

Earned Value Management: “When you come to a fork in the road...” —Paul Solomon 7/25/2024

Note: A recent GAO report states that the Capability Maturity Model® Integration (CMMI®) provides leading practices for project management. This revision includes essential project management best practices in CMMI® that are absent from the EIA-748 guidelines. These are bidirectional requirements traceability, risk management activities, product integration, quantitative performance targets, verification, and validation.

Robert Frost: Two roads diverged in a wood, and I—

I took the one less traveled by,
And that has made all the difference.

Frost’s poem and the novel *Something of Value* pertain to Earned Value. *Something of Value* is the title of the book that is cited in the letter to HASC Vice Chair Wittman, Appendix 3, Subj: “Something of Value” not “Earned Value.”

Excerpt: “When we take away from a man his traditional way of life, his customs, his religion, we had better make certain to replace it with Something of Value.” So, what do we do if we take away mandatory compliance with the Earned Value Management (EVM) Standard guidelines in EIA-748? Per the Section 809 Panel report, “traditional measurement using EVM provides less value to a program than an Agile process in which the end user continuously *verifies that the product meets the requirement.*”

The NDAA for FY 2024 created a fork in the acquisition road. The *Final Report of the Commission on Planning, Programming, Budgeting, and Execution (PPBE) Reform* also points to that fork. I recommend taking the path that gives the warfighter and the taxpayer “Something of Value” instead of EV.

This white paper differs from *DoD Acquisition Reform: EVMS-lite and Integrated Program Management* (“EVMS-lite”). *EVMS-lite* advocates a Government-unique, internal EVMS standard to replace EIA-748. This paper advocates booting the requirement to use EVM and its associated, compliance reviews. New information includes:

1. Comparison to *EVMS-lite*
2. Response to W. Abba article: *It’s Time to “Reboot” EVM*
3. “When you come to a fork in the road, take it”
 - a. NDAA Section 827 exempts software contracts from the EVMS requirement
4. Something of Value to replace mandatory EV
5. Budgeting 101 and Scheduling 101
6. “The road less traveled by.” Don’t take it.

This paper provides a lower cost, effective alternative to EIA-748. There will be no regulatory requirement for EVMS and no compliance reviews. Tear down that regulatory wall that is a barrier to competition for Silicon Valley-type companies. If contractors believe that it is cost-beneficial to use EVM, they may continue to use it and to maintain EIA-748. However, DoD should revise its policies and guides to focus on the **product** and technical performance, not on **work**. The revised policies and guides will be based on GAO guides, system engineering (SE) standards, Project Management Institute (PMI) standards and *PMBOK® Guide*. The government would provide incentives for program managers and contractors to achieve cost, schedule, and technical objectives but no subjective award fees just for using EVM in an “Excellent” manner. The government would provide incentives for government program managers to use integrated program management (IPM) best practices and to flow down an Integrated Management Plan (IMP) and a SE Management Plan (SEMP) to contractors.

It's Time to "Reboot" EVM is the title of Wayne Abba's article in *Defense Acquisition Magazine*, March-April 2023. I recommend that you read it. Wayne and I have been colleagues since we teamed with others to write the original EVMS standard. We got the David Packard Excellence in Acquisition Award. We are both contributors to the GAO's "Best Practice" guides. However, we disagree on "rebooting" EVM.

This white paper incorporates or refers to the white paper, "*DoD Acquisition Reform: EVMS-lite and IPM*" (*EVMS-lite*) but is an alternative. It calls for replacing EIA-748, which lacks management value, with Something of Value.

Abba cites Gen. Charles Q. Brown, Jr.'s paper, "Accelerate Change or Lose." Brown is now Chairman of the Joint Chiefs of Staff. Excerpts from the paper:

- DoD stakeholders, Congress, and traditional and emerging industry partners must work differently to streamline processes and incentivize intelligent risk-taking in support of the Warfighter and the Nation.
- We owe it to the American taxpayers to examine how we can provide greater value at an affordable cost to the Nation's defense.
- "Cost, schedule, and performance metrics alone are no longer sufficient metrics of acquisition success."

Abba agreed with Gen. Brown and stated the result should be a process "rebooted" to help DoD program managers and their contractors to deliver on or ahead of schedule, on or under budget, and to meeting or beat performance goals. He also stated that it has been about 30 years since DoD took a hard look at its EVM-based IPM process. Actually, there were more recent hard looks. Unfavorable assessments were made 2009, 2014, and 2018. Those unfavorable assessments are cited in *EVMS-lite*.

Conversely, *EVMS-lite* also cites the favorable outcome of a pilot program. DoD reported in 2021: "Congress removed the burden of resource-heavy reporting requirements of EVM in pilots, resulting in greater focus on delivering working product and value over documentation."

