NASA Earned Value Management (EVM) Update

EVM World

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evm.nasa.gov
Outline

- NASA Centers
- EVM Requirements
- EVM Assessment/Maturity Model
- EVM Goals/Partners
- EVM Capability
- Surveillance
- Lessons Learned
- Available EVM Resources
- Organization Focal Points
- GAO Audit
- Summary
- Questions
NASA Centers

10 Centers
1 FFRC

(Click on Center location to view Center pages)
Overarching EVM Requirements

- OMB Circular A-11 requires for total project EVM (in-house and contracted effort) to comply with the ANSI/EIA-748 guidelines
  - Details are in the Capital Planning Guide Supplement

- The OMB Circular A-11 requirement has been flowed down to the current version of NPR 7120.5
NASA Document Hierarchy

**Authority / Requirements**
- GPRA of 1993
- PMA 2002
- OMB Circular A-11
  - NPDs
  - NPR 7120
  - MPDs / MDs
- MPRs / Programs
- MWIs / Projects

**EVMS**

**Handbooks / References**
- ANSI/EIA 748
- PMI PMBOK
- NDIA PMSC EVMS Intent Guide
- EVM Capability Documentation
- NASA Schedule Management HB
  - IBR HB/Toolkit
  - WBS Handbook
  - EVM Handbook

**Defines “What”**

**Defines “How”**

*Forms the foundation for EVM and facilitates training, mentoring, tool development, assessment, and integration*
• Planning begins during Formulation.
• EVM is applied in phases C and D to projects with an estimated life cycle cost >$20 million and to Phase E modifications, enhancements, or upgrades with an estimated cost > $20 million.
• EVM system complies with the guidelines in ANSI/EIA-748 and is described in the Project Plan.
• EVM system requirements are flowed down to applicable suppliers. (NFS 1834 is applied to contractors.)
• The project’s Performance Measurement Baseline (PMB) is established in Phase B in preparation for KDP C approval and is assessed during a review of the integrated baseline for the project.
• Project EVM reporting begins no later than 60 days after the start of Phase C. Contract EVM reporting begins no later than 90 days after contract award.
EVM Requirements - Excerpts of Interest

7120.5D: (Past)
- (2) The Project's EVM approach is in-place by KDP C and implemented in Phase C through KDP E.
- (4) As a minimum, EVM principles, as defined by ANSI/EIA-748, Earned Value Management Systems, apply from KDP C through KDP E, if the project's life-cycle cost is at or greater than $20M.

7120.5E (Present)
- 2.2.7 Programs, at the discretion of the MDAA, projects in phases C and D with a life cycle cost estimated to be greater than $20 million and Phase E project modifications, enhancements, or upgrades with an estimated development cost greater than $20 million shall perform earned value management (EVM) with an EVM system that complies with the guidelines in ANSI/EIA-748, Standard for Earned Value Management Systems. Use of the NASA’s EVM capability and processes, will ensure compliance with the ANSI standard. This capability allows tailoring to match the individual needs of the program or project, while still meeting the ANSI-748 guidelines.
- 2.2.8 EVM system requirements shall be applied to applicable suppliers in accordance with the NASA Federal Acquisition Regulation (FAR) Supplement 1834.201 and to in-house elements.
- 2.2.9 In accordance with the NASA Federal Acquisition Regulation (FAR) Supplement 1834.201, EVM system requirements shall be applied to applicable suppliers and to in-house work elements. For contracts that require EVM, a Contract Performance Report (CPR), Integrated Master Schedule (IMS), and Work Breakdown Structure (WBS) are required deliverables and the appropriate data requirements descriptions (DRDs) included in the contract and/or agreement.
- 2.2.10 For projects requiring EVM, Mission Directorates shall conduct an pre-approval integrated baseline review as part of their preparations for KDP C to ensure that the project’s work is properly linked with its cost, schedule, and risk and that the systems are in place to conduct EVM.
# EVM Requirements

<table>
<thead>
<tr>
<th>NASA Projects</th>
<th>Flow-Down to Contractors</th>
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<tr>
<td><strong>&gt;$50M</strong></td>
<td><strong>$20M or More</strong></td>
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<td>Full EVM Terms and Conditions of DRDs</td>
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<td>Conditions of DRDs</td>
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All Supporting Contractors
EVM Assessment/Maturity Model

