



Earned Value

Defense Acquisition Reform and Project Management

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Office of the Under Secretary of Defense
(Acquisition & Technology)***

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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”**

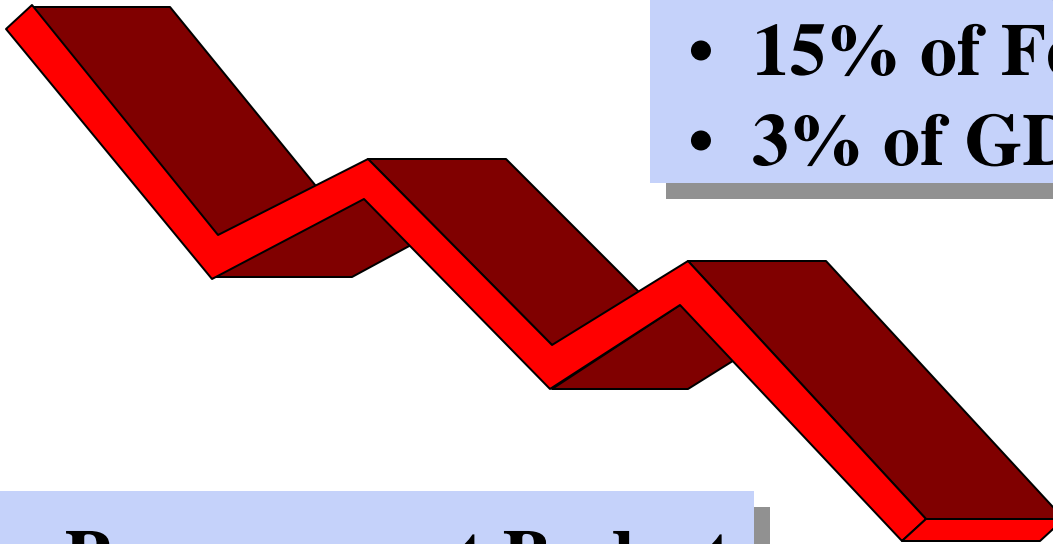
1961 Pentagon Spending:

- 40% of Federal Budget
- 8% of GDP

1997 Pentagon Spending:

- 15% of Federal Budget
- 3% of GDP

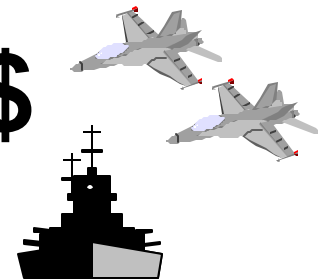
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Military Procurement Budget:

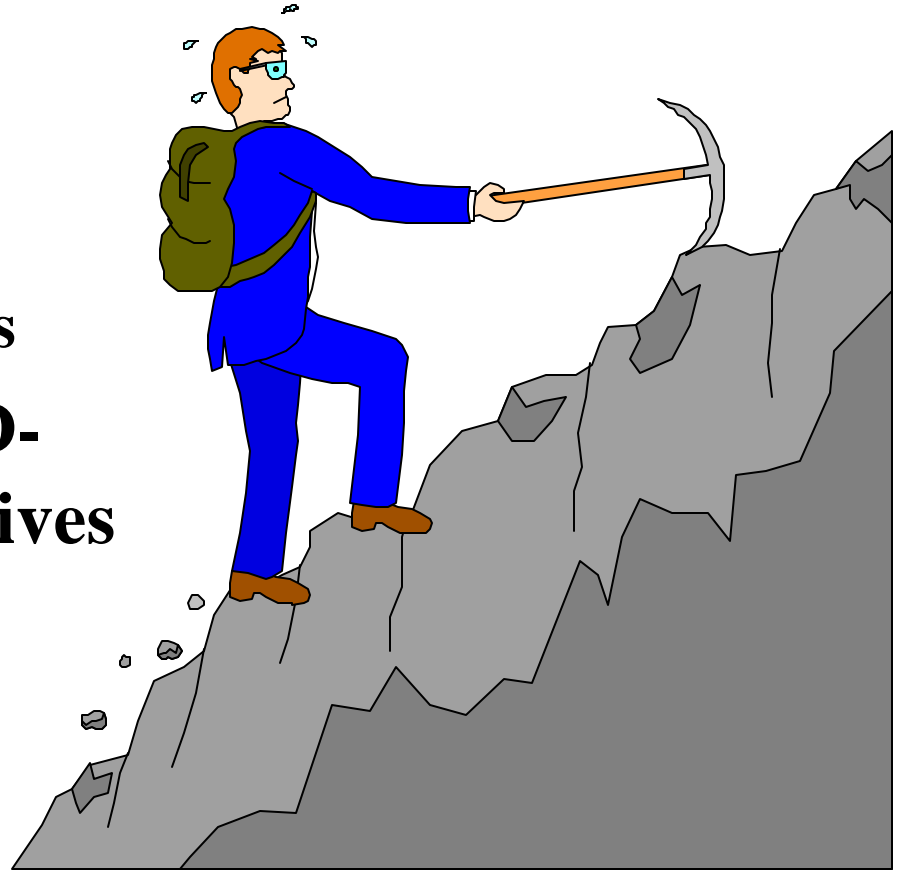
- Down 67% since 1985 peak
- \$60 Billion goal

