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Adopting Department of Defense (DoD) Best Practices in Integrated Program Management (IPM) to Meet non-DoD Needs

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Agenda

- Introduction
- Acquisition Management Challenges
- USAF Space & Missile Center (SMC) Best Practices in IPM
- USAF SMC IPM Lessons Learned
- Earned Value Management System (EVMS) Best Practices
- Current State of Program Management (PM) and Earned Value (EV) Communities' "Best Practices"
- Integrated System Approach for Improving Acquisition Program Execution and Affordability
- Tailoring to meet non-DoD Needs
- Summary

Introduction

- Many non-DoD acquisition agencies (e.g., Department of Energy(DoE), Department of Homeland Security (DHS), NASA, Federal Aviation Administration (FAA), etc.) face acquisition management challenges, specifically in the areas of acquisition program execution and program affordability
- Non-DoD acquisition agencies are interested in tailoring DoD best practices in PM, EV and Schedule management to satisfy their own unique acquisition requirements and acquisition culture while addressing their acquisition management challenges
- This presentation discusses an integrated system approach to tailoring USAF SMC best practices for non-DoD acquisition needs.

Acquisition Management Challenges*

- Acquisition programs across multiple federal agencies (DoD, DoE, NASA, DHS, etc.) have continued to experience schedule delays and cost growth that require re-baselining of the program's Performance Measurement Baseline (PMB)
- Improving acquisition program execution requires an integrated system approach
  - *Develop an executable integrated technical, schedule and cost baseline*
  - *Increase insight into project performance by implementing an Earned Value Management System (EVMS) that meets best practices as specified by ANSI EIA-748 Guidelines*
  - *Conduct Integrated Baseline Reviews (IBR) that ensure the government and contractors have a mutual understanding of the following risk areas that may have adverse impact on the program's schedule and cost execution performance*
    - (i) Organization; (ii) Planning, Scheduling, Budgeting; (iii) Accounting Considerations; (iv) Analysis and Management Reporting; (iv) Revision and Data Management
  - *Baseline Execution and Monitoring*

**** GAO High Risks Update (Feb, 2015)***

Overview of USAF SMC Best Practices in IPM

PMB Formulation

Integrated Baseline Reviews (IBR)

Overview of USAF SMC Best Practices in IPM

PMB Formulation

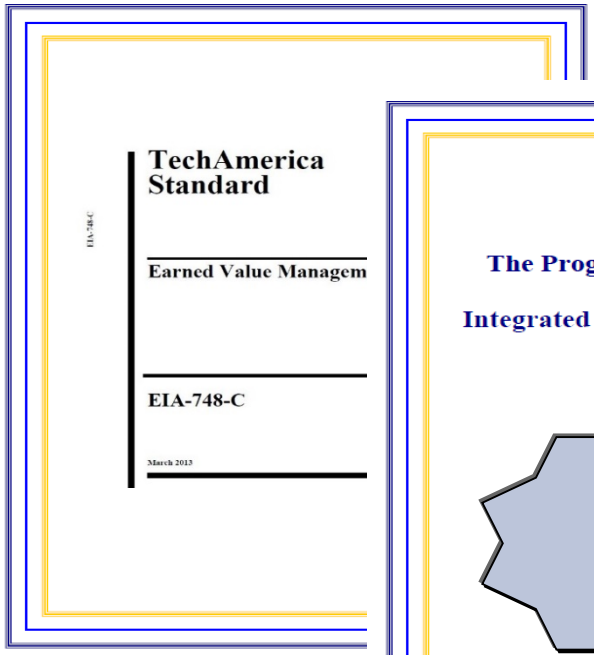
- All program requirements are met
- PMB covers the entire scope of work
- Work is realistically and accurately scheduled and consistent with WBS
- Proper amount and mix of resources are assigned to accomplish all requirements
- Work can be measured objectively (appropriate EV methodologies are used)
- Management Control and Risk Management Processes are in place to support successful execution of the project

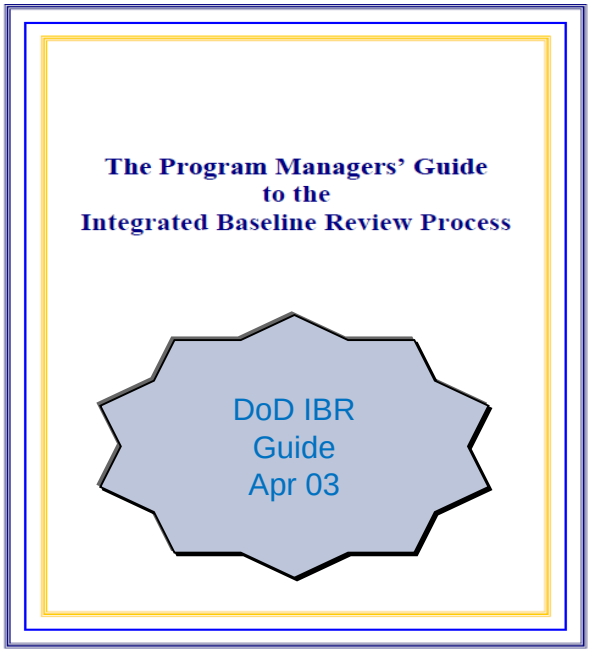
Overview of USAF SMC Best Practices in IPM

Integrated Baseline Review (IBR)