Levels provide foundations for continuous improvement of EVMS

- Monitoring the efforts to improve the Earned Value Management system
- Managing the quality of the EVM data
- ANSI 748 compliant, organization-wide
- Less than fully compliant with ANSI 748, limited project use
- No or limited EVM implementation in place

The Earned Value Management Maturity Model® and the abbreviation EVM³® are trademarks of MMI

- Requirements and Process in place
- Future Implementation will key
NASA EVM Goals/Partners

Compliance | Consistency
---|---
Projects | EVM Capability
Self-Reliant | Centers
Repeatable/Sustainable | Integrity

EVM Implementation
What is the NASA EVM Capability?

Overall Objective was to develop an Agency EVM capability that complies with the guidelines in ANSI/EIA-748 and test through two pilots, refine and finalize EVM process and documentation based on test results.

- **A common agency EVM capability/process** that complies with the guidelines in ANSI/EIA-748 for in-house projects
- **Documented** with supporting handbooks, instructions, workarounds, etc.
- **Tested** through two pilot projects, Extra-vehicular Activities (EVA) and Ice, Clouds and Land Elevation Satellite (ICESat) II
- **Approved** by independent Peer Review Team with representation from each Mission Directorate and Center
- Reported to a senior level Agency Steering Committee represented by each Mission Directorate and Center
- Approved **initial (phased) rollout** by the Agency Project Management Council (APMC)
  - Space Launch System (SLS) - (MSFC)
  - ICESat II (GSFC)
  - Focus on EVM flow-down to contracts across the Agency
Products Developed by EVM Capability

- EVM process flow diagrams (Storyboard)
- System Description (Detailed Process)
- Narratives (Summary Process)
- Project-Control Account Manager’s (P-CAM) Reference Guide
  - Provides a quick reference for Technical Managers
- EVM Handbook
  - Overall Agency and general EVM guidance
- Pilots results
  - Lessons Learned/Issues/Workarounds/Recommendations
- EVM Acceptance/Surveillance Strategy
  - Acceptance Strategy
  - Surveillance Overview
- Software Acquisition Strategy
  - Hardware/Software access/acquisition
- Training Modules by Process Area
  - Modularized training for each process area

Latest documents are on the www.nen.nasa.gov website under the EVM sub community folder
Maintaining Integrity through Surveillance

• Surveillance is a key function to ensure usefulness as a management tool and compliance with external mandates.

• Surveillance Frequency (programmatic/institutional)
  – Recurring assessment as part of the lifecycle reviews and
  – NPR 7120.5 Center Surveys

• Mature EVM Capability for improved support of multi-center programs and projects
1. Projects have to consider EVM Implementation from Day 1 of project
   1. Each time a charge code is created it effectively changes the technical WBS for the life of the project
   2. Where will the work be controlled and performance taken? EVM construct must be considered for control accounts and work packages.

2. Support Contractor costs will continue to be a constraint unless proper cost reporting requirements are flowed down to contracts
   • Support Contracts are often owned by other organizations outside of the projects with no EVM requirements.

3. Work Authorization agreements that document an agreement of scope, schedule and budget by both sponsor and performing orgs. are fundamental to the implementation of EVM

4. PP&C skills must be strengthened to support EVM and project management

5. Senior Level Management support is needed across the agency with the change management process
NASA EVM Resources

**POLICY, HANDBOOKS, GUIDANCE**
- NPR 7120.5
- EVM Handbook
- Scheduling Handbook
- IBR Toolkit
- WBS Handbook
- Project Control Account Manager (CAM) Guide (draft)
- Standardized WBS (7120.5)
- EVM Capability Products
  - Process/Storyboard
  - System Description
  - DRDs

**PRODUCTS & SERVICES**
- Center EVM Implementation Plans and Support
- Support for Agency and Centers EVM Policy & Procedures
  - Training
  - RFP Development
  - SEB EVM Evaluation
  - IBR Support
  - Data Analysis/Tools
  - Surveillance
  - In-house EVM Support