\$



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.

Lockheed

Martin Marietta
GD Rockets
GE Aerospace

Martin Marietta

Loral
Unisys Defense
IBM Fed. Systems
LTV Missiles
Ford Aerospace
Goodyear Aerospace

Loral

Lockheed Martin

Northrop
LTV Aircraft
Grumman
Westinghouse Def

Northrop Grumman

Northrop Grumman

Boeing
Rockwell Def & Space
McDonnell Douglas

Boeing
Rockwell Def & Space
McDonnell Douglas

Boeing

Raytheon
E-Systems
Texas Instruments Def

Raytheon
Texas Instruments Def

Raytheon

Hughes Aircraft
Magnavox Def
CAE Link
GD Missiles

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)?

Spend Plan

- Planned \$1M/week
- Planned \$3M to date
- Actual cost \$2M
- \$1M favorable???

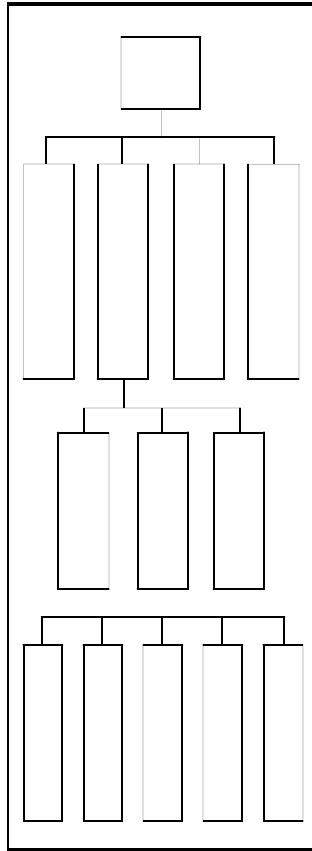
Earned Value

- Planned \$1M/week
- Planned \$3M to date
- *Earned \$1M* (66% behind)
- Actual \$2M (100% overrun)
- EAC \$8M, 8 weeks late