Neither GAO nor other independent reviewers have ever reported that contractors, who were certified as being compliant with the EIA-748 guidelines, had fewer and smaller cost overruns or schedule delays on major weapon systems development contracts. So, we don't need another assessment. "Just do it." Let's *Buy a Product that Works, not a Statement of Work*.

Other Reasons to Boot EIA-748

1. EIA-748 Not Widely Accepted as a Commercial Practice

Despite the unsubstantiated claim in the *DoD EVMS Interpretation Guide*, EIA-748 is not a widely accepted industry best practice that is used across the commercial sector. Evidence is provided in *EVMS-lite*.

2. Program Management Improvement and Accountability Act of 2016 (PMIAA)

The PMIAA is not yet applicable to DoD. Congress should remove the exemption. See *EVMS-lite* and the November-December 2015 *Defense AT&L* article, "A Contract Requirements Rule for Program Managers (PM)." A PM's needs that are covered by the *PMBOK® Guide* but are not mentioned in EIA-748 include the technical or product baseline, requirements management and traceability, risk management, and project procurement management.

3. PMBOK® Guide includes standards and principles that meet the needs of IPM but are absent from EIA-748 or are enhancements that meet product or quality needs (Appendix 2).

4. Per GAO Report GAO-24-106886, the ISACA Capability Maturity Model® Integration (CMMI®) Model V3.0 contains the best leading practices for the following project management activities; requirements traceability, risk management activities, product integration, quantitative performance targets, verification, and validation. Appendix I is a table of the pertinent best project management leading practices to measure progress towards meeting technical performance requirements, verification and validation milestones, and the integration of hardware with embedded software.

For additional information, please read my Carnegie Mellon U./Software Engineering Institute Technical Note CMU/SEI-2002-TN-016, Oct. 2002, "Using CMMI® to Improve Earned Value Management." Although written in 2002, it is relevant to today's digital engineering ecosystem. Just skip the obsolete sections regarding EVM.

5. DoD Should Boot EIA-748 because it is impractical, per OMB Circular A-119 criteria. See *EVMS-lite*.

Excerpts:

"Impractical" includes circumstances in which such use would fail to serve the agency's...program needs; be inadequate or be less useful than the use of another standard.

EIA-748 is impractical based on the following evaluation factors in *OMB Circular A-119, Federal Participation in the Development and Use of VCSs and in Conformity Assessment Activities*:

- The prevalence of the use of the standard in the national and international marketplaces.
- The problems addressed by the standard and changes in the state of knowledge and technology since the standard was prepared or last revised.

EIA-748 does not address the state of knowledge and technology since it was last revised. It is still silent on the product or technical baseline, risk management, and on tracing the requirements baseline to the schedule and work packages. The Quality Gap has not been closed.

6. The use of EIA-748 fails to serve DAS policy to "Employ Performance Based-Acquisition Strategies" that support an "acquisition approach structured around the **results to be achieved** as opposed to the manner by which the **work** is to be performed."

OPM/OMB Memo: PMIAA IPM Competencies

In 2019, OPM, in consultation with the OMB and the Program Management Policy Council, issued a memo which defined "IPM competencies to select, assess, and train program and project management talent for the 21st century." In August 2023, the memo was updated. Both versions included four technical competencies which are not covered in the EIA-748 guidelines:

- Quality Management - Knowledge of the principles, methods, and tools of quality assurance, quality control, and reliability used to ensure that a project, system, or product fulfills requirements and standards.
- Requirements Management - Knowledge of the principles and methods to identify, solicit, analyze, specify, design, and manage requirements.
- Risk Management - Knowledge of the principles, methods, and tools used for risk assessment and mitigation, including assessment of failures and their consequences.

- Scope Management - Knowledge of the strategies, techniques, and processes used to plan, monitor, and control project scope; includes collecting requirements, defining scope, creating a work breakdown structure, validating scope, and controlling scope to ensure project deliverables meet requirements.

Neither version includes EVM as a technical competency.

The defense industry historically alleges that EVM is a necessary competency for IPM. In 2009, GAO asserted that “the shortage of qualified practitioners with a background in integrated planning and **EVMS** has often led to poor program planning” and that “government and industry are challenged by the limited pool of available skill sets necessary for IPM, particularly scheduling and **EVM**.” In contrast, OPM did not and does not consider EVM competency to be necessary.

Recently, USD Kathleen Hicks stated, in the National Defense Industrial Strategy, “we need to shift **from policies rooted in the 20th century** that supported a narrow defense industrial base.”