**RESOURCES, SYSTEMS, TOOLS**
- Automated Tools
  - wInsight/Cobra
- Access to Training Materials and
  - online EVM/Scheduling/CAM/IBR training available through SATERN
- Websites
  - evm.nasa.gov
  - Internal material/Knowledge Now
  - nen.nasa.gov
- EVM Working Group Meetings and Peer Support
## Organizational EVM Focal Points

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<tr>
<th>ORGANIZATION</th>
<th>NAME</th>
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<tr>
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The mission of the NASA Earned Value Management (EVM) website is to provide a primary on-line reference point for EVM theory, application, and use as an integrated project management process within NASA.

**OVERVIEW**

**What is EVM?**

EVM is an integrated management control system for assessing, understanding and quantifying what a contractor or field activity is achieving with program dollars.

- Integrates technical, cost, schedule, with risk management
- Allows objective assessment and quantification of current project performance
- Helps predict future performance based on trends.

EVM provides project management with objective, accurate and timely data for effective decision making.

**Policy References**

OMB Circular A-11, Part 3; NPR 7120.5 Program/Project Management Processes and Requirements; Industry Guidelines, ANSI/EIA-748 Standard for EVM Systems
NASA Earned Value Management (EVM) Update

NASA Engineering Network [https://nen.nasa.gov](https://nen.nasa.gov)

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**Rover Prototype Set To Explore Greenland Ice Sheet**
Submitted by NASA Engineering Network from JPL on May 02, 2013

NASA’s newest scientific rover is set for testing May 3 through June 8 in the highest part of Greenland.

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**SPOTLIGHT**

**OCE Events: April 2013**
- 2-3 - Aerospace Safety Advisory Panel
- 3 - SELDP Selection Interview/Decision Mtg
- 16 - Program Management Council
- 16 - IEEE/Keynotes Systems Conference 2013
- 18 - ISS ATV 4 “Albert Einstein”, Ariane 5
- 24 - ISS Progress 51
- 24 - Baseline Performance Review
- 26 - Strategy Implementation Planning (Satellite Communication Review)
- 30 - Strategic Management Council Face-to-Face

**Young Professionals Blogs**
The Young Professional’s Blog is an area for early career engineers to showcase their work, the tools that they use, and what it is like to work as young professional at NASA. Follow, collaborate, and develop a cross-agency understanding of a new generation of engineers that are eager to share their career development.

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**COMMUNITY OF PRACTICE**
**Flight Mechanics**
Flight Mechanics encompasses atmosphere definition and measurement (earth and planetary trajectory design and analysis; modeling for simulation; flight mechanics simulation and analysis (including Monte Carlo methods); flight measurement techniques, flight testing...

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**DESIGN PRINCIPLES**
To promote excellence in design and avoid known risk top level design principles and design requirements from across the Agency are listed here.
NEN - NASA Community of Practice

NASA Earned Value Management (EVM) Update
NEN - NASA EVM Community of Practice

Earned Value Management (EVM) Update

Earned Value Management (EVM) is an integrated management control system for assessing, understanding, and quantifying what a project is achieving with its resources. EVM integrates technical, cost, and schedule with risk management. It allows objective assessment and quantification of current project performance, and helps predict future performance-based trends.

Community Links:
- **Contact List**: Search and locate Headquarters, Mission Directorate, and Center EVM Focal Points.
- **NASA Public Links**: View information from NASA's EVM public portal.
- **Document Repository**: Find EVM process, reference, and training documents.
- **Suggestions**: Submit an idea or suggestion to the community.
Focus Areas in response to GAO EVM Recommendations

• Corrective action plans to focus on the following areas
  • Rollout of EVM Capability (NASA EVM Process)
  • Conduct Skills Assessment
  • Develop Change Management Plan
  • Strengthen EVM Surveillance
• NASA will periodically report to GAO on the progress that the Agency has made to the recommendations corrective action plan
Key Components of EVM Process

- Processes
- Documentation
- Tools
- Customer Support

- Requirement (7120)
- Roll Out Support
- Surveillance Program

- Curriculum
- Training Materials
- Target Audiences

Everything is in place for implementation
Questions?