- The IBR is an essential program management tool for identifying, quantifying, and mitigating risks when executing complex weapons system and information technology projects
- The IBR concept was developed in 1993 and published in DoD 5000.2-R due to a growing recognition within the DoD that unrealistic contract baselines were established, leading to significant cost and schedule overruns and/or under-performance on technical objectives.
  - *Normally limited to cost and incentive contracts with an EVMS requirement*
  - *Require conducting IBRs on all cost and incentive contracts valued at $20M or greater*
  - *An IBR is also required on any subcontract, intra-Government work agreement, or other agreement that meets or exceeds the $20M threshold for Earned Value Management System (EVMS) implementation*
- Program Management Office (PMO) priority is establishing a credible PMB and understanding the risks; EVMS compliance is also important but secondary
  - *Five Risk Areas: technical, schedule, cost, resource, and management processes*

IBR Policy and Guidance





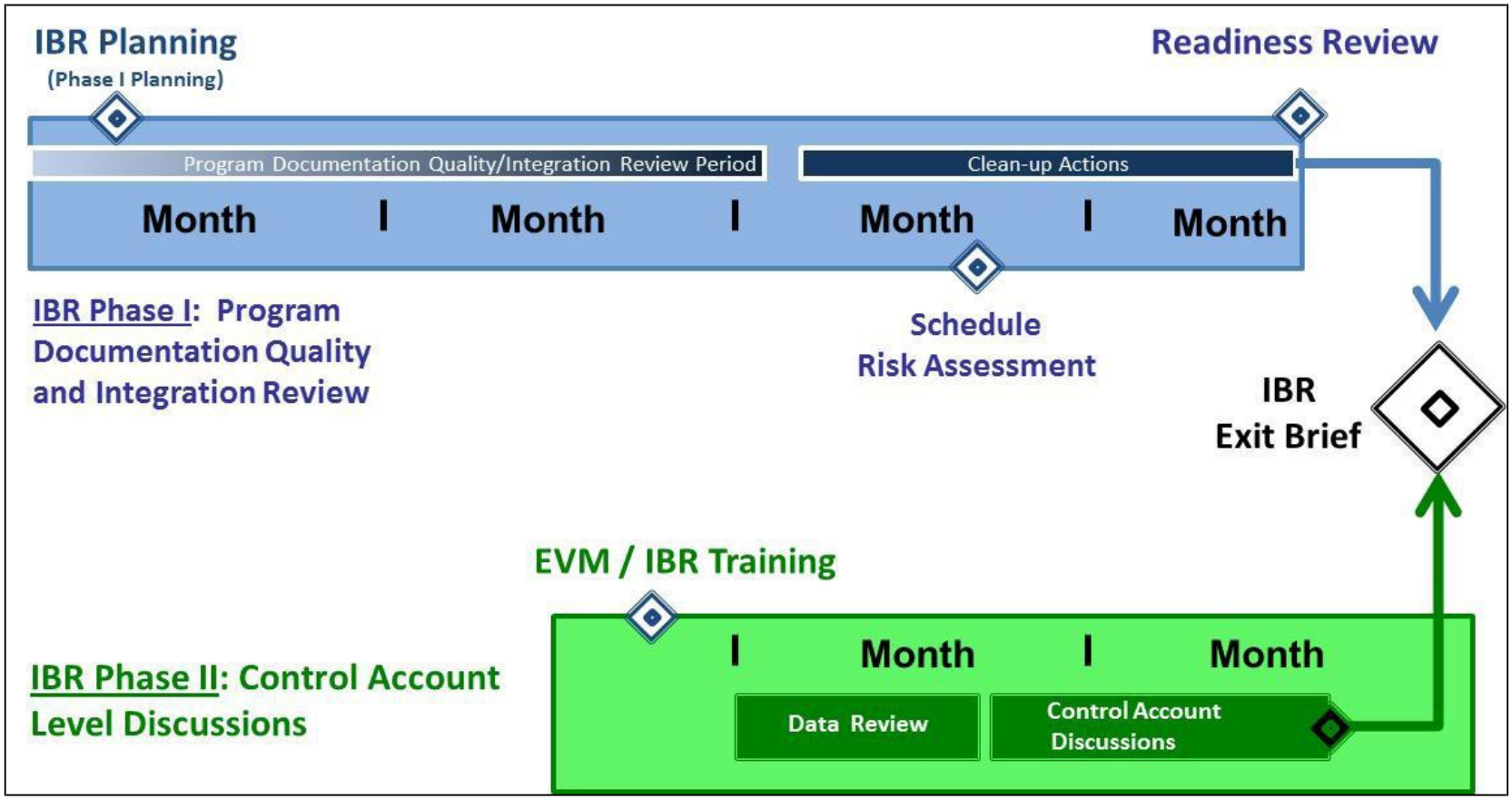
DoD IBR Guide Apr 03

Program Guidance And Contractor's System Description

DoD EVMS Interpretation Guide (EVMSIG) 18 Feb 15

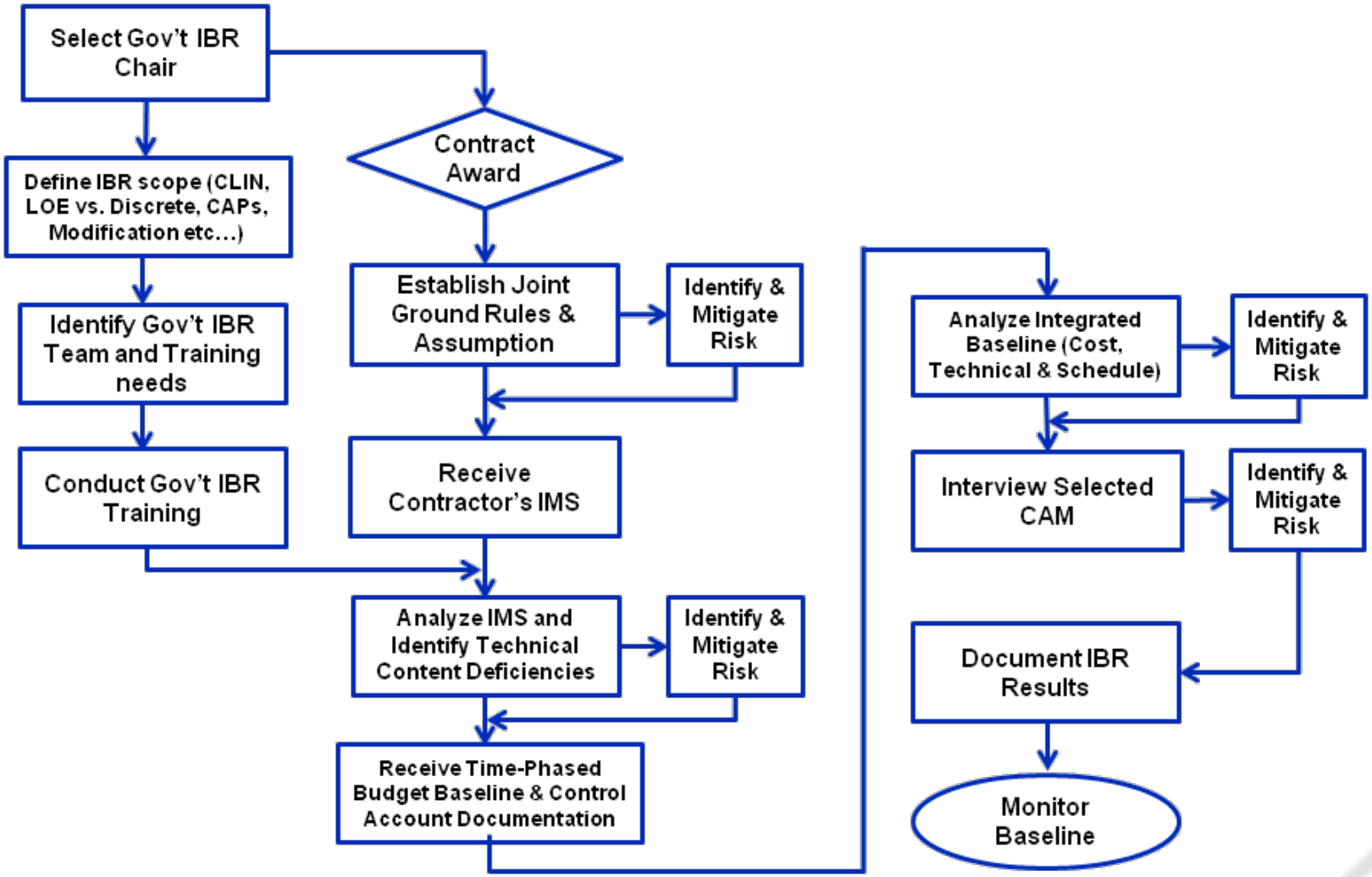
Space & Missile Center (SMC) Instruction 63-107 Earned Value Management 4 Aug 10