Does the defense industry still support the status quo regarding the DFARS EVM clause and claim that compliance with the EIA-748 guidelines from 1967 is necessary for IPM?

“When You Come to a Fork in the Road...”

Yogi Berra said, “When you come to a fork in the road, take it.” The fork in the road appeared with the passage of the NDAA for FY 2024. Section 827 requires DoD to revise DFARS to exempt all software contracts and subcontracts of the DoD from EVMS requirements.

The Final Report of the legislative Commission on Planning, Programming, Budgeting, and Execution (PPBE) Reform, March 6, 2024, states that EVM systems purport to assess expenditures against established delivery benchmarks but have long been criticized as easily manipulated and inadequate to the task. The PPBE Report also called for metrics that provide information on the *value received* (Something of Value). The Commission stated that “the status quo is insufficient to the demands and realities of today’s strategic and technological environment” argued for a “Need for Change.”

That change should include taking the fork in the road not currently traveled (by DoD but widely travelled by commercial enterprises) and request Congress to expand the scope of the software exemption. Exempt *all* DoD contracts from the EVMS requirement in conjunction with applying the PMIAA to DoD.

The Path to Effective IPM

The path to effective IPM bypasses mandatory compliance with the EIA-748 guidelines. EVM itself is not necessary to provide program managers with early warning of developing trends. Per *GAO Cost*, “Typically, schedule variances are followed by cost variances and management tends to respond to schedule delays by adding more resources or authorizing overtime.”

All stakeholders will benefit when program managers get “early warning of developing trends—both problems and opportunities—allowing them to focus on the most critical issues.” However, EVM is not a prerequisite to getting early warning.

DoD should revise policy and guides to provide incentives for program managers and contractors to utilize best practices from GAO Guides, PMI standards and guides, SE standards, and other digital engineering (DE) guidance. The selected best practices comprise Something of Value. My recommendations to close the Quality Gap and to

provide greater value at an affordable cost to the Nation's defense are included herein and, in the white paper, *"Integrating the Embedded Software Path, Model-Based SE, MOSA, and DE with Program Management (Embedded SW)."*

DoD should also remove the counter-productive qualitative award fee criteria in the DoD EVM Implementation Guide such as "Contractor proactively and innovatively uses EVM. Contractor plans and implements continuous performance improvement in using EVM." Much time has been wasted by program managers, IPT leaders, and finance staff in the preparation of alleged evidence of excellence.

How can the program manager obtain valid, reliable measurement of the quality and technical maturity of technical work products? A contractor may be compliant with EIA-748 guidelines and choose not to use technical performance measures (TPM) as base measures of EV. The Quality Gap is enabled and sustained by the *NDIA EVMS Intent Guide*. Guideline 7, Identify Products and Milestones for Progress Assessment, differentiates quality from quantity:

"The purpose for identifying objective indicators is to provide a means to measure the *quantity* of work accomplished – the earned value...Performance measures are one aspect of an IPM system as *other* processes control the quality and technical content of the work performed."

Abba recommends that DoD and the NDIA IPM Division (IPMD) jointly re-evaluate EVM governance and implementation. However, IPMD has reaffirmed EIA-748 every five years without closing the Quality Gap. Einstein's definition of insanity is doing the same thing over and over again and expecting different results. Although I do not recommend wasting time and effort on another re-evaluation of EVM, if it occurs, it should include participation of the NDIA SE Division.

The SE Division "advocates for the widespread use of SE in the Defense Department acquisition process to achieve affordable, supportable, and interoperable weapon systems that meet the needs of warfighters...works for a new understanding of a streamlined SE process and aims to provide state-of-the-art national defense systems early in the formation of policies, guidance, initiatives, and investments." IPM should focus more on the product, less on the work. Accordingly, I recommend that DoD's SE and acquisition organizations jointly work to define and institutionalize Something of Value.

I agree with Abba that "DoD EVM specialists would not disappear. If something of value were to replace earned value, their expertise would be used to advise program teams and provide independent analysis. I also recommend that the EVM specialists be retrained in SE skills. The specialists should verify requirements decomposition and traceability to the IMS. Then they should understand, verify, reconcile, and explain technical performance vs. reported schedule performance.

Today, those highly skilled EVM specialists waste time and money reviewing data anomalies in contractually-required, automated "DCMA EVMS Compliance Metrics (DECM)." DECMs provide answers to *process* questions that are not useful to the program manager. They include:

- Does Budget at Completion within the EV Cost Tool reconcile to the Work Authorization Document?
- Are required variance analysis reports being generated that exceed established internal thresholds?
- Are retroactive changes being made to the actual costs of work performed?

