S&T Affordability Task Force Update

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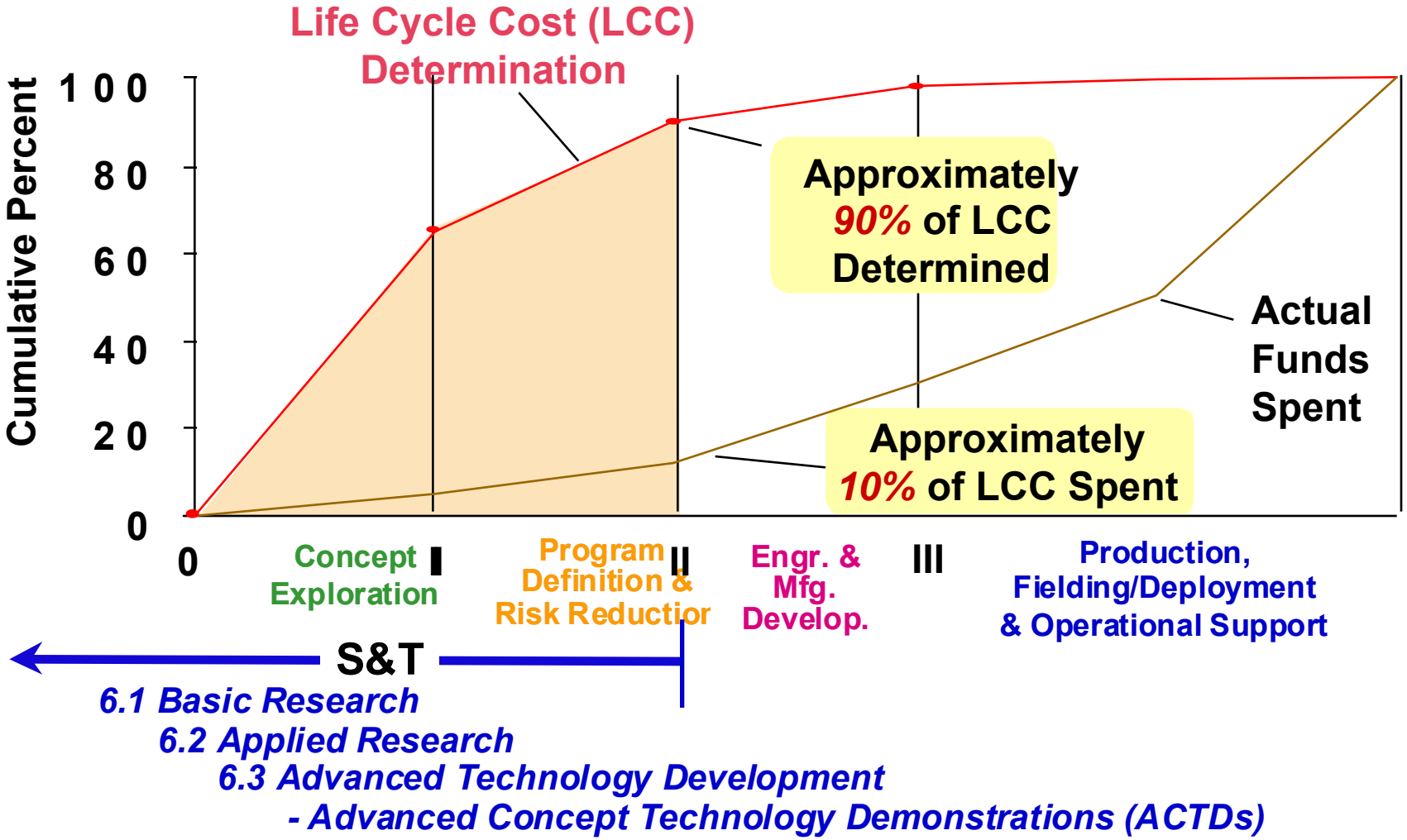
Affordability in Science & Technology

- **Focus Science & Technology (S&T) programs to obtain process maturity earlier in the acquisition process**
  - **Change the S&T culture**
  - **Balance cost / performance tradeoffs**
  - **Improve affordability of technologies to the warfighter**
- **1995: DDR&E established S&T Affordability Task Force (ATF) to provide recommendations for improving strength of affordability in S&T programs**
  - **Use of Integrated Product & Process Development (IPPD) and use of Integrated Product Teams (IPTs) is key to affordability**
  - **ATF Membership: ODDR&E, DARPA, Joint Staff, Services (S&T, ManTech & Acquisition)**

Affordability is Key Component of the Defense S&T Strategy

Why Affordability in S&T?

