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Advanced Systems & Concepts

for the

Global War on Terrorism

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Deputy Under Secretary of Defense

Advanced Systems & Concepts

17th Annual NDIA SO/LIC Symposium & Exhibition

March 2006

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Mission…
Why we come to work every day

We find, demonstrate, transition, and transfer the best operational concepts and technology solutions for transformational, joint & coalition warfare problems

Swedish bunker buster system fired from confined spaces, used in Afghanistan and Iraq.

Real Solutions for Real Problems

It's all about... Innovation !

"No flying machine will ever fly from New York to Paris."
- Orville Wright.

"Airplanes are interesting toys but of no military value."
- Marshal Ferdinand Foch [Professor of Strategy, Ecole Superieure de Guerre]
(circa 1911)
Supreme Commander of Allied forces, 1918

"Airplanes suffer from so many technical faults that it is only a matter of time before any reasonable man realizes that they are useless!"
- Scientific American (1910)

"Even if a submarine should work by a miracle, it will never be used. No country in this world would ever use such a vicious and petty form of warfare!"
- William Henderson, British Admiral (1914)

"Radio is just a fashion contrivance that will soon die out. It is obvious that there never will be invented a proper receiver!"
- Thomas Edison

"Many innovations require a lengthy period of many years from the time when they become available to the time when they are widely adopted. *Therefore, a common problem for many individuals and organizations is how to speed up the rates of diffusion of an innovation*."

— Everett M. Rogers, *Diffusion of Innovations (1995)*

Vision…
AS&C Process Development Plan

Goals:

- ***Employ diversified programs to speed discovery, development, and delivery of advanced technology and concepts for improved military capabilities***
- ***Partner with DoD Acquisition Activities, Industry and Coalition elements to provide the best affordable capabilities to Joint and Coalition warfighters***
- ***Balance "try before you buy" experiments and demonstrations with "test to procure" initiatives***
- ***Become a DoD Center of Excellence for Operationalizing Innovation – we know more about operationalizing innovation than anyone else in DoD***

AS&C Objectives...
Implementing the Plan

Enhance Combatant Commander options for integrated acquisition and employment of core military capabilities

Operationalize innovative solutions for the warfighter by:

- ***Providing "on ramp" for industry innovation to the DoD***
- ***Providing "off ramps" from S&T to industry & DoD Programs of Record***

Encourage efficient technology transition between the military and commercial market sectors

Maintain a non-parochial approach to finding the best operational concepts and technology solutions

Mitigating the Risks of Innovation & Transformation

Acquisition Processes

Joint Rapid Acquisition Cell

- ✓ Urgent, mission critical
- ✓ 120 days or less initial materiel or logistics solution

