:
2. **Develop and Communicate Implementation Guidance for the DoDI 5000.02 ESOH Policy**
3. **Director, Defense Research and Engineering (DDR&E) should sponsor an ESOH Technology Focus Team (TFT) in FY2010**
4. **Establish a High Level Safety Requirement or Safety Key Performance Parameter for JCIDS Process**
5. **Establish a DoD-wide S&T Knowledge Management System**
6. **Develop a Feedback Mechanism to Determine How Acquisition Safety Policies are being Implemented**

ATP TF Technology Insertion Study Recommendations Summary

Safety Technology Insertion Barriers	Recommendations					
	1. Examine the Processes for the Collection, Analyses, and Utilization of Mishap Data and Epidemiological in Acquisition Process	2. Develop and Communicate Implementation of DoDI 5000.02 ESOH Policy	3. DR&E sponsor an ESOH TFT in FY10	4. Establish a High-level Safety Requirement or Safety KPP for the JCIDS Process	5. Establish a DoD-wide S&T Knowledge Management System	6. Develop a Feedback Mechanism on How Acquisition Safety Polices are Being Implemented
SE & System Safety Process	X	X		X	X	X
Capabilities (Requirements) Development Process	X			X	X	
Acquisition (Future) Program Challenges	X	X	X	X	X	X
Legacy Program Challenges	X		X	X	X	X
S&T Transition Challenges			X	X	X	
S&T Investment Process			X		X	

Summary

- Secretary of Defense Emphasis on Safety
- DoD Established DSOC with Nine Task Forces
- DSOC ATP TF Initiatives – Policies & Tools
- Implementation Challenge – Technology Insertion
- Identified Six Roadblocks to Technology Insertion (not exclusive to safety)
- Identified Six Cross-cutting Recommendations to Address the Roadblocks

Contact Information

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