DCMA specialists also waste time when analyzing or developing Cost Performance Index Estimates at Completion (CPIEAC) even though the cost performance is based on BCWP that can obscure, not spotlight, real schedule progress. Overstated BCWP results in understated EAC. Instead of wasting money on labor and software licenses for DECM, DCMA should employ these specialists to focus on tasks that really help program teams. They should focus on issues and risks related to completing the product, not on the EVM process and metrics.

Budgeting 101 and Scheduling 101

Keep it cheap and simple. Don't bother computing EV (BCWP) and trying to explain the derived, budget-based schedule variance. Go back to Budgeting 101 and Scheduling 101. Compare cumulative actual costs to budget (ACWP – BCWS). Then analyze. If there is an *apparent* cost overrun, is it real? Or are you just ahead of schedule? If there is an apparent cost underrun, are you behind schedule? Why? Are you under your hiring plan? Is development or testing by a subcontractor behind schedule and on the critical path? What's needed is thorough root cause analysis, identifying corrective actions and risks, and estimating realistic completion dates and costs.

Merge the Software Acquisition Pathway with the Major Acquisition Pathway

Per the National Defense Industrial Strategy (NDIS), flexible acquisition planning will allow the DoD to work with a broader set of industry and balance the tension between the need for customization and adopting, where appropriate, industry standards. The following, flexible acquisition technique meets the needs of DoDI 5000.87, DoDI 5000.02, and NDIS: For the software-intensive components of major capability acquisitions, simply plan the software activities as level of effort (LOE) and compute BCWP = BCWS. That approach meets the following requirements:

DoDI 5000.02

Acquisition and product support processes, reviews, and documentation will be tailored based on the program size, complexity, risk, urgency, and other factors. Software-intensive components may be acquired via the software acquisition pathway, with the outputs and dependencies integrated with the overall major capability pathway.

DoDI 5000.87

Each program will develop and track a set of metrics to assess and manage the performance, progress, speed, cybersecurity, and quality of the software development, its development teams, and ability to meet users' needs. ... The program will continue to update its cost estimates and cost and software data reporting from the planning phase throughout the execution phase.

As GAO stated, "Typically, schedule variances are followed by cost variances and management tends to respond to schedule delays by adding more resources or authorizing overtime." So, when planning software activities as LOE, a significant cost variance (ACWP – BCWS) will trigger a root cause analysis, identification of corrective actions and risks, and estimating realistic completion dates and costs.

Of course, independently of the EVM schedule variance, which is always zero, the program will use, develop, and track a set of metrics to assess the schedule progress of software development.

The use of EVM is not necessary to achieve NDIS objectives. However, if a program manager chooses to use EVM, there is no need for the tailored, EVM best practices to be in accordance with a widely accepted industrial standard

for EVM. However, if the program manager does choose to use EVM in a manner that is consistent with a widely accepted EVM standard, then EIA-748 should not be considered for all the reasons provided above.

EIA-748 vs. ANSI/PMI 19-006-2019 The Standard For EVM

The only standard that meets the needs of NDIS and the OMB Circular A-119 criteria is ANSI/PMI 19-006-2019 The Standard for EVM (PM EVM Standard). Some of the program and project management components of that standard that are missing from the EIA-748 guidelines are product scope, risk management, and configuration management. Appendix 2 includes excerpts from PM EVM Standard.

Recommended Four Step Plan for Acquisition Reform

It is recommended that DoD, OMB, and GAO implement the following four step, sequential plan.

Step 1: DoD actions:

- DoD revise policies, guidance, and instructions to document evidence that PMIAA is applicable to DoD because DoD's program and project management policies, procedures, and guides are consistent with the best practices in widely accepted standards for program and project management planning and delivery, including GAO Guides, PMI standards, and *PMBOK® Guide*. Appendices 1 and 2 include best practices that should be included in Something of Value.
- DoD request to OMB, through the NIST, that EIA-748 be replaced by program and project management policies, procedures, and guides that are consistent with widely accepted standards for program and project management planning and delivery, including PMI standards.
- DCMA discontinue EVMS compliance reviews and the DECM.
- Retrain EVM specialists and team them with SE experts to focus on the developing product and risks to program success, not on EVM compliance reviews.
- Make the IMP and SE Management Plan (SEMP) contractual requirements

Step 2: GAO actions:

- Verify that DoD completed above actions.
- As required by PMIAA, examine the effectiveness of the following on improving Federal program and project management: (1) The standards, policies, and guidelines for IPM issued under section 503(c) of title 31, United States Code, as added by subsection (a)(1).
- Include the results of its examinations in its "GAO Report on Effectiveness of Policies on Program and Project Management," in conjunction with the High Risk list.
- Revise *Agile Guide* to add MVCR and MVP as shown Appendix 1, Chapter 4, Figure 4
- Revise *Schedule Guide* to close the Quality Gap and conform to the other GAO *Guides* (Cost Estimating and Agile).