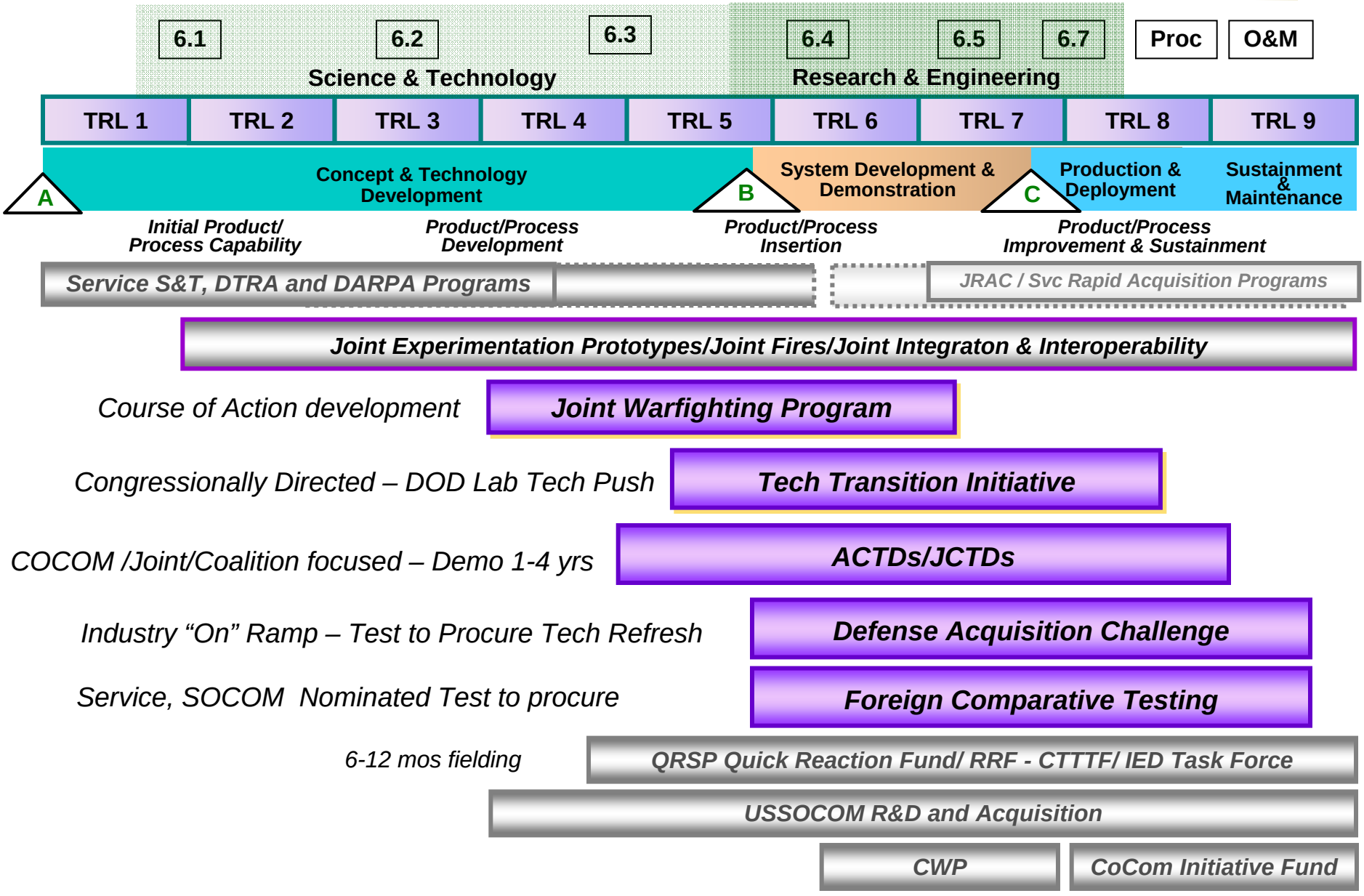
Agile Acquisition Process

- ✓ Attuned to CoCom timelines
- ✓ Well adapted for integrating joint solutions
- ✓ Rapid, responsive, flexible program
- ✓ Decentralized execution
- ✓ Transformation engine; innovation enabler
- ✓ Small, non-traditional business "on-ramp"
- ✓ "Try before you buy" cost control mechanism
- ✓ Spiral improvement generator

Deliberate Acquisition Process

- ✓ Optimized for delivery of complex systems
- ✓ Methodical oversight and synchronization
- ✓ Includes sustainment resources
- ✓ Well adapted to individual Service cultures
- ✓ Scalable for large-scale military solutions

