

Technical Data (an Output of Systems Engineering) in the Context of the LCMC

9th Annual Systems Engineering Conference
23-26 October 2006
San Diego, CA
R. Miller

Today's Agenda

- Statement of Purpose
- Government's Weapon system (sustainment) mission
- Background
- Challenges
- Path Ahead
- Overview of the SE Process from a DOD perspective
- Technical Data as a specific SE Output and Metric
- Life Cycle Management Command (LCMC) Org.
- Electronic Data Transfer
- Product Data and Engineering Working Group (PEWG)
- Summary

Statement of Purpose

The importance of technical data and its benefits within the Government is resurfacing with the revitalization of Systems Engineering by OSD

The Government's Weapon System (sustainment) Mission

- The OSD/Army missions requiring TD
 - FAR/DFAR compliant contracting
 - Contingency sustainment strategies
 - Spare part technical designs and reviews
 - Rapid Warfighter and or Operational solutions
 - Continuous technology refreshment
 - Support to the AM LCMC depots
 - Competition initiatives
 - Reliability Improvements
 - Value Engineering
 - Hosting standardized TD formats for seamless transfers

Background

- Acquisition Reform ¹
 - Contractor-maintained design/configuration
 - Use of technical data within Government deemphasized
 - Technical Data access preferred over delivery
 - Decentralized program management
 - Performance-based development heralded as the panacea
 - Streamlined ECP approval
 - Elimination of Mil Specs and Mil Standards
 - Elimination of non-value added reporting
 - Rights in technical data deemphasized

Savings expected, but not yet realized ¹

Challenges

- Understanding/Overcoming execution issues of the past
 - Practices of the past that were based in paper, presented significant issues
- Understanding that development costs are equivalent to Rights in Data (RID) costs ¹²
 - Costs to *acquire* TD rights are incorrectly viewed as duplicative
- Understanding the USC and FAR/DFAR establishes significant RID advantages for OSD
 - DOD has claim even to privately funded TD
- Understanding there are no free lunches in TD maintenance
 - TD left with an OEM offers little advantage while presenting significant sole-source challenges
 - Access only; TD strategies are not adequate for long-term LCMC missions ³
- Understanding PBL and performance strategies/outcomes are necessarily complex
 - PBL contracts being awarded require technical data contingency or exit strategies ²
 - Success is nebulous at best (GAO)
 - PBL strategies confuse roles of Army and contractor ¹³
 - Performance in general adds cost/risk due to complex preparation ¹
- Decentralized program management adds cost/risk:
 - Standardized TD delivery
 - PMOs must support collaborative product data management
 - Requires core logistics capability ¹
 - Performance Specifications beneficial....*when practical* ¹

Confluence of Solutions

Today with:

1. The revitalization of Systems Engineering is ushering in the reemergence and importance of technical data
2. Meaningful reorganizations (Army LCMC)
3. Electronic data transfer
4. Product Data Initiatives by Army leadership ¹⁰