Overview of USAF IBR Process*



** Air Force Integrated Baseline Review (IBR) Process Guide (version 3.0, 20 SEP 2012)*

IBR Process Work Flow

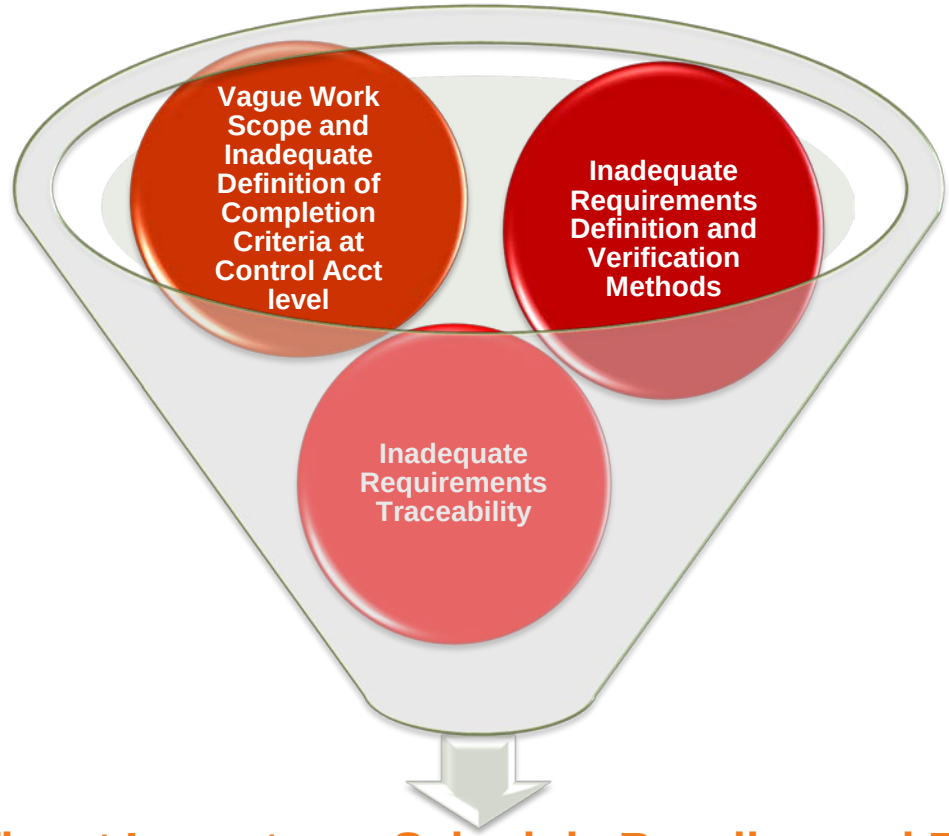


IBR Evaluation Output

- IBR evaluation output consists of IBR risks in the following areas:
  - *Technical:*
    - Ability of the project's technical plan to achieve the objectives of the scope of work. This includes the effects of factors such as available technology, software development capability, and design maturity
  - *Schedule:*
    - Adequacy of time allocated for performing defined tasks to successfully achieve the project schedule objectives. This includes effects on a schedule from the interdependency of scheduling activities to achieve project milestones while still supporting the Program Manager's (PM's) ability to identify the critical path
  - *Cost:*
    - Ability of PM to successfully execute project cost objectives, which requires recognizing the relationships between the scope of work, schedule, budget, resources and available funding. This includes effects from assumptions used for estimates and resource allocation on budgets for work items
