

Status of NDIA Joint DoD-Industry Life Cycle Cost/Total Ownership Cost Initiative

Sponsored by:

NDIA Systems Engineering &
Logistics Divisions

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27 April Workshop Objectives

- Convene senior SMEs from OSD, Services and Industry
- Address major issues related to assessing & optimizing LCC/ TOC ..new & legacy weapons systems
- Deliver value to war fighter
- ID & prioritize issues... then accomplish a first level root cause assessment for each issue

Problem Statement

- DoD lacks well-defined/ institutionalized LLC/ TOC and affordability methodology for weapon systems across the entire defense system life to include:
 - Material Solution Analysis
 - Technology Development
 - EMD
 - Production and Deployment,
 - Operations and Support
 - Disposal

LCC/TOC Core Issues

**NDIA/DoD LCC/TOC Workshop
27 April 2010**

Issue #1

Acquisition Requirements Specifications lack adequate emphasis and language that enable LCC focus in system design and development

Problem: DoD weapon system requirements specifications do not consistently enable design for supportability and optimization of life cycle cost

Issue #2

Traditional Acquisition Cost, Schedule, Performance metrics are barriers to focusing on life cycle results

Problem: Traditional acquisition metrics (Acquisition cost, Schedule to IOC, Performance at IOT&E) drive Acquisition PMs to give lesser emphasis to LCC optimization opportunities, resulting in trading away supportability and sustainment enablers.

Issue #3

Inconsistent emphasis on LCC/ TOC analytics throughout the life cycle

Problems:

- Collection, compilation, and analysis of RAM/Engineering analysis (FRACAS, FMECA, LORA, Fault Tree, Operational Modeling & Simulation,, etc.) are emphasized early in the life cycle but lose emphasis during operations and support phase.
- Out of production, legacy systems fail to consistently maintain RAM/ engineering analyses as a priority throughout the life cycle.

Issue #4

Lack of Resources to address
LCC/TOC/O&S cost issues throughout
life cycle

Problem: No clearly recognized pool or
source of funding identified for LCC/
Supportability improvement initiatives.

Overarching solution emerging to address Four LCC/ TOC Issues

- **Develop an LCC/ Affordability methodology/model** (Per NDIA SE LCC committee meeting 16 June):
 - Issue #1: Acquisition Requirements Specifications lack adequate emphasis and language that enable LCC focus in system design and development
 - Issue #2: Traditional Acquisition Cost, Schedule, Performance metrics are barriers to focusing on life cycle results
 - Issue #3: Inconsistent emphasis on Life Cycle Cost/Total Ownership Cost analytics throughout the life cycle
 - Issue #4: Lack of Resources to address LCC/TOC/O&S cost issues throughout life cycle
- NDIA Log Division needs to be engaged with NDIA's SE and Mod&Sim Division now thru final report. **Log Div Volunteers needed...who's in?**

Latest SE Tasks (16 June)

- Develop “Affordability” definition, description, objective (vs. “failure” of LCC)
- Define “Affordability Methodology” (or “Model” – TBD, with benefits
 - More flexible time frame application (not just amorphous “life cycle”)
 - More flexible application (Cost per unit of operation, contract cost, or even LCC!)
 - Agnostic of colors of money or life cycle phase
 - Facilitates CAIV & matching of capabilities to available resources

Latest SE Tasks (con't)

- Develop methodology/framework for applying “affordability” to the issues we’ve captured (Core Issues) – and potentially broader general positive benefits

Next Steps

- Brief NDIA's SE & Log Divisions on workshops results (Complete)
- Advise both Randy Fowler and Nick Torelli of preliminary results (Complete)
- NDIA's SE, Mod & Sim and Log Division LCC sub-committees refine issues, root causes and potential solutions
- Complete findings/ recommendations as a White Paper and "out brief" to Randy/ Nick
 - "Final" originally planned for Spring 2011
 - now shooting for draft white paper by end of July 2009 and final with outbrief by end of 2010 (Randy Fowler departure)

BACKUP SLIDES

Agenda

- 0730 Continental Breakfast
- 0800 Welcome: Bruce Pieper, NDIA Logistics Division, Chair, LCC Committee
- 0810 Opening Remarks: Mr. Randy Fowler (Assistant Deputy Under Secretary of Defense, Materiel Readiness), Mr. Nic Torelli (Director, Mission Assurance Systems Engineering, DDR&E)
- 0845 Agenda Review, Administrative Information, Introductions: Jerry Cothran, NDIA System Engineering Division, Co-Chair, LCS Committee
- 0945 Break
 - Team Composition: 4 teams
 1. Pre-Milestone B (Material Solution Analysis, Technology Development, Analysis of Alternatives)
 2. System Acquisition (EMD: Requirements, Design and Development, T&E)
 3. Production and Deployment (Initial fielding through FOC and standup of Organic Depot capability)
 4. Operations and Support: phase out of production; operational use (FOC through disposal)
- 1000 Walt Cooper (CAPE) Updates on Major Operating and Support (O&S) Cost Projects
- 1030 Team Group Activity 1: Identify and Prioritize the Issues
 - Product: Consensus list of issues prioritized by Life Cycle Phase categories
- 1200 Lunch: Provided
- 1300 Team Group Activity 2: Recommended Actions
 - Product: List of recommended actions to address issues
- 1530 Break
- 1545 Summary/Closing Joel Moorvitch, NDIA System Engineering Division, Co-Chair, LCS Committee
- 1630 Adjourn

