Earned Value

Defense Acquisition Reform and Project Management

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**Standard Form 298 (Rev. 8-98)**
Prescribed by ANSI Std Z39.18
DoD Acquisition Reform

- The acquisition environment
  - Industrial base consolidation
- Earned Value “Reengineered”
  - From C/SCSC to Earned Value Management Systems (EVMS) Criteria
- Integrated Project Management
  - Scope/Schedule/Resources/Risk

EVM Web Site - www.acq.osd.mil/pm
DoD Acquisition Reform

- Make DoD the smartest buyer of best goods & services to meet warfighter needs at best value over life of product
  - New laws and policies
  - Separate mandatory/discretionary practices
  - Simplify acquisition policy documents
  - Integrate policies & procedures for weapon systems and information systems
- Shift from “oversight” to “insight”
1961 Pentagon Spending:
• 40% of Federal Budget
• 8% of GDP

1997 Pentagon Spending:
• 15% of Federal Budget
• 3% of GDP

Military Procurement Budget:
• Down 67% since 1985 peak
• $60 Billion goal
DoD Responses

- Acquisition Reform
- “The Last Supper”
  - 1993 DepSecDef dinner
  - Fewer, larger companies
- Followed previous OSD-led management initiatives
  - Better integrate cost, schedule, technical perf.
    using Earned Value
  - Ongoing since 1980s
The 1990’s - Shrinking Industrial Base

Lockheed
GD Mil. Jets
Sanders Assoc.
Martin Marietta
GD Rockets
GE Aerospace
Loral
Unisys Defense
IBM Fed. Systems
LTV Missiles
Ford Aerospace
Goodyear Aerospace
Northrop
LTV Aircraft
Grumman
Westinghouse Def
Boeing
Rockwell Def & Space
McDonnell Douglas
Raytheon
E-Systems
Texas Instruments Def
Hughes Aircraft
Magnavox Def
CAE Link
GD Missiles

Lockheed

Martin Marietta

Loral

Lockheed Martin

Northrop Grumman

Boeing

Raytheon

Hughes Aircraft
Effective Management*

**Contract:** 4 miles of railroad track in 4 weeks for $4 million.

**Status:** After 3 weeks, only $2 million has been spent.

**Question:** How are you doing (and how do you know)?

<table>
<thead>
<tr>
<th>Spend Plan</th>
<th>Earned Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planned $1M/week</td>
<td>Planned $1M/week</td>
</tr>
<tr>
<td>Planned $3M to date</td>
<td>Planned $3M to date</td>
</tr>
<tr>
<td>Actual cost $2M</td>
<td>Earned $1M (66% behind)</td>
</tr>
<tr>
<td>$1M favorable???</td>
<td>Actual $2M (100% overrun)</td>
</tr>
<tr>
<td></td>
<td>EAC $8M, 8 weeks late</td>
</tr>
</tbody>
</table>

* Source: May 1997 General Accounting Office Report
Earned Value Management = Basic Management Principles
Too often, earned value insights remain the sole province of the supporting program control staff of both contractors and the government.

– Earned value must be an integral part of the performing design and manufacturing organizations

– Only when program technical staffs are held accountable for earned value analysis, will they begin to understand its implications
Reengineering EVMS
October 1993 - A Vision
Integrated Product Teams: The Key to Success

Management systems don’t manage - people do!
EVM is used to identify, communicate and manage the resource effect of technical and schedule problems
The Really Nice Thing About Not Planning

Failure comes as a complete surprise and is not preceded by long periods of worry and depression!*

*Micro Planning International
Work Breakdown Structure: The Key to Integration

MIL-HDBK-881
Reengineering EVM: DoD Improvements

- Redefined Earned Value Ownership
  - Financial reporting to management
  - Government to industry
  - PMs “assume” data integrity

- Better management tools

- Integrated Baseline Reviews
  - Improved planning process
  - Better technical/risk management

- Revised DoD 5000.2-R
  - Defense Acquisition Deskbook
Reengineering EVM: Integrated Baseline Reviews

- Within 6 months of award
- Mutually understand plan
  - Scope
  - Schedule
  - Resources
- Planning process vs. event
- PM leads
  - EVM staff supports
  - Management system reviews effectively eliminated

IBR Training
- Schedules
- Mgmt. Systems
Growing Consensus: Gov’t/Industry Best Practice