  - *Resources:*
    - Availability of personnel and facilities when required for performing defined tasks to execute program successfully
  - *Management Process and Control:*
    - The degree that management processes provide effective integrated technical/schedule/cost planning and baseline change control. This includes the ability of processes to establish and maintain valid, accurate, and timely performance data, including that from subcontractors, for early visibility and tracking risks
- IBR Scoring (compliant with USAF IBR Guide guidance)
  - *High (RED)*
  - *Medium (YELLOW)*
  - *Low (GREEN)*
- IBR Out Brief
  - *Summary of IBR Risks identified*
  - *Actionable Recommendations*

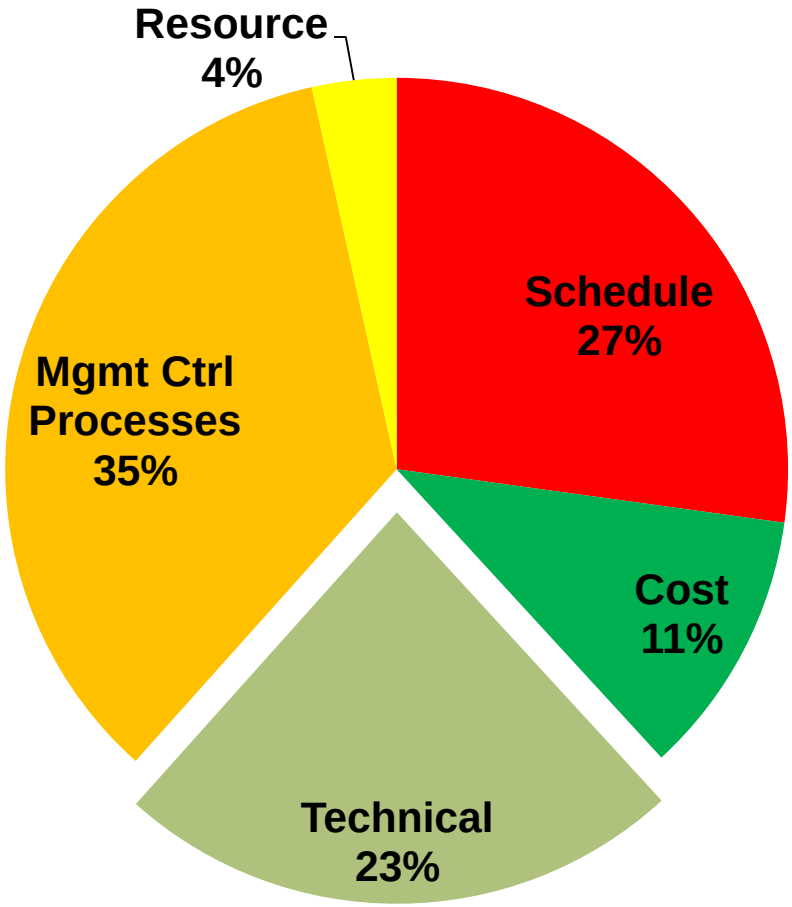
USAF SMC IPM Lessons Learned

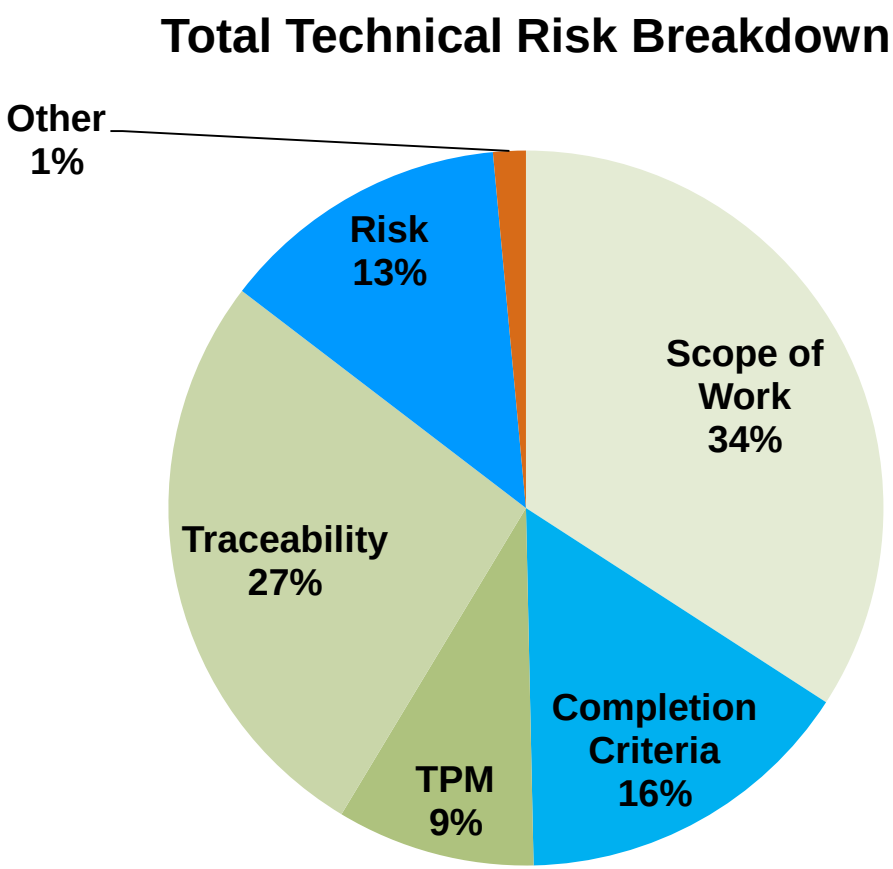
Inadequate Technical Baseline Planning Leads to Poor PMB Formulation and Inadequate Insights into Program Execution Status