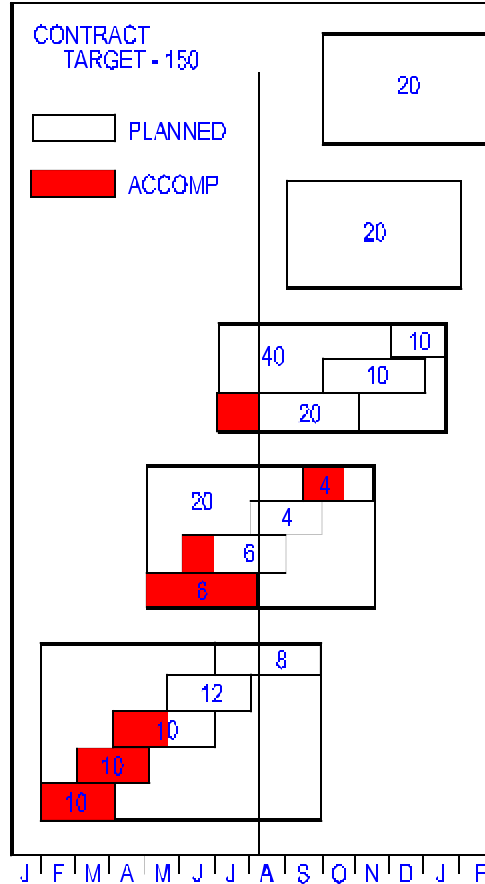
* **Source: May 1997 General Accounting Office Report**

Earned Value Management = Basic Management Principles

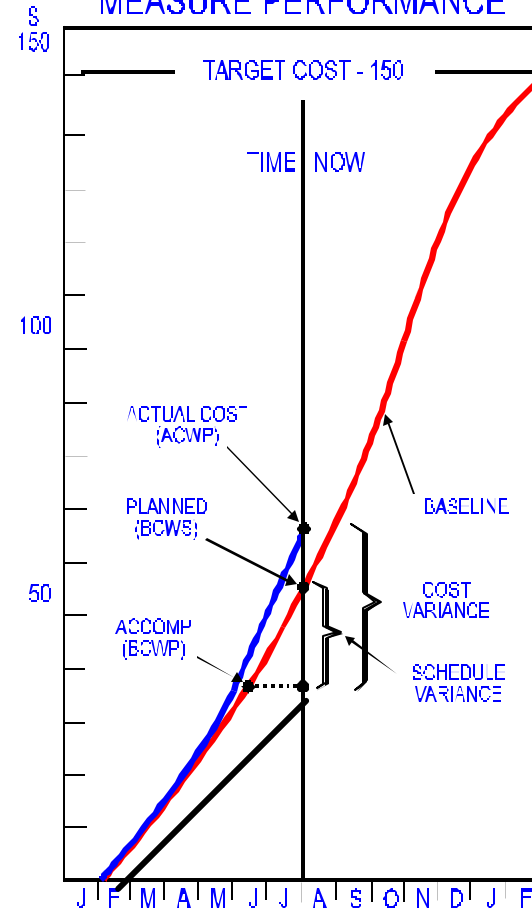
DEFINE THE WORK



SCHEDULE AND BUDGET



MEASURE PERFORMANCE



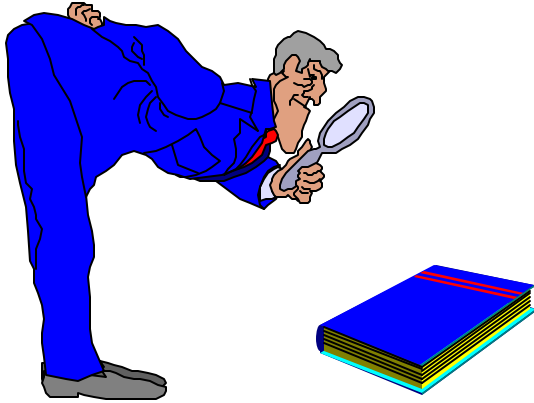
Lesson of the A-12 (& others)