- Dec. ‘96 DoD accepted industry EVMS guidelines as C/SCSC replacement
- Reserved right for government reviews
  - As determined by project manager
  - “Self-certification” not in public interest
- Encouraged “true” standard
  - ANSI/EIA 748-98 Earned Value Management Systems
  - For now, DoD and industry EVMS criteria are equal
  - International discussions ongoing Canada, UK
Keynote Themes

- **Industry**
  - EVM does not cost
  - Pays “big time”
  - Improves bottom line
  - Customer satisfaction
  - More bang for buck

- **Government**
  - Perceptions
  - Martyrs, Missionaries, Messengers
Roadmap from Requirements to Competitive Advantage

- **Challenges:**
  - Cost-effective government requirements
  - International cooperation
  - Commercial environment efficiently eliminates non value-added practices.

- **Exam question:**
  - Can EVMS respond?
Industry’s Vision

- National Defense Industrial Association Management Systems Subcommittee
- Move the community from a requirements structure to one based on competitive advantage
- Yogi Berra: “When you arrive at a fork in the road, take it.”
Roadmap - Requirements to Competitive Advantage

- **Industry**
  - Grow business (new contracts)
  - Achieve customer expectations (contract performance)
  - Achieve stockholder expectations (improve financial results)

- **Government**
  - Reduce project costs
  - Reduce schedule risk
  - Program Success: improve predictability
Roadmap - Requirements to Competitive Advantage

- Common Business Processes give the Program Manager the tools to avoid reinventing the wheel for each program.
- EV is a tool integrating technical, schedule and cost performance measurement and analysis data for management.
- Cost savings and competitive advantage come from a broad business application.

Program by program application isn’t good enough.
Roadmap from Requirements to Competitive Advantage

**Government**
- Incorporate ANSI-EIA 748 in DoD Regulation

**Contractor Project Management Practices**
- Business Unit Policy & Process embrace EVMS (Ownership)
- International recognition of EVMS Guidelines

**ANSI-EIA 748 Advance Agreements**

**IBRs**

**Industry**
ROADMAP FROM REQUIREMENTS TO COMPETITIVE ADVANTAGE

Integrated Program Management Competitive Advantage
(ALL non-value added activity eliminated)

Integrated Program Management using Earned Value in the most effective manner

Business Unit Processes embrace Earned Value

Business Unit EVM Policy & Ownership
Sustaining the Progress

- Public/Private cooperation
  - Expand contact with commercial firms
  - Eliminate unessential differences between government and commercial management practices
  - Civil-Military Integration
- Global Standards (or guidelines)
  - Work with industrial partners
  - While encouraging wider dialogue
Sustaining the Progress (cont’d)

- Project Management Education
  - Alternative delivery
    - Distance learning
    - Alternate sources
- Integrated Project Management
  - Technical Performance Management
    \[ \text{IPT} + \text{IBR} + \text{EVM} = \text{IPM} \]
- In-house management
  - November 1998 conference
Sustaining the Progress (cont’d)

- Interagency cooperation
  - Office of Management and Budget
  - “One government” approach
- Associations are valued partners
  - American Project Management Forum
  - Global Forum
  - Standards
  - Education
  - PMA/PMI
Sustaining the Progress (cont’d)

- “Clearinghouse”
  - Trust & Communication
  - OSD to DCMC
  - Mr. Richard Zell
    (703) 767-3469
    richard_zell@hq.dla.mil

- Cloud Kingdom
  - At your service
    (703) 695-5166
    abbawf@acq.osd.mil
WAR (wInsight Analysis & Review) Room

- **8 Screens**
  - WBS
  - Product Photo
  - Schedule status
  - Schedule perf. trend
  - Risk + (Monte Carlo)
  - Cost perf. trend
  - Est. at complete
  - Funding status

- **Compare programs**
  - Update in real time
  - Link performance to budget decisions

- **Natl. Reconnaissance Office**
  - Near Dulles Airport
  - Visits can be arranged
  - Demo at Tysons conf.

World Class Best Practice in Partnership with DoD
Using Variance Information

- **Schedule Variance**
  - BCWS tied to early start/finish
    - Late with float
    - “Real” problem
    - Deliberately delayed
    - Work done; no BCWP
    - Early
    - Anomalies

- **Cost Variance**
  - Negative
  - Positive
  - Anomalies
Negotiating Contract Changes

- Value of completed work
- Value of work in process
- Value of work deleted (yet to be done)
- ACWP Cum
- BCWP Cum
- ACWP Cum (+ ETC)
- Baseline Budget