Step 3: OMB approve DoD request to remove references to EIA-748 and revise *Capital Programming Guide* to discontinue the use of EIA-748 and replace it with Something of Value.

Step 4: DoD establish a strategic plan for IPM that is consistent with PMIAA and OMB objectives and leads to use of standards and policies that are in accordance with *PMBOK® Guide*, *ANSI/PMI 19-006-2019*, *GAO Guides*, and SE standards.

Employ DoD DE Strategy to Lower Costs, Close the Quality Gap

Appendix 1 cites the DoD DE Strategy, June 2018 (DE Strat). Employment of DE Strat will lower costs and close the Quality Gap by providing a pathway to automatic transfer of schedule performance information from the completed digital artifacts in the engineering model to the EVM data base instead of the manual entry of estimated percent complete of the work. The use of completed digital artifacts as base measures of schedule performance will also provide valid, reliable information for decision making instead of misleading information when estimated percent complete is based on “objective indicators” that are not consistent with meeting the requirements, technical performance, rework, and technical debt.

GAO best practices include similar guidance. Per *GAO Agile*, “Enable contract oversight through data from the program’s Agile artifacts.” Additional information is provided in *Embedded Software*.

Conclusion

DoD and OMB should sunset use of EIA-748 because it is impractical and ineffective. It fails to serve OMB and DoD’s procurement and IPM needs. It is not a widely-accepted industry practice. It has failed to keep current with changes in the state of knowledge and technology and is less useful than the *PMBOK® Guide*. The end of the path should be a set of best practices and processes for IPM, Something of Value.

EIA-748 guidelines focus on the **statement of work**, not the **product scope** or the results to be achieved. In contrast, the *ANSI Standard for Project Management*, included as Part II of *PMBOK® Guide*, states “The success of the project is measured against the **project objectives and success criteria**.”

We need policies and processes to **Buy Products that Work, not Statements Of Work.**”

The letter to HASC Vice Chair Robert J. Wittman (Appendix 3) says it succinctly. The subject is “More Lessons Learned: “Earned Value? We don’t need no stinking Earned Value.” We don’t need more evaluations either. Take the path less traveled by (by commercial enterprises), the path without mandatory earned value.

Finally, EIA-748 alleges, “The EVMS guidelines incorporate best business practices to provide strong benefits for program enterprise planning and control.” If compliance with those archaic guidelines is so beneficial, then we don’t need a DFARS requirement. Defense contractors, “just do it.” You will get reimbursed for the costs of EVM, whether productive or counterproductive.

Note: All references are available at www.pb-ev.com.

Appendix 1

Appendix 1 Elements of GAO Guides and Adaptive Acquisition Framework (AAF) Policies to Be Included in Something of Value		
GAO or AAF Document	Section	Excerpt Note: (parenthesized comments are not in document)
GAO Agile	Chapter 5	<p>..in Agile development, the term requirement is rarely used. Instead, it is replaced with terms such as ‘epic’ or ‘user story’ and often represents a capability, feature, sub-feature, or more granular expectation for the system being developed.</p> <p>This guide considers both product backlog items and user stories to be a form of requirements. The following best practices will be discussed in this chapter:</p> <ul style="list-style-type: none"> • Elicit and prioritize requirements. • Refine requirements. • Ensure requirements are complete, feasible, and verifiable. • Balance customer and user needs and constraints. • Test and validate the system as it is being developed. • Manage and refine requirements. • Maintain traceability in requirements decomposition. • Ensure work is contributing to the completion of requirements.
GAO Agile	Chapter 4, Figure 4 (revised by author per Note) >	<p>Agile programs typically use five levels of planning to progressively define work, as illustrated in Figure 4.</p> <p>Note: (The GAO Agile Assessment Guide shows five levels of planning. The revised Figure 4 below includes two additional levels, the MVCR and the MVP. The MVP is discussed elsewhere in the GAO Agile Assessment Guide).</p>

Appendix 1 Elements of GAO Guides and Adaptive Acquisition Framework (AAF) Policies to Be Included in Something of Value