A suitable path ahead is beginning to take shape

Systems Engineering a DOD Overview ¹¹

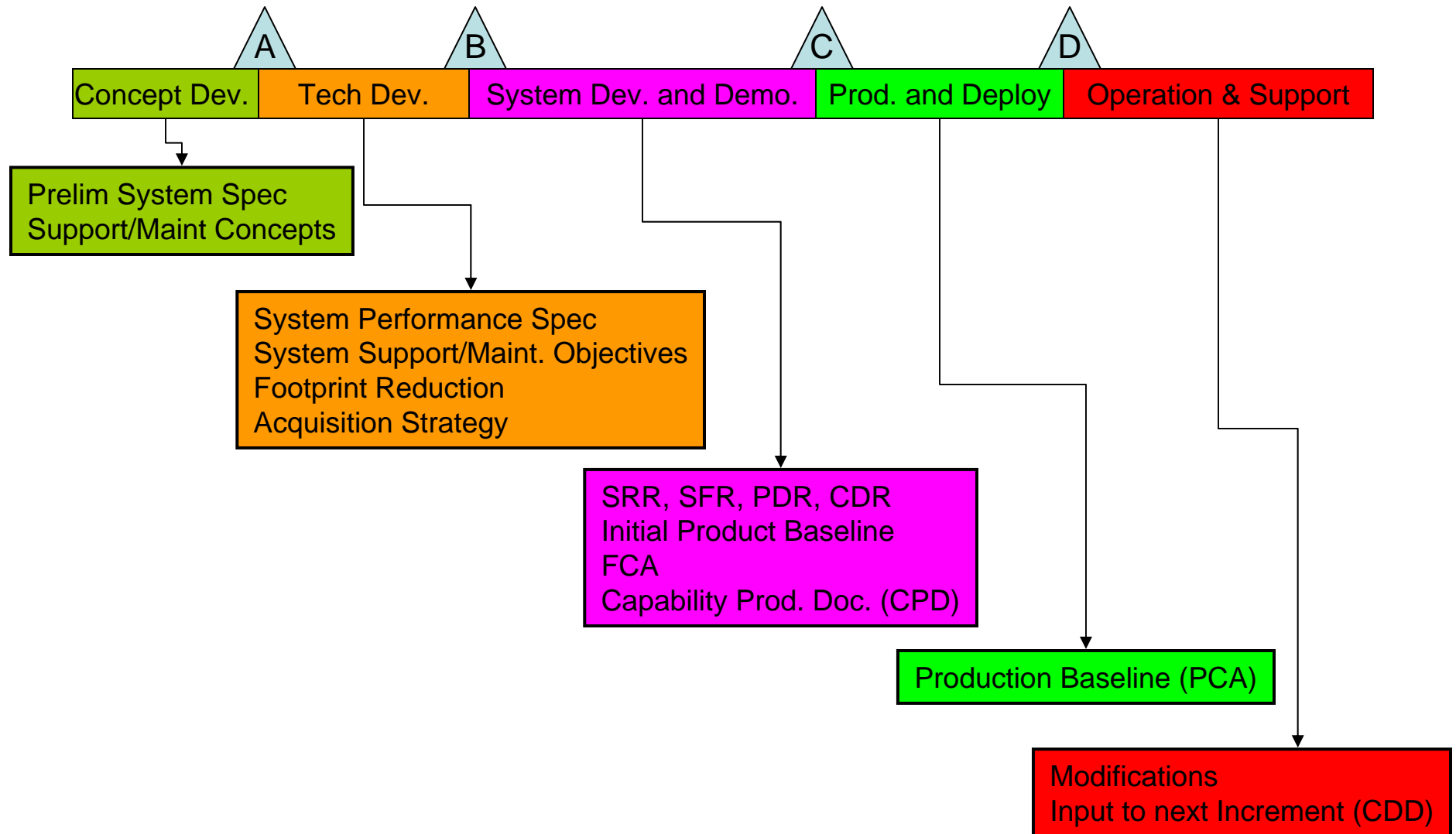
- Requirements Development
 - Performance Parameter Objectives
 - Affordability constraints
 - Scheduling constraints
 - Technical constrains
- Logical Analysis....Functional Analysis/allocation
 - Partitions a system in to logical groupings
 - Disciplined definitions of interfaces
- Design solution
 - People Products and process entities
 - Related internal and external interfaces
 - Upward and downward traceability
 - Interoperability and open system requirements

Systems Engineering a DOD Overview cont.