Agile Acquisition Processes



AS&C Program Alignment: Military Capability Conceptualization to Delivery

AS&C Programs

Joint Warfighting Program

Joint Experimentation

Tech Transition Initiative

ACTDs

JCTDs

Foreign Comparative Testing

Defense Acquisition Challenge

Conceptualization

- Needs identification/lessons learned/assessment
- Tech push exploitation

Alternatives Development & Assessment

- Red Teaming
- Experimentation

Technical Concept Design & Development

- Prototyping

Functional Validation; Tailored Form/Fit/Function

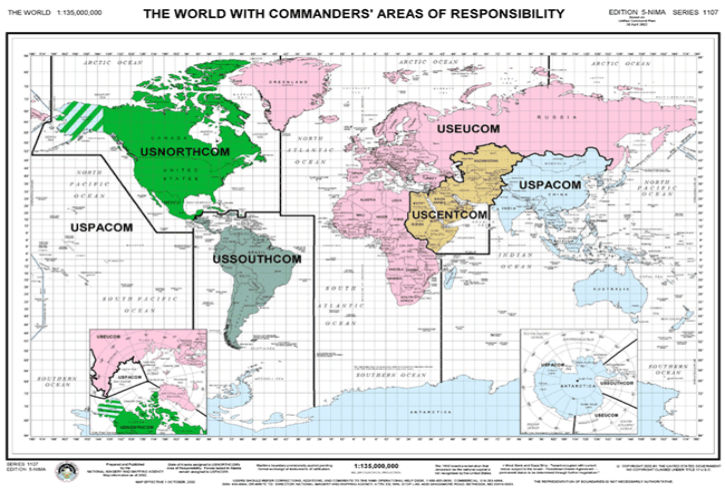
- Demonstration
- DOTMLPF construct development and confirmation

Readiness & Suitability Confirmation

- Test & Evaluation
- Military assessment of utility

Transition to Procurement & Sustainment

Joint Warfighting Program



- **Joint Advanced Warfighting Program (JAWP)**
  - Independent analysis by IDA civilian staff analysts teamed with USJFCOM military officers in the Joint Center for Operations Analysis
  - Critical near-real-time lessons learned, for example: OEF / OIF / Katrina support
- **DoD Adaptive Red Team (DART)**
  - Core team and tailored support from Subject Matter Experts (SME) as required
  - Time sensitive and responsive to need
  - Challenge conventional solutions, provide innovative perspectives on joint military missions and capabilities
- **Technology Feeder Support (TFS)**
  - Fund Joint Experimentation (JE) efforts nominated by major Combatant Commanders

Direct Support for Joint Combatant Commander Analysis Needs

Supporting OIF Operations… Technology Transition Initiative

Automated Change Detection

Lab: Army CECOM;

Acceleration: 18-24 months

Compares day-to-day changes; makes IED detection easier, reduces false alarms

Semantic Web Network

Lab: NGA/Nat'l Tech Alliance, ONR;

Acceleration: 24 months

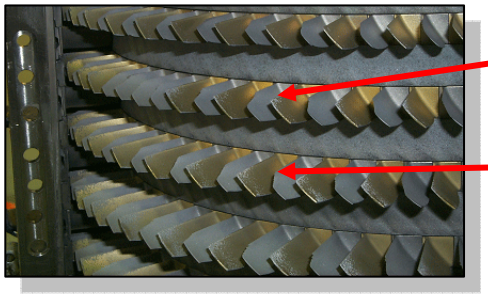
Content routing system incorporated Into MarineLink; eliminates 4-5 hours of manual data mining from various intel databases

T-58 Compressor Blade Coating

Lab: FCT Source of Procurement

Acceleration: 24 months

Titanium Nitride (TiN) coating doubles compressor life in sand environment; projected to save $10M in life cycle costs through FY 2012



Water Pen Purification System

Lab: DARPA

Acceleration: 18-24 months

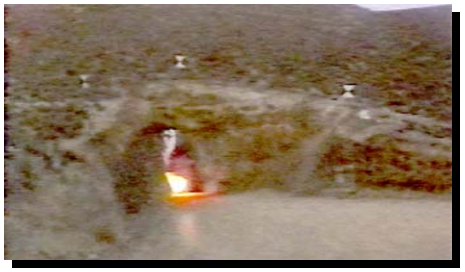
Uses salt tablets and small lithium camera batteries to purify water in mobility/austere environments

New Program – Fast Start Technology from Federal Labs

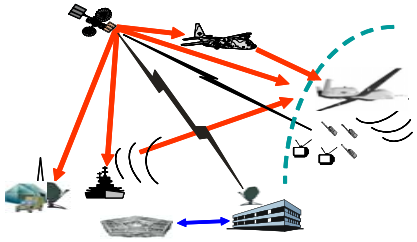
Meeting critical military needs with mature technology
Advanced Concept Technology Demonstrations (ACTD)