Significant Impacts on Schedule Baseline and Earned Value Performance Measurements

IBR Baseline Review Findings





D. Wang, et al., "Improving Technical Baseline Execution Excellence", PMAG Symposium 2011

(Based on compiled statistics from IBRs conducted by SMC from 2007 – 2010)

Summary of DoD/USAF IPM Lessons Learned

- Inadequate training for Control Account Manager (CAM) to prepare and plan for executable PMB
- Inadequate technical baseline planning has significant adverse impacts on EV implementation
- Schedule (IMS) planning and execution management issues
  - *Inadequate quality control on schedule content and schedule network*
  - *Inadequate analysis of IMS to ensure vertical and horizontal traceability*
  - *Limited insight into the program's schedule execution due to excessive %LOE*
- EVM planning and implementation issues
  - *Improper application of EV techniques*
- Inaccurate and/or incorrect methods for material cost and indirect cost accumulation by control accounts
- Inadequate integrated analysis of schedule and cost variances
  - *Variance analyses and corrective action plan often ignore underlying root causes due to technical baseline execution*
  - *Estimate at completion (EAC) due to schedule and cost variances are often pro-forma and lack rigor*
- Inadequate documentation and revision control of changes to PMB

Earned Value Management Best Practices

NDIA EIA-748 C Standard

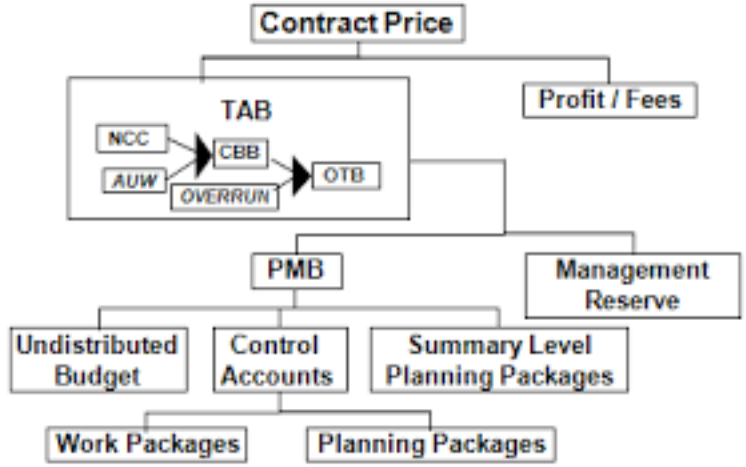
EIA-748 EVMS Guidelines

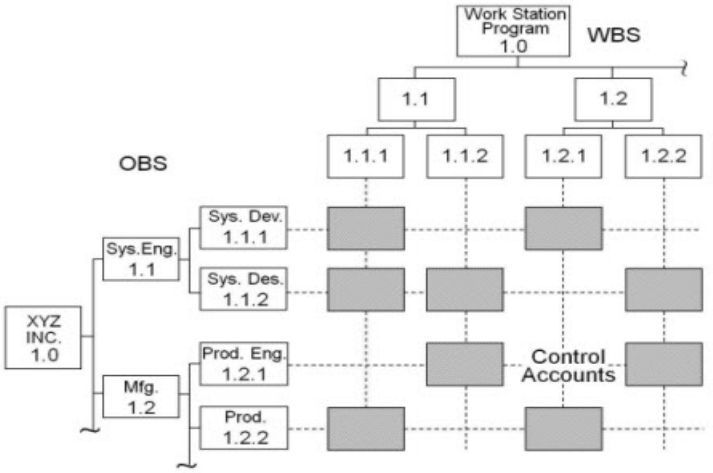
DoD EVMS Interpretation Guide

ANSI EIA-748 C Standard

- The American National Standards Institute/Electronic Industries Alliance (ANSI/EIA) Standard 748 EVMS was revised and reissued as ANSI/EIA 748 C in March 2013
  - *Led by the Program Management Systems Committee (PMSC) of the National Defense Industrial Association (NDIA) in its development*
  - *Provided a* structured and controlled approach to the implementation of an EVMS