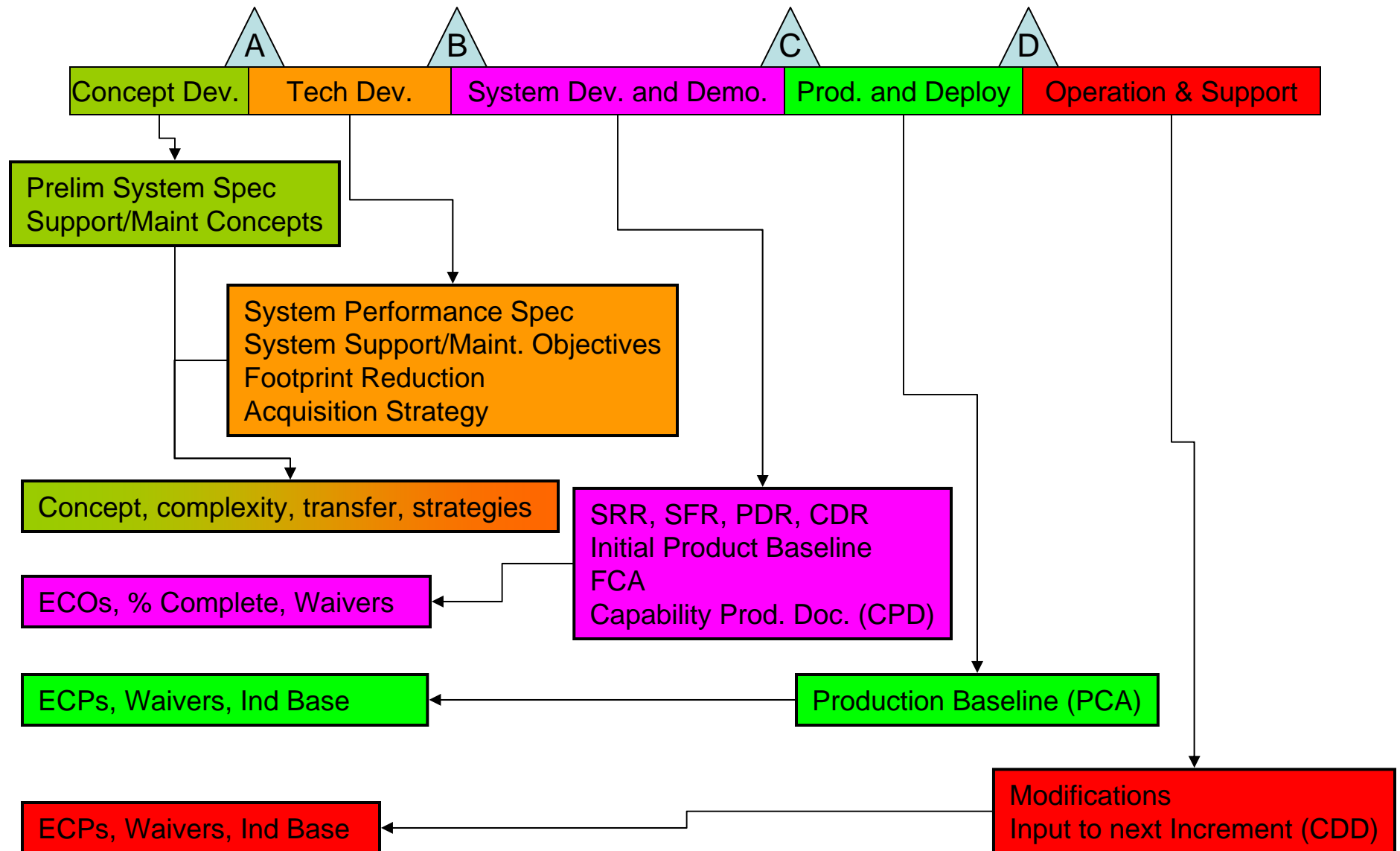
- Implementation
 - System elements formed/fabricated
 - Some testing
 - Packaging handling and storage
 - Operations, maintenance, installation
- Integration
 - Interfaces
 - Putting it all together
- Verification
 - Confirmation that the system meets design specifications
- Validation
 - Confirmation that we “..built the right thing..”
- Transition
 - Movement of the system to the ultimate user