The “Beach” Report, A-12 Administrative Inquiry, 28 Nov 1990

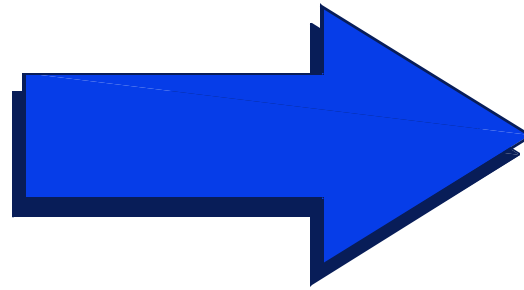
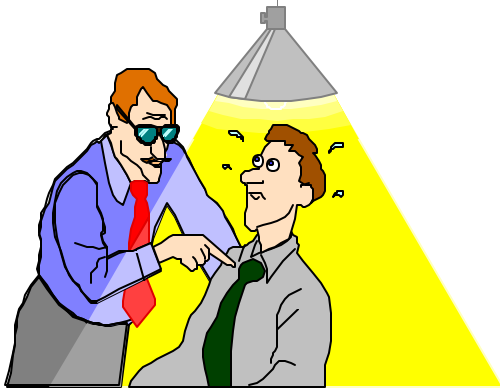
- ◆ Too often, earned value insights remain the sole province of the supporting program control staff of both contractors and the government.
 - Earned value must be an **integral** part of the performing design and manufacturing organizations
 - Only when **program technical staffs** are held accountable for earned value analysis, will they begin to understand its implications