GAO or AAF Document	Section	Excerpt Note: (parenthesized comments are not in document)
GAO Agile	Chapter 7	EVM is effective for Agile programs when it is integrated with technical performance and EVM processes are augmented with a rigorous systems engineering process
GAO Agile	Chapter 7	It is a best practice, though, to ensure the customer and product owner are communicating on priorities and the balance between scope, schedule, and budget so that MVP functionality requirements are met.
GAO Cost	Chapter 7 WBS	Step 4 Because a product-oriented WBS reflects cost, schedule, and technical performance on specific portions of a program, it represents a cost estimating best practice.
GAO Cost	Chapter 7 WBS	Table 4: Typical Technical Baseline Elements Detailed technical system and performance characteristics Includes key functional requirements and performance characteristics; descriptions of hardware and software components (including interactions, technical maturity of critical components, and standards); system architecture and equipment configurations (including how the program will interface with other systems); key performance parameters;

Appendix 1 Elements of GAO Guides and Adaptive Acquisition Framework (AAF) Policies to Be Included in Something of Value

GAO or AAF Document	Section	Excerpt Note: (parenthesized comments are not in document)
GAO Agile	Chapter 6	Enable contract oversight through data from the program’s Agile artifacts.
GAO Cost	Chapter 18 EVM Process	<p>Determine which performance measures will be used to objectively determine when work is completed. These measures are used to report progress in achieving milestones and should be integrated with technical performance measures.</p> <p>Progress and milestone events should represent measurable performance in terms of quality and technical performance as well as cost and schedule.</p> <p>Measures used to report progress in achieving milestones should be integrated with technical performance measures.</p> <p>Management should use the EVM data captured by the CPR data to integrate cost and schedule performance data with technical performance measures</p>
GAO Cost	Chapter 19 EVM Execution	Schedule variances are usually followed by cost variances, because as schedule increases various costs such as labor, rented tools, and facilities increase. ...Additionally, management tends to respond to schedule delays by adding more resources or authorizing overtime.
DoDD 5000.01	1.2.a	Deliver Performance at the Speed of Relevance.
DoDD 5000.01	1.2.a.(1)(e)	Actively Manage Risk.
DoDD 5000.01	1.2.g.	Employ a Disciplined Approach.
DoDD 5000.01	1.2.g.(2)	Program goals for cost, schedule, and performance parameters (or alternative quantitative management controls) will describe the program over its life cycle. Approved program baseline parameters will serve as control objectives. Deviations from approved acquisition program baseline parameters and exit criteria will be documented, recorded, and reported to the Milestone Decision Authority (MDA) or Decision Authority.
DoDD 5000.01	1.2.k	<p>Employ Performance Based-Acquisition Strategies.</p> <p>“Performance-based strategy” means a strategy that supports an acquisition approach structured around the results to be achieved (technical baseline or product scope) as opposed to the manner by which the work is to be performed (statement of work).</p>

Appendix 1 Elements of GAO Guides and Adaptive Acquisition Framework (AAF) Policies to Be Included in Something of Value		
GAO or AAF Document	Section	Excerpt Note: (parenthesized comments are not in document)
DoDD 5000.02	4.1.b.(6)	Establish a risk management program to ensure program cost, schedule, and performance objectives are achieved, and to communicate the process for managing program uncertainty.
DoDI 5000.87	3.3.b(2)	Programs will...actively manage technical debt.
DoDI 5000.87	3.3.b(3)	The sponsor and program office will develop and maintain a product roadmap to plan regular and iterative deliveries of software capabilities. Develop and maintain program backlogs that identify detailed user needs in prioritized lists.
DoDI 5000.88	3.4 Program Technical Planning and Management a. Systems Engineering Plan	(3) For MDAPs, ACAT II, and ACAT III programs, the SEP will contain these elements, unless waived by the SEP approval authority: (b) The engineering management approach to include technical baseline management; requirements traceability; configuration management; risk, issue, and opportunity management ; and technical trades and evaluation criteria. (c) The software development approach to include architecture design considerations; software unique risks; software obsolescence; inclusion of software in technical reviews; identification, tracking, and reporting of metrics for software technical performance , process, progress, and quality; software system safety and security considerations; and software development resources. (g) Specific technical performance measures and metrics, and SE leading indicators to provide insight into the system technical maturation relative to a baseline plan. Include the maturation strategy, assumptions, reporting methodology and maturation plans for each metric with traceability of each performance metric to system requirements and mission capability characteristics. (k) The timing, conduct, and entry and exit criteria for technical reviews. (l) A description of technical baselines (e.g., concept, functional, allocated, and product), baseline content, and the technical baseline management process.
DoDI 5000.88	3.4.b Technical Baseline Management	If practicable, the PM will establish and manage the technical baseline as a digital authoritative source of truth.
DoDI 5000.88	3.4.c Configuration and Change Management	(3) Provide for traceability of mission capability to system requirements to performance and execution metrics.
DoDI 5000.88	3.4 f. Risk, Issue, and	(2) Risk management plans will address risk identification, analysis, mitigation planning, mitigation implementation, and tracking.