Basic EVMS Concept





32 EIA-748 EVMS Guidelines*

1. Define authorized work
2. Identify Program Organization Structure
3. Company integration of EVMS subsystems with **Work Breakdown Structure (WBS)**
4. Identify organization/function for overhead
5. Integrate WBS and Organization Breakdown Structure (OBS), create control accounts
6. Sequential scheduling of work
7. Identify interim measures of progress, i.e. milestones, products, etc.
8. Establish time-phased budget
9. Identify significant cost elements within authorized budgets
10. Identify discrete work packages
11. All work package budgets and planning packages sum to control acct
12. Identify and control LOE budgets
13. Establish overhead budgets by organization element
14. Identify management reserve and undistributed budget
15. Reconcile program target cost goal with sum of all internal budgets
16. Record direct costs from accounting system
17. Summarize direct costs into WBS without allocation
18. Summarize direct costs into OBS without allocation
19. Record indirect costs
20. Identify unit costs, equivalent units costs or lot costs
21. Accurate material cost accumulation by control accounts; EV measurement at right time; full accountability of material
22. Control account monthly summary, identification of **Cost Variance (CV)** and **Schedule Variance (SV)**
23. Explain significant variances
24. Identify and explain indirect cost variances
25. Summarize data elements and variances through WBS/OBS for management
26. Implement management actions as a result of EVMS analysis
27. Revise EAC based on performance data; calculate VAC
28. Incorporate authorized changes in timely manner
29. Reconcile current budgets with prior budgets
30. Control retroactive changes
31. Prevent all but authorized budget changes
32. Document changes to **(PMB)**

* NDIA PMSC EVMS Intent Guide

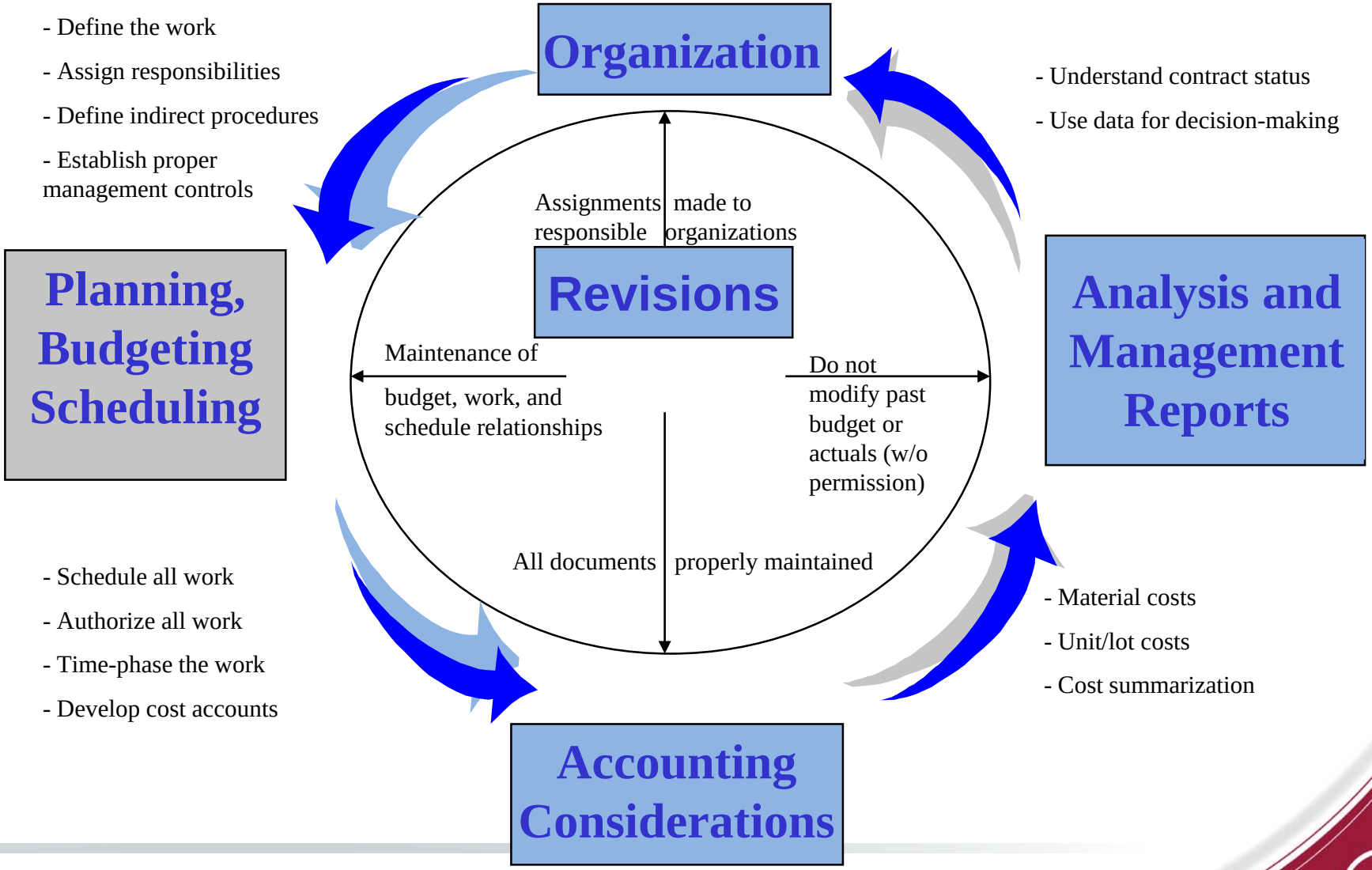
DoD EVMS Interpretation Guide (EVMSIG)

- DOD EVMSIG, dated February 18, 2015 was released in March 2015
  - *Provides the overarching DoD interpretation of the 32 Guidelines where an EVMS requirement is applied.*
  - *Serves as the authoritative source for EVMS interpretive guidance and is used as the basis for the DoD to assess EVMS compliance to the 32 Guidelines in accordance with Defense Federal Acquisition Regulation Supplement (DFARS) Subpart 234.2 and 234.201*
    - Provides the DoD Strategic Intent behind each guideline as well as the specific attributes required in a compliant EVMS