Technical data performance = Program performance

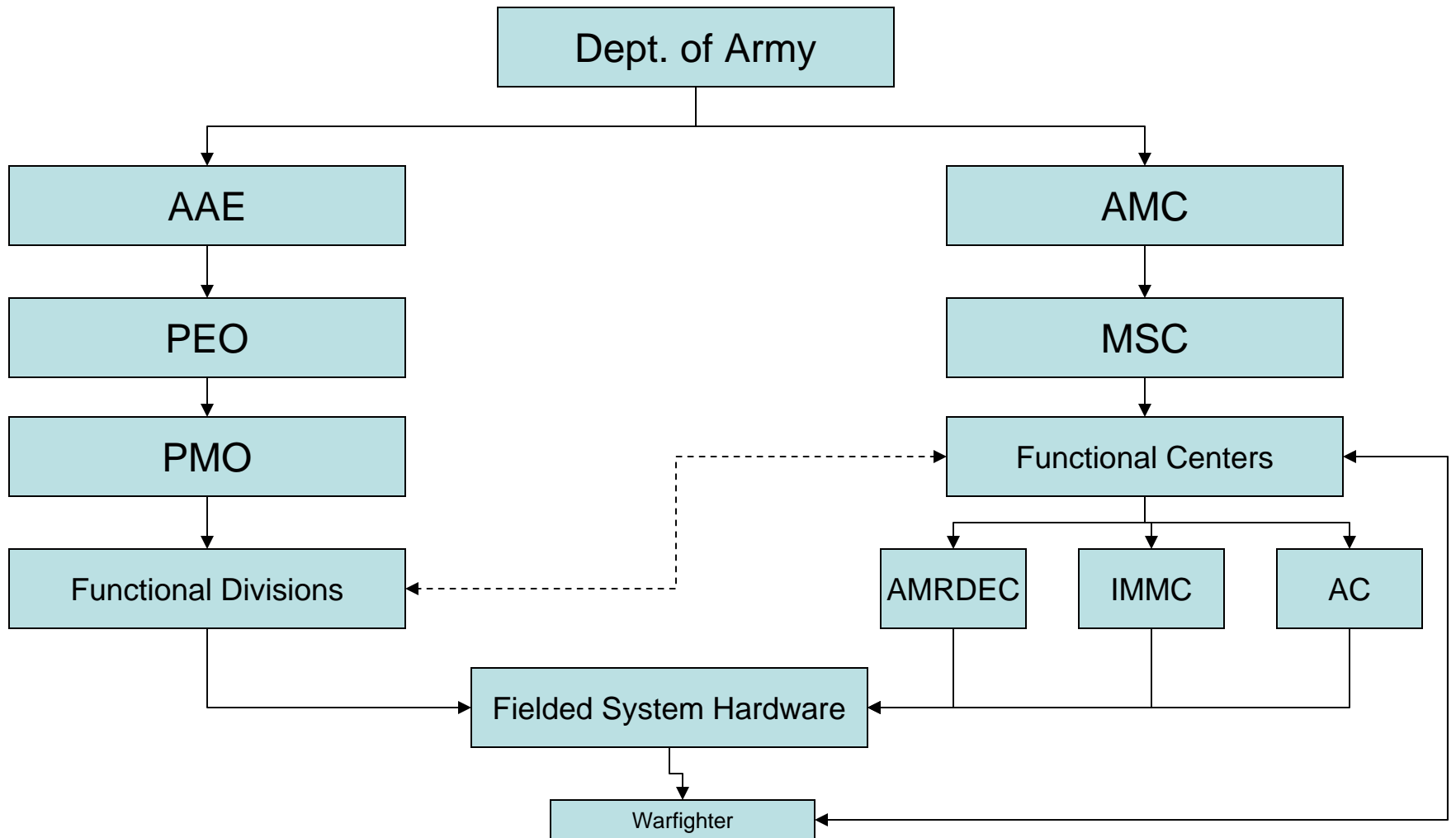
Technical Data Outputs of the SE Process