Reengineering EVMS

October 1993 - A Vision



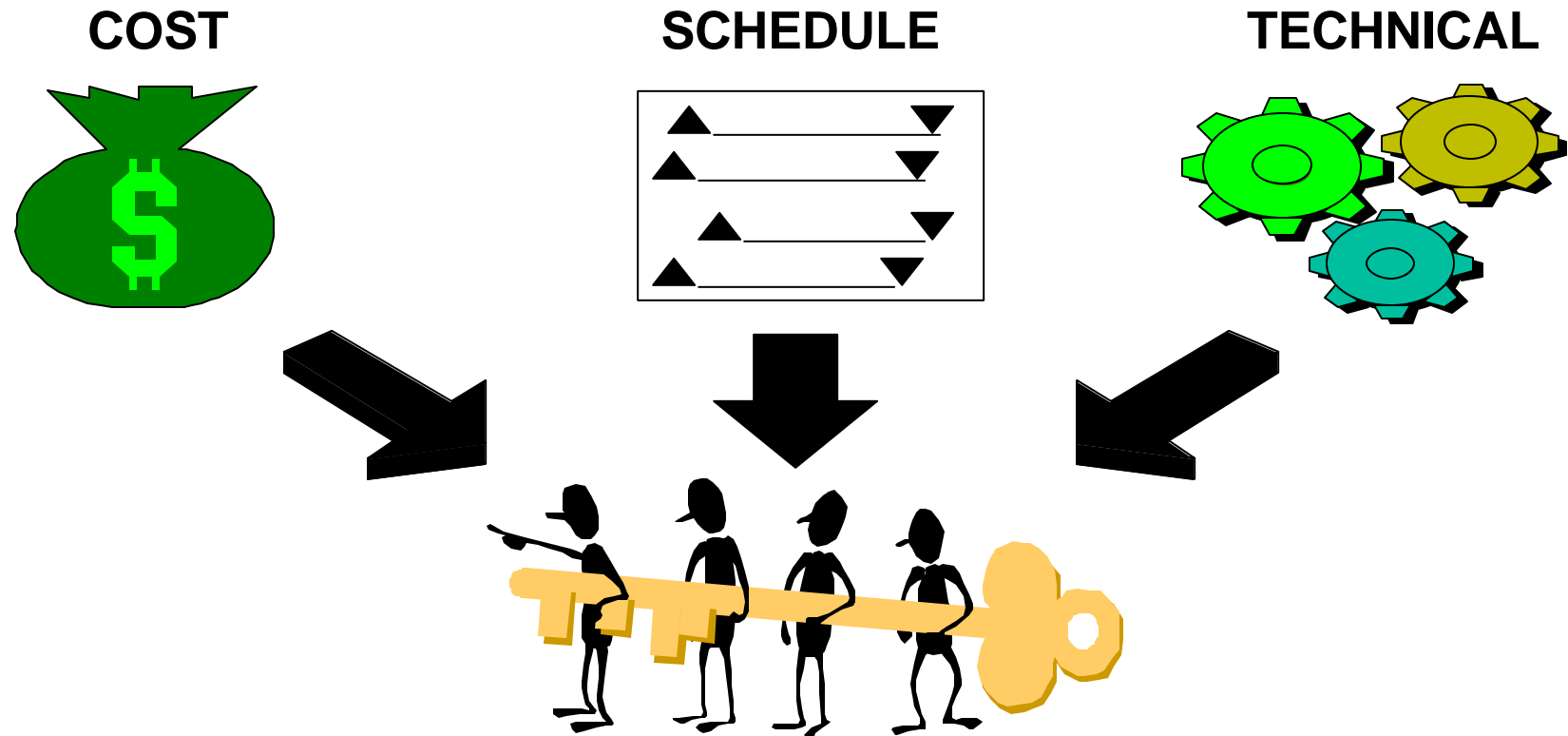
Inspection



Management



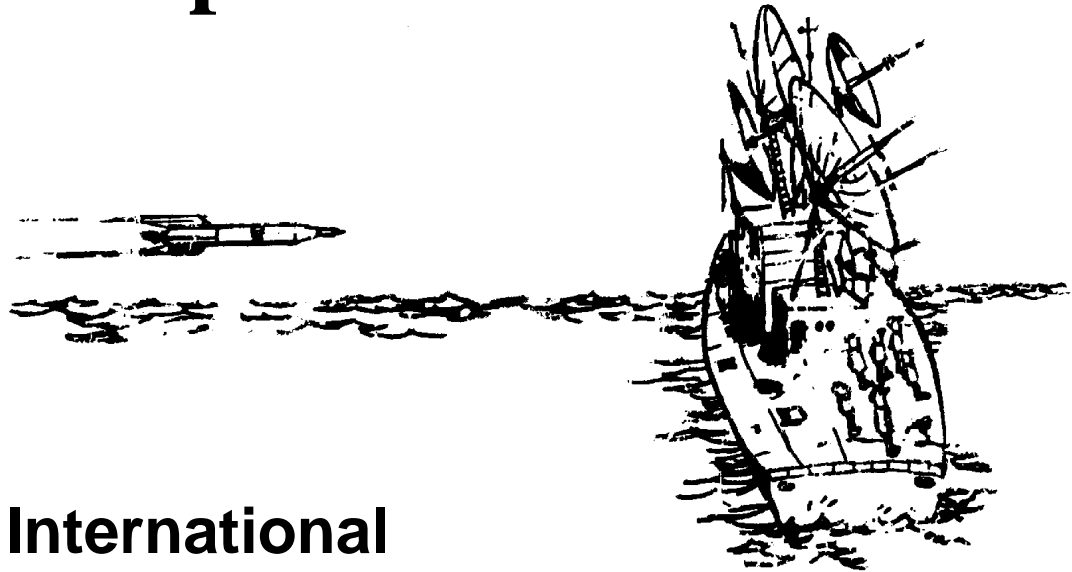
Integrated Product Teams: The Key to Success



**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!***



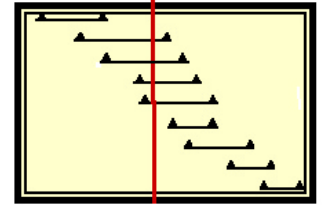
***Micro Planning International**

Work Breakdown Structure: The Key to Integration

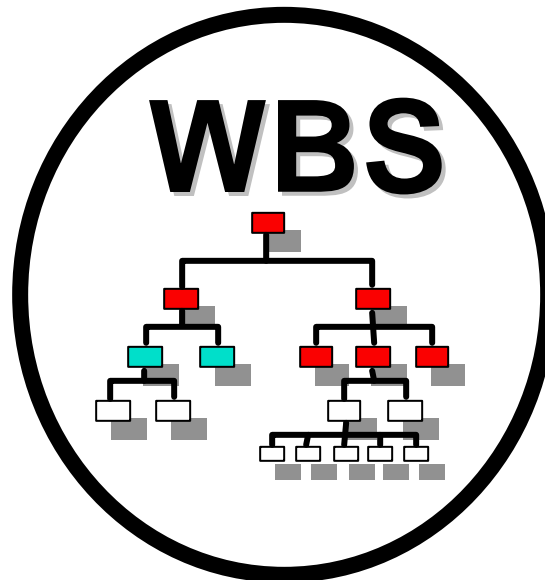
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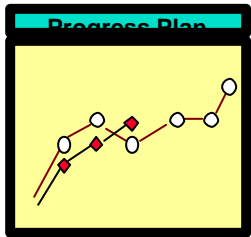
COST