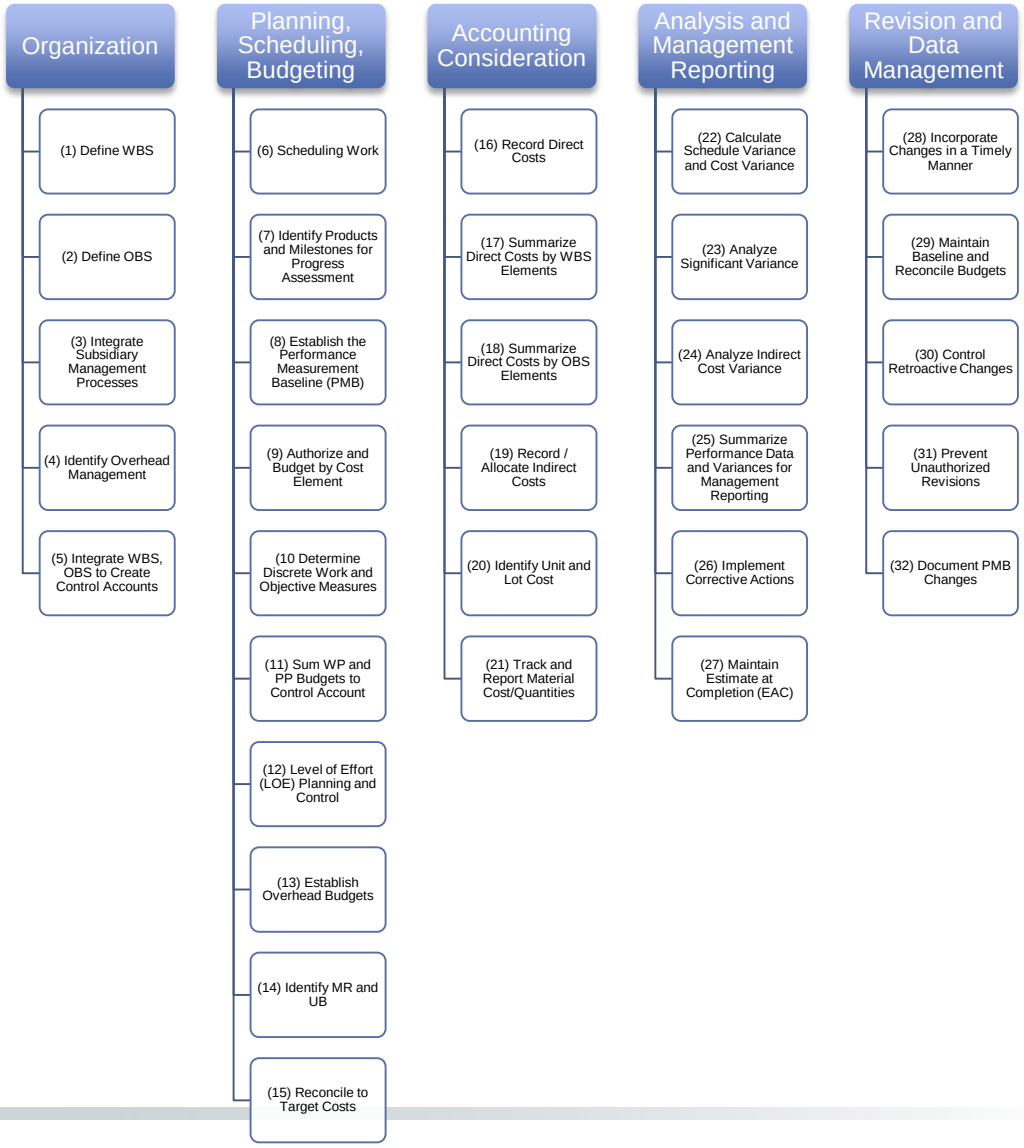
Focus is on EVMS Implementation Compliance and Certification

PMB Planning and Implementation

Relationship with ANSI/EIA 748-98 EVMS Five Focus Areas



32 EIA-748 EVMS Guidelines by 5 Focus Areas



Current State of PM and EV Communities' "Best Practices"

In search of "Midas touch" and "magic bullet"
to improve program execution…

Current State of PM Community ”Best Practices”

- PM “Best Practices” focus on risks identification and mitigation
  - *Technical baseline planning focus on technical performance criteria; adverse Schedule and EV implementation impacts are often ignored*
    - Reduce the usefulness and insights provided by EV metrics
  - *Schedule completion date risk is often treated as top priority; schedule content, LOE, and network quality issues are often treated as low priority*
    - Reduce the usefulness of Schedule Forecasts based on IMS
  - *EV planning and implementation risks (e.g. incorrect/inappropriate EV techniques, incorrect and/or inaccurate material costs and indirect costs accumulation) are often treated as low priority*
    - Reduce the usefulness and insights provided by EV metrics
  - *Documentation and revision control of PMB changes often treated as administrative issues and not addressed*
    - Reduce the usefulness and insights provided by EV metrics

Current State of EV Community's "Best Practices"

- EV "Best Practices" focus on EV implementation guides and surveillance of EVMS
  - *ANSI EIA 748-98 EVMS Guidelines (32 guidelines)*
  - *ANSI EIA 748-98 EVMS Intent Guide*
  - *ANSI EIA 748-98 EVM System Accept Guide*
  - *DoD EVMSIG*
    - Introduced five Categories: (i) Organization; (ii) Planning, Scheduling, Budgeting; (iii) Accounting Considerations; (iv) Analysis and Management Reporting; and (v) Revision and Data Management
  - *Department of Energy (DOE) EVMS Interpretation Handbook (EVMSIH)*
    - Introduced a sixth Category: (vi) Indirect Considerations
    - Introduced the concept of Line-of-Inquiry (LOI)
      - *132 LOI mapped into 6 Categories*
      - *Each LOI represents a more detailed check on the compliance aspect of the EVMS undergoing surveillance*
- Focus on surveillance and certification of EVMS