Acquisition Community is Focused on Cost Reduction Throughout Life Cycle



S&T Affordability Definition

Affordability is not

- A *Program* for cost reduction

Affordability is

- A *Process* for cost reduction that includes:
  - An Integrated Product & Process Development (IPPD) methodology
    - Includes utilization of IPPD tools - e.g., Design for Manufacturing, Quality Functional Deployment, Design for Six Sigma, Design of Experiments
  - Mechanism to establish mature processes
  - An empowered Integrated Product Team (IPT)
  - Measures of program effectiveness
  - Window of opportunity for technology insertion

Where We've Been

- Affordability Criteria Established & Updated
- 20 Proposed "Role Model" Projects Evaluated
- 2 "Role Models" Selected as Best in Class
  - Composites Armored Vehicle & Next Generation Soldier System
- Improve Awareness via Briefings and Workshops
- Service Selection of Additional Affordability Projects in 1997/1998
- Assessment of Pilots In DDR&E Annual Technology Area Review and Assessment (TARA) Process
  - Feedback to Defense S&T Advisory Group
- USD(A&T) Signature of S&T Affordability Policy Memo
  - August 1996

S&T Affordability Policy
(August 1996)

RATIONALE:

- S&T phase historically driven by product performance
- Manufacturing & business practices must be sufficiently mature to transition to DemVal or EMD without costly reinvention

Element	Activity
Program Selection	• Senior Service/Agency Execs review all new ATDs & similar programs expected to transition to acquisition • Designate Affordability Programs
Management Support	• Funding approval of Affordability Programs dependent upon development of an Affordability Plan • Plan must address affordability criteria/use of IPPD/IPT
Education & Training	• Execs make IPPD/IPT trng. available for S&T Managers • Teams most effective when trained as a team, including private sector members
Institutionalz.	• Identify S&T programs for input into annual DTAP • Review and evaluation by TARA teams

S&T Affordability 1998 Activities

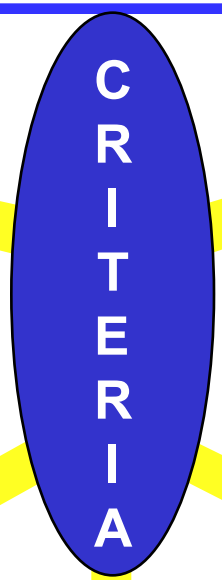
- Review of 13 Affordability Programs
  - Results briefed to DSTAG in March 98
- Improve Transition of ATDs, ACTDs, & Other Programs
- Educate the S&T workforce
  - 2-day pilot training course
  - Navy activity with Defense Systems Management College (DSMC)
  - S&T Affordability Handbook
  - Expand best practice workshops to conference
- Develop S&T Affordability Metrics
  - Link to Nat'l Perf. Review (NPR), Defense Reform Initiative (DRI), & Defense System Affordability Council (DSAC) Goals

1998 Affordability Programs

- **Army**
  - Future Scout Cavalry System (FSCS) ATD
  - Objective Individual Combat Weapon (OICW) ATD
  - Multi-Mission Common Modular UAV Sensors ATD
  - Rotary Wing Structures ATD (1997)
- **Navy**
  - Acoustic Sensors & Sources (1997)
  - Nanoscale Coatings
  - Miniature Modular Microwave Receiver
  - SC-21 Manning Technology for Affordability
  - Composites Affordability Initiative (CAI) - Joint w/Air Force
- **Air Force**
  - Next Generation Transparency (1997)
  - Large Aircraft Infrared Countermeasures (IRCM) ATD (1997)
  - Advanced Laser Eye Protection
  - Composites Affordability Initiative (CAI) - Joint w/Navy
- **DARPA**
  - Miniature Air Launched Decoy (1997)

- 8 New Projects
- 5 Carried Over From '97 for Re-evaluation

Evaluation of S&T Affordability



IPPD Methodology Implemented

- IPT/Multi-Disciplinary Team in Place
- IPT Members Empowered & Understand their Decision Making Authority
- Cost Drivers & Best Value of Military Capability Versus Cost Identified
- Contract Provisions Incentivize Affordability

Management Support is in Place

- Shift from Serial Development to IPPD Understood & Encouraged
- Funding is Available to Implement Affordability Goals
- Leverage with with Other S&T, Acquisition, or Commercial Prgms.
- Technical Program Reviews Address Affordability

Affordability Metrics Established & Measured

- Quantitative Goals in Place
  - Unit or Life Cycle Cost Reduction, Lead-Time Reduction
- Technology Maturity Indices Developed
- Exit/Entrance Criteria for Technology Insertion & Transition Established
- Six Sigma Quality Objectives in Place

Transition Plan in Place to Mitigate Risk

- Customer Committed to Transition (e.g., MOA/MOU)
- Transition Milestones Established
- S&T Outcomes Agreed To
- Funding Strategy in Place to Effect Transition

Training Plan Developed & Executed

- Team Training has been Conducted, Including Industry Partners
- Tools Training Conducted, e.g.,
  - Quality Function Deployment
  - Design for Six Sigma
  - Design of Experiments
- Funding for Training Identified and Set-Aside

1999 ATF Review Process

- Goal - 20 programs
  - 6 programs per Service
  - 2 programs from DARPA
- Blue Team approach
  - Assist S&T PMs with affordability guidelines and precepts
  - 1998 criteria with emphasis on:
    - Affordability built-in not added-on
    - Linkage to Defense Technology Objectives
    - Manufacturing process maturity
    - Use of common components on multiple systems
  - Provide S&T PMs with written feedback of results within two weeks of review
- Brief review results to the Defense S&T Advisory Group