#1 Root Causes

- Requirements development highly weighted towards technical performance and capabilities, not sustainment or LCC considerations
- Budgets driven towards system capabilities to the point that adding costs to optimize sustainment and/or LCC are minimized or disregarded
- An over-emphasis on “operators” vice logistics and sustainment expertise on the requirements writing team
- Requirements don’t provide industry or Government opportunities to “design for support” or optimize Life Cycle Cost or design for Affordable System Operational Effectiveness (ASOE – Defense Acquisition Guidebook Chapters 4.4, 5.2, 5.4.1)
- Government and Industry lack of training, expertise or tools to define LCC and supportability requirements.

#1 Potential Solutions

- Optimize LCC and supportability (i.e.; Affordable System Operational Effectiveness (ASOE) analytics) in JCIDS Policy
- Improved LCC and supportability optimization training for requirements development teams
- For ACAT I and II programs:
 - require pre-Milestone B Technology Demonstration Mod & Sim to ID mission capabilities and sustainment strengths and deficiencies
- For Legacy systems:
 - use LCC impact metrics in allocation and approval of new projects/requirements.
- Require Change Control Boards to assess and document LCC impacts for every major requirement modification.

#2 Root Causes

- The ‘forcing functions’ (Acquisition Metrics) frame the priorities
- “We have always done it this way”. (Culture issue.)
- Lack of meaningful data collection/ analysis after IOC
 - causes acquisition PMs to lack viable precedent models of what actions can or should be taken in acquisition to optimize sustainment.
 - Result: Long term Reliability focus replaced by more near term buying of parts and maintenance
- A culture that relies on “supplementals” to address sustainment issues
- No common, accepted methodology for LCC estimation.

#2 Potential Solutions

- Develop life cycle focus which begins pre-Milestone A & continues for life of program
- Emphasize life cycle metrics – Materiel Availability, Materiel Reliability, Mean Down Time, and Life Cycle Cost
- Grade PM & incentivize industry on LCC to drive improvements in R&M (make RAM-C Manual mandatory)
- Develop resources and procedures for continuous collection and analysis of engineering data (FRACAS, reliability growth, supply chain metrics) throughout life cycle
- Change Nunn-McCurdy breach criteria from unit acquisition cost to LCC
- Manage what you measure to cause the necessary cultural/behavioral change to LCC

#3 Root Causes

- Lack of sufficient data (as defined in the Defense Acquisition Guidebook Chapter 4.2.3.1.7.4. Definition and Scope of Data), general and specialized tools, education/training, skilled personnel and methodologies to effectively address complex and disciplined LCC/TOC/ASOE-oriented analytics throughout the life cycle
- No standard methodologies, models or expertise in LCC analyses
- LCC analyses and Post-production engineering are not identified in contract language (RFP, SOW or CDRL)
- Lack of well defined CDRL's and associated DID's that signal the importance of TOC/ASOE-oriented analytics and trade-offs starting very early in the lifecycle and continually improved until disposal
- Lack of accepted benchmarks, standards, or definitions of desired O&S and Life Cycle Cost

#3 Potential Solutions

- Select or create common LCC methodology and model. Identify required training/skills and train work force
- Create and continually maintain a true Integrated Data Environment (IDE) IAW DAG Chapters 2.3.14, 5.1.6 and 11.12, that provides required LCC/ASOE-oriented data; available to Government and Industry as required
- Add new language into contract documents that require FRACAS, engineering support and continuous LCC analyses throughout the product Life Cycle
- Create Life Cycle metrics by contract Life Cycle or type of system.

#4 Root Causes

- Budget realities drive available funding; little is left to address LCC/supportability issues
- The short term budget horizon (i.e. 2 year POM cycle, 6 year FYDP cycle) hinder long term investment and payback analysis.
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- No objective way to allocate funds between weapon systems and suggested modifications

#4 Potential Solutions

- Establish LCC/supportability revolving fund similar to the Working Capital Fund to support O&S supply and maintenance operations. After initial capitalization, fund would be used to resource approved LCC/supportability improvements. Restoration of fund could be accomplished by the Return on Investments (ROI) from the approved initiatives
- Develop LCC/ supportability methodology for life cycle perspective. Disassociate initiatives from normal budget cycle (ROI beyond 6 years is pretty much meaningless)
- Mandate minimal requirements for LCC analyses and metrics in decision process/milestones.
- Streamline contracting process to fund solutions closer to need