- **ACTDs provide rapid method for fielding new, relevant joint operational capabilities**
  - ***COCOMs*** **are the Customer**
  - **Fills gap between pure "off the shelf" solutions and long term acquisition activities**
  - **Process bridges gap between scientist and warfighter**
  - **Project selection process tied primarily to annual cycle**
- **Final demonstration occurs 2–4 years after start**
- **Intended outcomes:**
  - **Determine if employment concept and technology solve problem – "try before you buy"**
  - **Rapidly transition technology to fielding and sustainment**
  - **Provide leave-behind technology:up to two years of Extended Utility Evaluation (EUE) support**

Micro Air Vehicle for small units from MAV ACTD



Thermobaric Weapons will improve the capability to defeat military activities in tunnels.



The Psychological Operations (PSYOP) Global Reach ACTD will extend the range of PSYOPS info.

Improved explosive ordnance disposal from JEOD ACTD

Precision air delivery from JPADS ACTD

Recent ACTD Accomplishments

Epidemic Containment

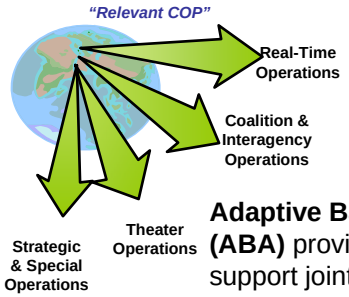
Epidemic Outbreak Surveillance (EOS) ACTD integrates advanced diagnostics and informatics with surveillance system concept of operations to rapidly detect, identify, and distinguish natural and hostile biological pathogens

Biometrics tool from **HICST ACTD** scans retinas, screening for Iraqi insurgents

Joint Blue Force Situaltional Awareness (JBFSA) will improve current blue force tracking (BFT) architectures by integrating BFT data for display on the common operational picture (COP).

- **154 ACTDs have been initiated since 1995; 74 are still active. 64 ongoing ACTDs; 10 New Starts in FY 2006 (6 ACTD: 4 JCTD)**
- **63 ACTD products have deployed in support of recent conflicts**
- **Over 70 percent of completed ACTDs transitioned products to programs or provided warfighting capabilities**
- **19 ACTDs were returned to the tech base**

Joint Area Clearance (JAC) provides the capability to locate and remove unexploded ordnance from rear area, non-combat zones



Adaptive Battlespace Awareness (ABA) provides tailorable information to support joint task force-level situational awareness and decision making using the Common Operational Picture (COP) provided by Global Command and Control and System (GCCS).

Expendable UAV provides tactical surveillance, payloads, and payload-dispensing technologies on low-cost, all-weather autonomously guided, expendable/recoverable UAVs. Currently deployed supporting OIF/OEF

Joint Distance Support & Response (JDSR) demonstrates a joint, common tele-maintenance & training environment providing end-to-end, low bandwidth and reach back capability.

– NEW –

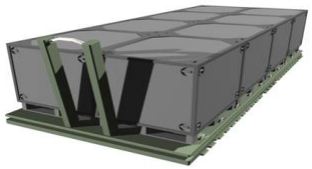
Joint Capabilities Technology Demonstrations

- ***COCOMs* remain the Customer – enhanced customer "capabilities pull"**
- **Builds on historically successful ACTD process**
  - **Balance "tech push" with "capabilities pull", focus on CoCom emerging needs**
  - **Maintains strong technical focus: work with services/agencies to push technology solutions**
- **Designed to increase speed of transformational, joint and coalition capabilities**
  - **Aim to introduce 1st spiral of new capability into field within first 12 months**
  - **Goal: final demonstration phase starts w/in 2 years, project completes in 3 years**
- **Increased focus on transition to long term warfighter support**
  - **Goal: 80% of JCTDs transition 50 percent of products (POR, residual support, GSA, etc.)**
- **Accelerate time to demonstration by increasing OSD funding in the first two years**

Transformational

Counter-intelligence Human-intelligence Advanced Modernization Program/Intelligence Operations Now (CHAMPION) will demonstrate timely CI and HUMIT from the tactical to the strategic level.