Affordability Program -
COMPOSITE ARMORED VEHICLE (CAV)

CAV: A BALANCED APPROACH
TECHNOLOGY + ILITIES + AFFORDABILITY

- **35% WT. REDUCTION - STRUCTURE & ARMOR**
- **SIGNIFICANT & MEANINGFUL ILITY WORK (ILS, RAM, PRODUCIBILITY)**
- **CHALLENGING AFFORDABILITY GOALS**

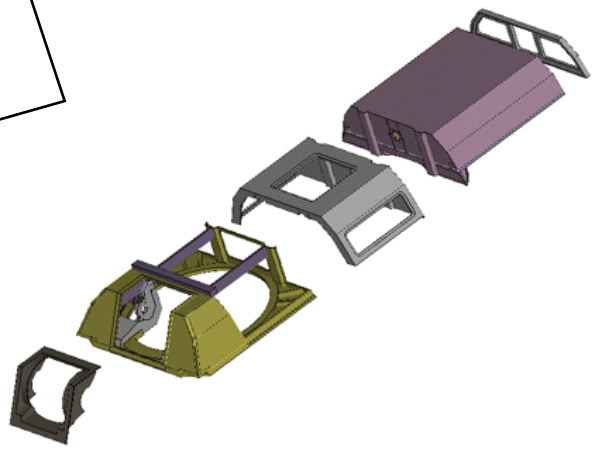
SOLID UNDERSTANDING OF PEO NEED

TECH PUSH

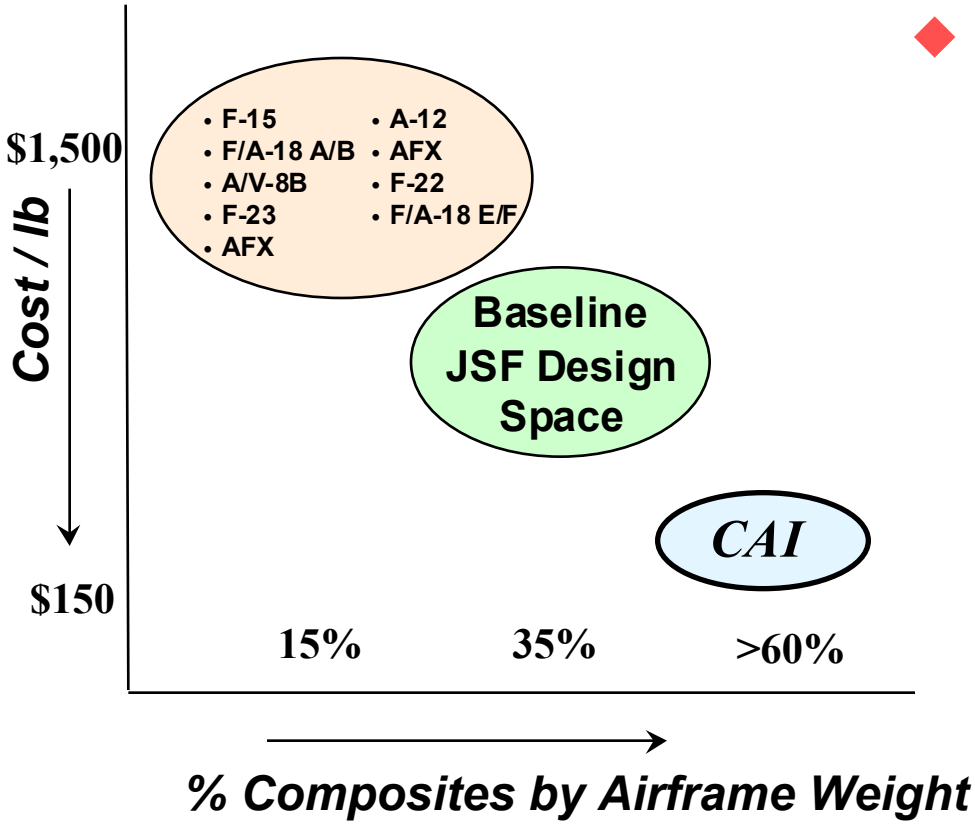
GOVT & INDUSTRY WORK CLOSELY WITH PEO

RESULT:

CRUSADER WT. REDUCTION OF 3750 LBS.



Affordability Program - CAI



- **Composites Affordability Initiative (CAI)**
  - Long range (8-10 yr) initiative
  - Get the designs out of the metallic design box
  - Reduce acquisition costs of composite structures by an order of magnitude
  - 50/50 Government/Industry cost sharing

Commercial- Military Cooperation

Conclusion

- **Develop superior technology - gain military advantage, provide options to future warfighters, hedge against technological surprise**
- ***Reduce costs - acquisition and operational***
- ***Place Affordability on par with Performance measures***
- ***Emphasize dual use technology and commercial practices***
- ***Transition technology more rapidly*** **- Advanced Concept Technology Demos**
- ***Support Jointness*** **- Joint Warfighting S&T Plan, Advanced Battlespace Information Systems Study**
- **Exploit information technology**

S&T Affordability Supports the Defense S&T Strategy