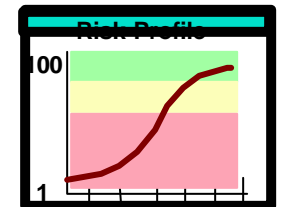
SCHEDULE



**TECHNICAL
PERFORMANCE**



RISK



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

} **Risk**
- ◆ **Planning process vs. event**
- ◆ **PM leads**
 - **EVM staff supports**
 - **Management system reviews effectively eliminated**



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

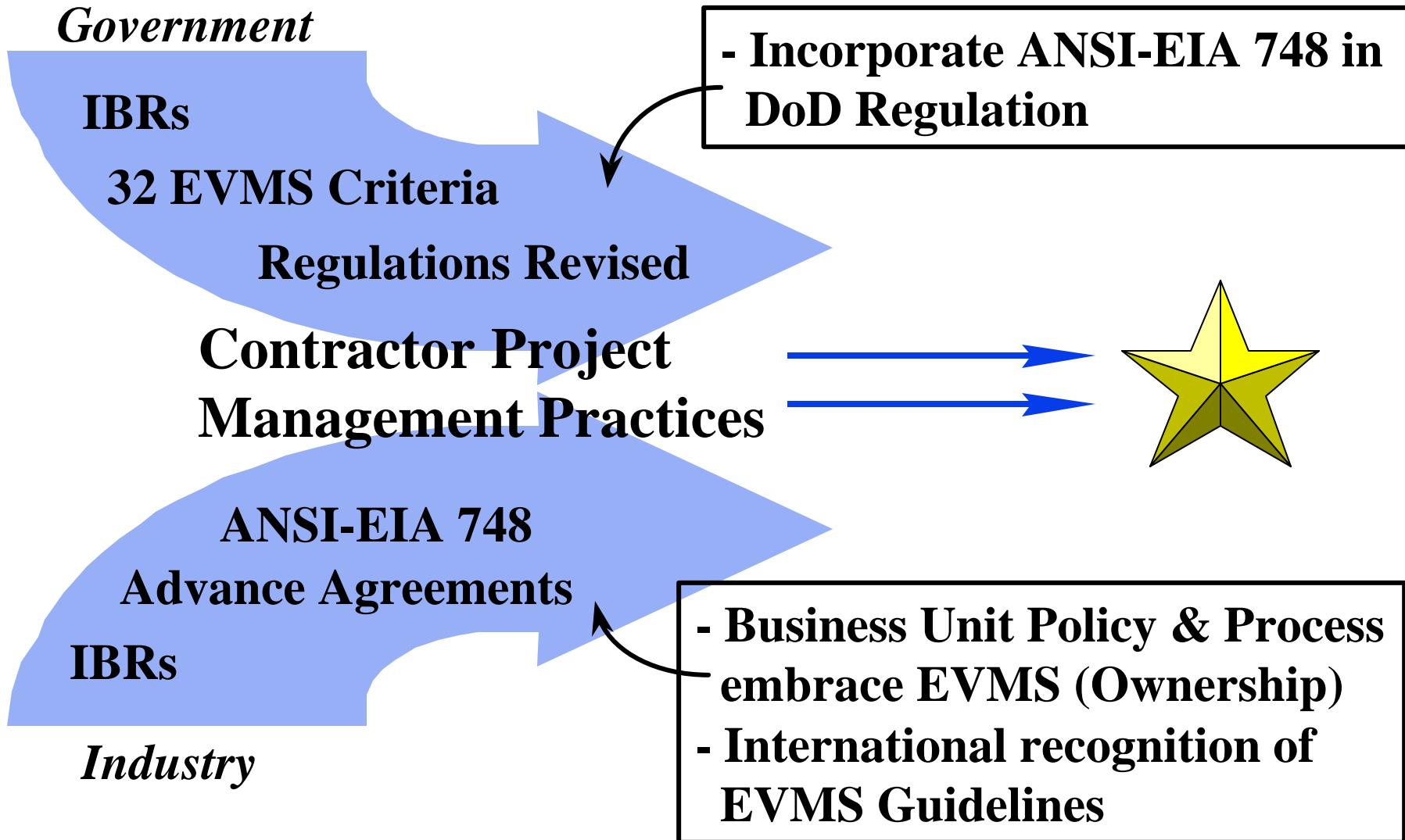
- **Reduce project costs**
- **Reduce schedule risk**
- **Program Success: improve predictability**