Appendix 1 Elements of GAO Guides and Adaptive Acquisition Framework (AAF) Policies to Be Included in Something of Value		
GAO or AAF Document	Section	Excerpt Note: (parenthesized comments are not in document)
	Opportunity Management.	Technical risks and issues will be reflected in the program’s IMP and Integrated Master Schedule (IMS).
DE Strat	1.3 Use models to support engineering activities and decision making across the life cycle	Exchange of information between technical disciplines or organizations should take place via model exchanges and automated transformations .
DE Strat	2.3 Use the authoritative source of truth across the lifecycle	As the technical baseline matures...stakeholders will generate digital artifacts . Use the authoritative source of truth to: <ul style="list-style-type: none"> • produce digital artifacts, support reviews, and inform decisions • make informed and timely decisions to manage cost, schedule, performance, and risks.
SW Strat	3 Unifying Principles	Resilient software must be defined first by execution stability, quality , and dependable cyber-survivability. These attributes can be achieved at speed by aggressively adopting modern software development practices that effectively integrate performance and security throughout the software development lifecycle. More Than Code - Software modernization is more than just code development. It includes the many policies, processes, and standards that take a concept from idea to reality . Considerations such as contracting and intellectual property rights, as well as transition from development to fielding, are often overlooked and underappreciated. These policies, processes, and standards must not hinder, but empower the vision of this strategy .
Eng Guidebook	3.4.2 Software Engineering	Programs should employ a highly iterative approach that quickly demonstrates small progressive updates and <i>provides</i> hands-on stakeholder participation so as to reduce rework and help focus the MVP solution.
SE Guidebook	Introduction	The developer’s SEMP, which is the contractor-developed plan for the conduct, management, and control of the integrated engineering effort, should be consistent with the Government SEP to ensure that Government and contractor technical plans are aligned.
SEP	1 Introduction	Describe the program’s plan to align the Prime Contractor’s SEMP with the PMO SEP.

Appendix 1 Elements of GAO Guides and Adaptive Acquisition Framework (AAF) Policies to Be Included in Something of Value		
GAO or AAF Document	Section	Excerpt Note: (parenthesized comments are not in document)
SEP	2.1 Requirements Development	<p>Program should maximize traceability and the use of models as an integral part of the mission, concept, and technical baseline to trace measures of effectiveness, measures of performance, and all requirements throughout the life cycle from ... requirements authoritative sources into a verification matrix, equivalent artifact, or tool that provides contiguous requirements traceability digitally.</p> <p>Program should trace all requirements from the highest level ... to the lowest level (e.g., component specification or user story). This traceability should be captured and maintained in digital requirements management tools or within model(s). The system Requirements Traceability Matrix should be a model output that can be embedded in or attached to the SEP, or the SEP should contain a tool reference location. ... The matrix should include the verification method for each of the identified requirements.</p>
SEP	3.1 Technical Schedule	<p>Provide the current technical schedule derived from the IMP/IMS for the program, including activities/tasks and event milestones such as ... MVP/MVCR.</p>
SEP	3.2.2 TPMs	<p>The program should add, update, or delete TPMs documented in the SEP.</p> <p>This section should include:</p> <p>A set of TPMs covering a broad range of core categories, rationale for tracking, intermediate goals, and the plan to achieve them with as-of dates</p> <p>SE leading indicators to provide insight into the system technical maturation relative to a baseline plan</p> <p>The maturation strategy, assumptions, reporting methodology, and maturation plans for each metric with each performance metric traced to system requirements and mission capability characteristics</p> <p>Whether any contractual provisions relate to meeting TPM goals or objectives</p> <p>Description of how models, simulations, the digital ecosystem, and digital artifacts will be used to support TPM tracking and reporting.</p>

Appendix 1 Elements of GAO Guides and Adaptive Acquisition Framework (AAF) Policies to Be Included in Something of Value		
GAO or AAF Document	Section	Excerpt Note: (parenthesized comments are not in document)
		<p>Description of the traceability among Key Performance Parameters; KSAs; key technical risks and identified TPMs.</p> <p>Identify SW measures for SW technical performance, process, progress, and quality.</p>

Appendix 2 Elements of PMI EVM Standard and PMBOK Guide® that should be Included in Revised DoDI 5000.88 and other components of Something of Value