Joint



Joint Modular Intermodal Distribution System (JMIDS) will demonstrate a seamless logistics system that will improve true joint Service and commercial interoperability.

Coalition

Comprehensive Maritime Awareness (CMA) will include coalition partners in extensive maritime sharing demonstrations. Includes tracking, tagging, and collaboration technologies. USNORTHCOM is also participating for homeland security application.

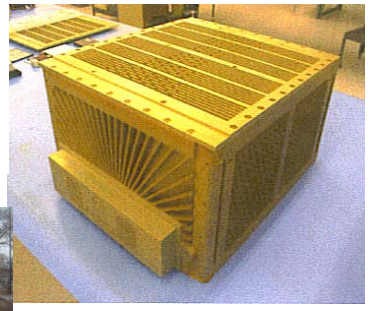
DoD's On-Ramp to Industry -
DAC Accomplishments / Successes

Spray Cool Technology: Electronics Sprayed with Non-Corrosive Coolant in a Hermetically Sealed Housing

Before SprayCool: **482 Pounds & 17 Cubic feet**

Employed in Counter Targeting System - Part of OVERWATCH ACTD

8 systems produced, 3 units deployed to Iraq



After SprayCool: **100 Pounds & 2.6 Cubic feet**

Mini Combat Trauma Patient Simulation System: Training medics at Camp Pendleton

Casualty simulator improves skills of medical personnel in mass casualty & triage - over 300 medics trained & deployed to Iraq

Metrics & Measures (FY03-06)

- **Over 1300 proposals submitted**
- **202 submitted so far for FY07**
- **274 endorsed by PORs (PEOs/PMs)**
- **63 projects awarded ($93M)**
- **70 companies from 26 states**
- **ROI (9 completed projects) is > 10:1**

Enhanced Performance Location Report System Tactical Data Network: Replaces manual network planning with automated system

Reduces complexity and need for manpower redundancy, ensuring rapid and accurate information flow and data priority on the joint/coalition battlefield

The search for world-class technologies — Foreign Comparative Testing (FCT)

Program Measures & Metrics (1980-2006)

- **OSD investment of $980 million has avoided $6.5 billion in costs**
- **548 projects started, 474 completed, 250 met testing requirements**
- **170 projects resulted in procurements worth more than $7.5B**
- **Accelerated fielding averaging 5–7 years**
- **Participation from 26 allied and coalition partners**
- **Vendor partnerships in 31 U.S. states**
- **Past 5 years:**

  Transition rate from testing to procurement > 80%

UK system can refuel two aircraft at once, avoiding $40 million in R&D

South-African developed Buffalo mine clearing vehicle probing & clearing mines & IEDs in Iraq

Russian erosion-resistant coating triples life of compressor blades in MH-53 helicopter, avoiding $1.6 million annually

Australian Halverson Loader in use today, replacing unreliable USAF equipment

Italian venture, the Joint Service Combat Shotgun, used in Iraq as a "door-buster"

AS&C Web Sites www.acq.osd.mil/asc

Program	Website	Phone
Advanced Concept Technology Demonstration (ACTD)	www.acq.osd.mil/actd	(703) 697 - 3568
DPA Title III	www.dtic.mil/dpatitle3	(703) 607 - 5314
Independent R & D	www.dtic.mil/ird	(703) 607 - 5314
Comparative Test Office (FCTs)	www.acq.osd.mil/cto	(703) 602 - 3740
Def Acquisition Challenge	https://bids.acqcenter.com/dacp	(703) 602 - 3739
Technology Transfer	www.dtic.mil/techtransit	(703) 607 - 5315
TechLink	www.techlinkcenter.org	(703) 607 - 5315
TechMatch	www.dodtechmatch.com	(703) 607 - 5315
NATIBO	www.dtic.mil/natibo	(703) 607 - 5315
Dual Use S&T	www.dtic.mil/dust	(703) 607 - 5315
Tech. Transition Initiative	www.acq.osd.mil/iti	(703) 607 - 5316
ManTech	www.dodmantech.com	(703) 607 - 5319

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