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.**

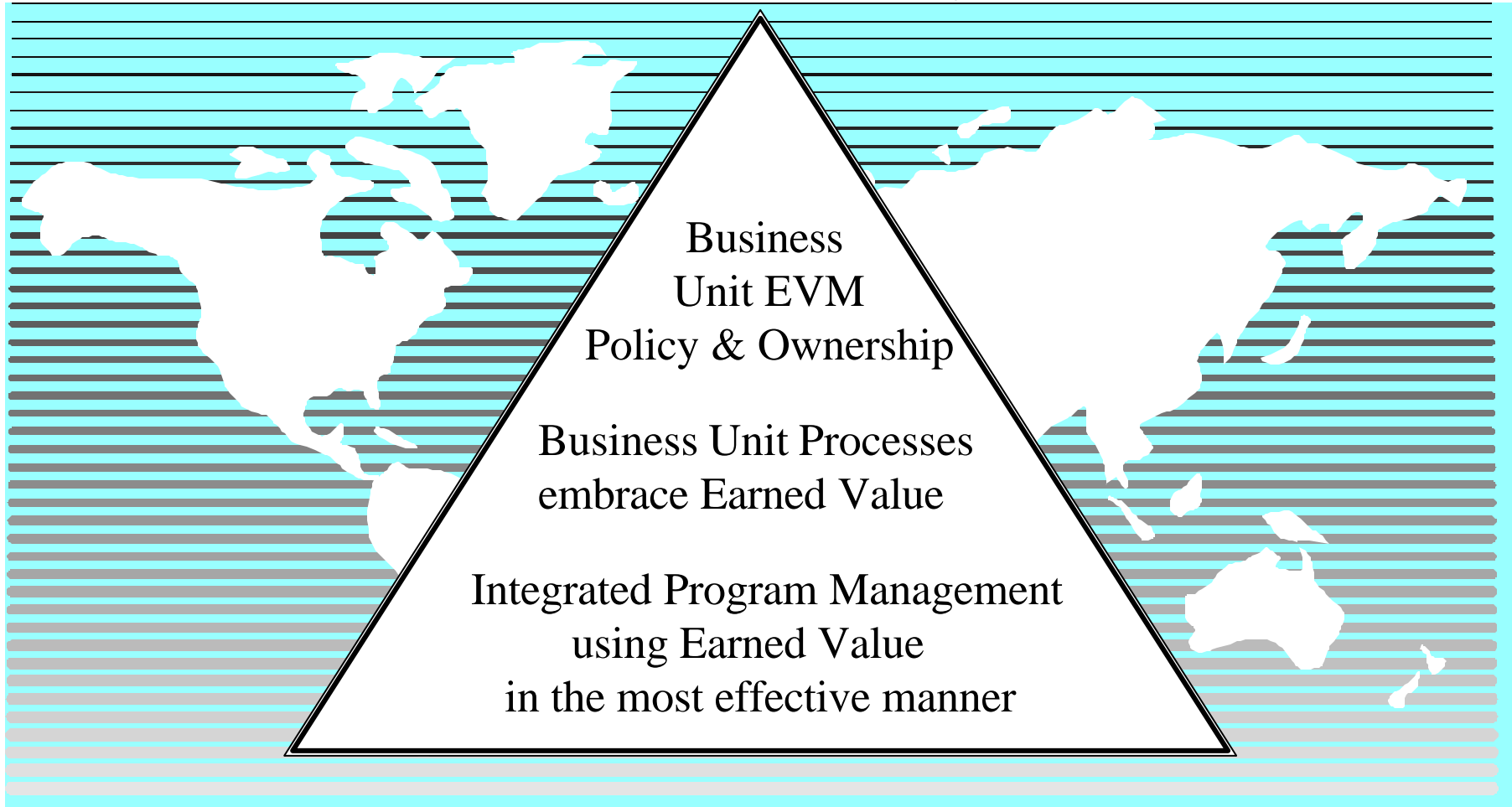
Program by program application isn't good enough.