Summary of PM and EV Communities Focus of ”Best Practices”

- PM community focus
  - *Emphasis on technical baseline risk identification and risk mitigation*
  - *Secondary priority on schedule baseline quality and content completeness*
  - *Low priority on EV implementation*
- EV community focus
  - *EVMS surveillance - compliance and certification*
  - *Low emphasis on technical performance measure and technical completion criteria in EV measurement and metric*
- Lessons Learned from prior IBRs or prior EVMS surveillance reviews were often not used in subsequent IBRs or future EVMS surveillance

Integrated System Approach for Improving Acquisition Program Execution and Affordability

Integrated System Approach is needed to Improve Acquisition Program Management Execution

- Engineering needs to be trained on the importance of having a technical baseline that includes
  - *Clear definition of technical scope of work at the Control Account level*
  - *Clear definition of completion criteria, and impacts on EV implementation*
  - *Clear definition of technical performance measures (TPM), and impacts on EV implementation*
- PM needs to be trained on the importance of incorporating more than risk identification and mitigation into their program management tool box
  - *Needs to understand impacts of technical baseline planning and implementation impacts on schedule and cost baseline, and EV implementation*
  - *Needs to understand how schedule implementation, EV implementation, and accounting of material costs and indirect costs affect the accuracy and insight provided by EV metrics and schedule performance metrics*
- EV practitioners need to understand the relative importance of EVMS guidelines and LOI to provide effective program execution insights to the PM
  - *Not all LOI are created equal*
  - *Only a subset of LOI are important to providing effective program execution insight*
- Historical lessons learned need to be incorporated into IBR process

Integrated System Framework for Reviewing and Evaluating IBR Artifacts

PMB Planning and Implementation Focus Areas	EIA EVMS Intent	IBR Line-of-Inquiry (LOI) (Detailed areas for CAM Notebook Review and CAM Interviews)	USAF IBR Risks (Technical, Schedule, Cost, Resources, Management & Control Processes)	Evaluation Scoring (Red, Yellow, Green)
Organization	1, 2, 3, 4, 5	In addition to LOI related to Intent #1-#5, add LOIs to address common Technical Baseline Risks: (i) clear scope definition; (ii) clear traceability of work scope, (iii) technical completion criteria; (iv) TPM definition; (v) risk mitigation is included	Same as USAF IBR Guide	Same as USAF IBR Guide
Planning, Budgeting and Scheduling	6, 7, 8, 9, 10, 11, 12, 13, 14, 15	In addition to LOI related to Intent #6-#15, add LOIs to address common schedule planning and management issues, and common EV implementation issues	Same as USAF IBR Guide	Same as USAF IBR Guide
Accounting Considerations	16, 17, 18, 19, 20, 21	In addition to LOI related to Intent #16-#21, add LOI to address EV metric accounting for material cost and indirect costs	Same as USAF IBR Guide	Same as USAF IBR Guide
Analysis & Management Report	22, 23, 24, 25, 26, 27	In addition to LOI related to Intent #22-#27, add LOI to focus on variance analysis and EAC	Same as USAF IBR Guide	Same as USAF IBR Guide
Revisions	28, 29, 30, 31, 32	LOI related to Intent #28-#32	Same as USAF IBR Guide	Same as USAF IBR Guide

Advantages of the Integrated System Framework

- Complies with existing USAF IBR Process
- Complies with DoD EVMSIG
- Complies with EIA-748-C intent
- Embeds enterprise level Lessons Learned from prior IBRs into the IBR evaluation / scoring process
- Provides clear traceability of IBR risks to specific areas of PMB planning and implementation deficiencies
- Facilitates preparation of IBR Out Brief to pinpoint specific areas of improvement in PMB planning and implementation

Tailoring to Meet Other Agencies' Needs

- In general, all agency specific requirements can be accommodated by modifying LOI impacted by the agency specific requirements
  - *For non-DOD agencies, historical data on IBR risks from prior IBRs (if available) may indicate different areas of execution improvement than DOD acquisition programs*
  - *Agency specific acquisition culture and acquisition contractual requirements may result in different definition of scope content, scope completion criteria, and TPMs*
  - *Acquisition program sizes may affect the granularity of schedule activities required, how rigorously schedule network quality is measured, and how schedule horizontal and vertical traceability requirements may be measured*
- The IBR process work flow and notional timeline may be affected by agency specific needs

Summary

- In this presentation, we summarized the USAF SMC IPM “Best Practices” and the USAF SMC IBR Process
- We provided an overview of key lessons learned from prior IBRs conducted at the USAF SMC
- Through comparison of the PM and EV communities IPM “Best Practices,” we were able to identify how we can leverage the risk based PM approach with the compliance/surveillance approach used by the EV community to improve acquisition program management execution going forward
- We presented an integrated system framework for improving acquisition program management execution
- Last, we discussed how we might tailor the integrated system framework to meet other agencies’ acquisition program management needs

References

- Air Force Integrated Baseline Review (IBR) Process Guide (version 3.0, 20 SEP 2012)
- Space & Missile Center (SMC) Instruction 63-107 “Earned Value Management”
- D. Wang, et al., “Improving Technical Baseline Execution Excellence”, PMAG Symposium 2011
- NDIA EIA-748 C EVM Standard
- NDIA “Program Management Systems Committee (PMSC) EVMS Intent Guide” – May 2011
- DoD EVMS Interpretation Guide (EVMSIG)

Backup