Technical Data as an SE Metric

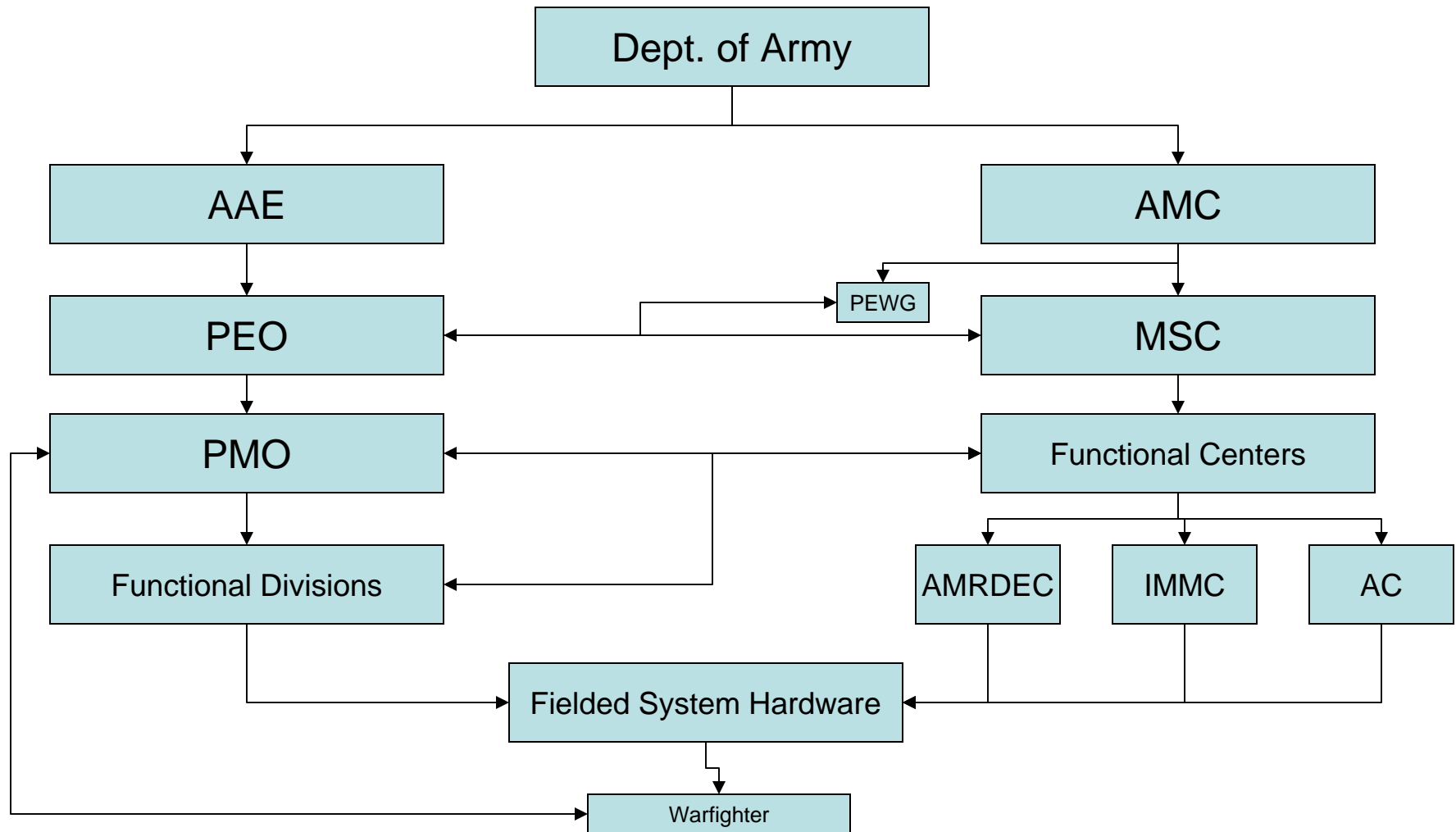


LCMC Re-Organization



Impact from PMO decisions rested with those outside the PMO

LCMC Re-Organization



Impact of PMO decisions rest in the PMO

Electronic Data Transfer

- Technical data today can be moved electronically
- Technical data today can be audited electronically
- A “Government” copy of the TDP no longer required
- Lean Six-sigma and good SE practices ‘should’ be driving maintenance (ECP) costs lower
- Model based Definitions becoming better defined/standardized

Legacy paper-based issues are no longer relevant

PEWG Focus

- **Philosophy: Getting Back To Basics**
 - Army manages Army weapon programs
 - Supports OSD revitalization of Systems Engineering
 - Compliments Acquisition Reform
 - PD in the Army is essential going into the future

- **Task Description:**
 - Review and correct existing acquisition policy, instructional material and contracting package templates, to insure the Army contracts for and receives weapon system product data and appropriate rights to use that data in a knowledge-based future of organic, contracted and contingency life cycle support.

Getting back to the basics

PEWGW Initiatives

- Mandate the delivery of PD to the Army in all development and S&T programs through clear and concise direction
- Insure the Army's intellectual property rights to PD, are identified, correctly/consistently marked and challenged (if necessary)
- Insure that DAU reinforces the importance of PD and clearly identifies the potential benefits, legitimate costs and uses of PD when instructing PMs and acquisition professionals
- Stem the vast diversity in Army contracting today whose PD approaches range from abandonment of PD to the delivery of the full technical data package....with the former often occurring in conjunction with PBL strategies
- Develop/adopt mutually acceptable standardized product data formats