Roadmap from Requirements to Competitive Advantage



ROADMAP FROM REQUIREMENTS → TO COMPETITIVE ADVANTAGE

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



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)**

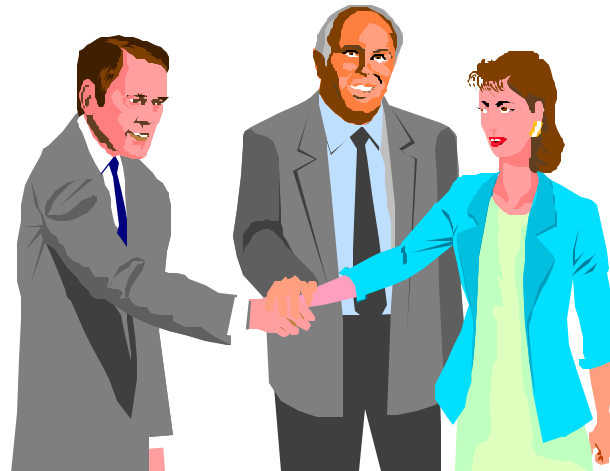
- **Work with industrial partners-**
- **While encouraging wider dialogue**

Sustaining the Progress (cont'd)

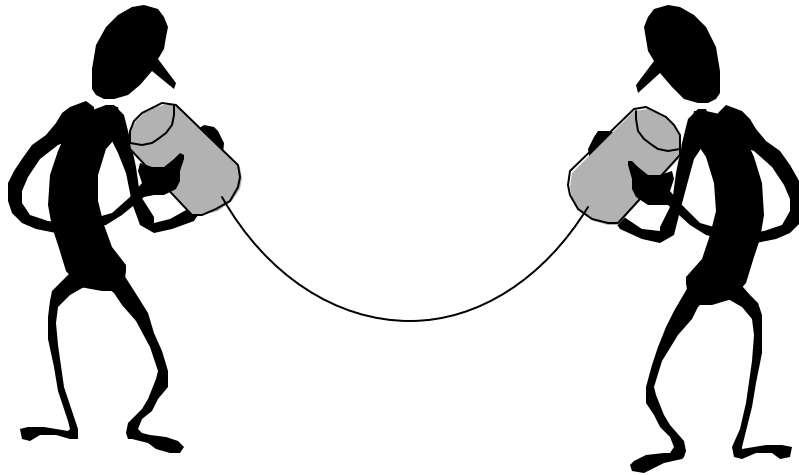
- ◆ **Project Management Education**
 - **Alternative delivery**
 - » **Distance learning**
 - » **Alternate sources**
- ◆ **Integrated Project Management**
 - **Technical Performance Management**
 $IPT + IBR + EVM = IPM$
- ◆ **In-house management**
 - **November 1998 conference**

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

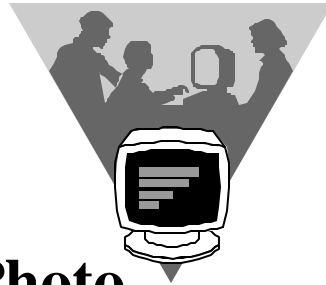
- ◆ **Cloud Kingdom**

- **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