Getting the Government's role right

PEWG Actions

- The Defense Acquisition System (DODD 5000.1)
 - E1.1.3 *Competition* (edit)
 - E1.1.4 *Cost and Affordability* (edit)
 - E1.1.16 *Performance-Based Acquisition* (edit)
 - E1.1.17 *Performance-Based Logistics* (edit)
 - E1.1.29 *Total Systems Approach* (edit)
 - E1.1.30 *Intellectual Property/Technical Data Rights*
 - Product data and intellectual property rights shall be vigorously protected
- The Defense Acquisition System (DODI 5000.2)
 - *E 10 ENCLOSURE 10*
- Army Acquisition Strategy (AR 70.1)
 - Chapter 4 *Acquisition Strategy* (edit)
 - Chapter 6; *Program Design* (edit)
 - Chapter 8; *Army-Unique Policies* (new)
- Leverage ASME Y14.41, MIL-T-3100C standardized formatting

Adequate policy is being made better..more practical

Summary

- Technical Data is an essential output and metric of the SE process
- LCMC Reorganization long overdue
 - PMs are not always right
- Preparation, control, management and distribution of technical data can be conducted electronically
- PEWG is correcting our course...getting back to basics
 - Acquisition Reform was the beginning, adjustments are now needed..
- Define (redefine) our mission/function
 - Policy is interesting....Execution is essential
- Industry is a *business* partner
 - The contract and PD should form all critical communications
 - There are no free lunches
- Performance is not the panacea
 - Performance is still transactional, for industry or Government
 - Discreet/effective performance metrics are very difficult to conceive

References

1. *Reexamining Military Acquisition Reform, Are We there Yet?*, RAND ARROYO CENTER, pg 11, 2005
2. *Opportunities to Enhance the Implementation of Performance-based Logistics*, GAO Report 04-715, page 4
3. 10 USC 2320, (b) (2)
4. Reserved
5. *Reexamining Military Acquisition Reform, Are We there Yet?*, RAND ARROYO CENTER, pg 53, 2005
6. 10 USC 2320, (a) (2) (C)
7. *DOD Needs to Demonstrate that Performance-based Logistics Contracts are Achieving Expected Benefits* GAO 05-966, Pg 3, Sept 2005
8. *Army Acquisition Policy*, Section 6, page 45, Dec 2003
9. *Army ALT Magazine*, pg 15, Nov-Dec 2004
10. *CHARTER FOR PRODUCT DATA and ENGINEERING WORKING GROUP (PEWG)*
Army Materiel Command, Page 1, Mar 2005
11. *DOD Acquisition Desktop Guidebook*, Date, Chapter 4
12. 10 USC 2320, (a) (2) (A)
13. *Performance Based Logistics: A Program's Manager's Product Support Guide*, Pg 4-1, March 2005,
14. *Opportunities to Improve the Army's and the Navy's Decision-making Process for Weapons Systems Support* GAO Report 02-306,, Pg 3, Feb 2002
15. *Reexamining Military Acquisition Reform, Are We there Yet?*, RAND ARROYO CENTER, pg 41
Footnote 13, 2005
16. *Army Acquisition Policy*, Section 4, page 36, Dec 2003
17. *Army Acquisition Policy*, Section 6, page 40, Dec 2003

Definitions

1. PEWG: Product Data and Engineering Working Group
2. Army Material Command: AMC, Responsible for all aspects of system sustainment
3. Functional Centers: Local centers of support with a specific focus
 - a. AMRDEC: Aviation and Missile Research Development and Engineering Center, provides all aspects of technical support, SE, Test, CM, Quality, etc.
 - b. IMMC: Integrated Material Management Center provides all aspects of supply and inventory management
 - c. AC: Acquisition Center supports all aspects of the formal contracting process
4. MSC: Major Support Center provides dedicated support for specific commodities, aviation, missile, etc. By merging collocated acquisition offices (PMO) with the AMC functional organizations, the LCMC is formed
5. AAE: Army Acquisition Executive provides component (Army) acquisition leadership
6. PEO: Program Executive Office provides executive oversight of assigned project management offices (PMO) within a specific commodity
7. PMO: Project Management Offices provide acquisition support to develop a capability requirements into fielded hardware (materiel developer).
8. Functional Divisions: Organized groups of support personnel within the PMO organization. Engineering Group, Logistics Group, etc.

Point of Contact

Russell F. Miller, russell.f.miller@us.army.mil, 256-876-1335

Chief, Technical Data Management Division

Engineering Directorate

Aviation and Missile Research, Development and Engineering Center

Huntsville, AL 35898-5000