DoDI 5000.88 Reference	PMI EVM Std. Section	PMBOK® Guide Section	Revised DoDI 5000.88
3.4.d.(1) IMP 3.4.b Product baseline	3.2 Developing the Project Management Plan		Develop the IMP to include the scope management plan (including product scope), requirements management plan, schedule management plan, cost management plan, quality management plan, ..., risk management plan, and procurement management plan.
3.4.c. Configuration and Change Management 3.4.c.(1) <i>functional, physical, and performance characteristics of the system design.</i> 3.4.c.(2) ... track any changes (e.g., a dynamic change log for in and out of scope changes, formal engineering change proposals) and provide an audit trail of program design decisions and design modifications.	3.2 Components: Change Management Plan Configuration Management Plan 4.6.1 Change Requests may result from an error in defining the product scope... evolving requirements	6 th ed.: 5, 5.3.3.1 Project scope statement	The WBS is used as the single structure that integrates the product scope, schedule, and cost baselines together at a common level. The WBS decomposes the scope of work to be carried out by the project team, and a WBS dictionary defines the scope (including product scope) of work for each WBS component. The product scope is the features and functions that characterize a product, service, or result.
3.4.a.(b) requirements traceability 3.4.a.(g) Specific technical performance measures and metrics with traceability of each performance metric to system requirements and mission capability characteristics.	3.2.4, 3.2.6	5.2.3.2 Requirements traceability matrix. 4.3.3.2 TPMs	The project team develops a responsibility assignment matrix (RAM) that tracks the scope (including product scope) to the responsible organization (OBS) in which all work scope and resources or cost under the EVM approach are mapped to control accounts. For procurement planning, the project team determines whether to use EVM for any procurements..., how the vendors will integrate EVM data into the overall project's EVM data and how performance management periods will be aligned. If EVM is flowed down to vendors/subcontractors, then plans should be adjusted to acknowledge the need to develop how Schedule, Cost, Risk, and other Project

			Management Knowledge Areas are fed from input provided by the vendors/subcontractors.
3.4.f.(2) Technical risks and issues will be reflected in the program's IMP and IMS.	3.3 Integrating the Product Scope , Schedule, and Cost Baselines 3.3.2 Risk Management ..outputs of the risk management process as described in the <i>PMBOK® Guide</i> should be incorporated into the PMB.		In creating the PMB, five Knowledge Areas (Project Scope Management, Project Schedule Management, Project Cost Management, Project Risk Management , and Project Resource Management) need to be integrated in such a manner that the scope (including product scope), schedule, risk , and cost are associated at a common level across the baselines (either CA, WP, or activity) with an established performance measurement method.
3.4(k) The timing, conduct, and entry and exit criteria for technical reviews.		6th ed.: 6.2.2.1	The project WBS, deliverables, and acceptance criteria documented in the scope (including product scope) baseline are considered explicitly while sequencing activities.
3.4.a.(b) Software technical performance 3.4.a.(g) Specific technical performance measures and metrics		4.3.3.2 TPMs	Determine the measurement method, technique or criteria to be used for progress evaluation of the activity types within a WP. Measure progress towards achieving the scope (including product scope) and technical performance goals for each CA.
3.4.a.(g) Specific technical performance measures and metrics		6th ed.: 1.2.4.7	Collect work performance data... including reported percent of work physically completed, quality and technical performance measures , etc.
none	4.6.2.1 Scope (including product scope) Change Analysis		Whenever work and budget moves into, out of, or within the project, one or more CAs change. Any change should always be reflected on the RAM and authorized through change control.

	Changes to the ... product scope impact the resources, schedule, and cost of a project.		
<p>3.4.a. SEP</p> <p>(3)(k) The timing, conduct, and entry and exit criteria for technical reviews.</p> <p>(3)(l) A description of technical baselines (e.g., concept, functional, allocated, and product), baseline content, and the technical baseline management process.</p>	<p>3.3.3 Scope Baseline</p> <p>...information on the product deliverables against which execution is compared</p>	<p>6th ed.: 6.2.1.1, 5.3.3.1</p> <p>7th ed.” 2.4 Alignment</p>	<p>Align the scope baseline, comprised of the project scope statement, WBS, and WBS dictionary, with work and planning packages.</p> <p>The detailed project scope statement, either directly or by reference to other documents, includes the following:</p> <p>Product scope description. Progressively elaborates the characteristics of the product described in the requirements documentation.</p> <p>Deliverables. Any unique and verifiable product, result, or capability to perform a service that is required to be produced to complete a process, phase, or project.</p> <p>Acceptance criteria. A set of conditions that is required to be met before deliverables are accepted.</p> <p>Planning activities and artifacts need to remain integrated throughout the project. ...planning for the performance in terms of scope and quality requirements aligns with delivery commitments, allocated funds, type and availability of resources, the uncertainty inherent in the project, and stakeholder needs.... combine the planning artifacts into an integrated project management plan (IMP).</p>

Appendix 3 Letter to the Hon. Robert J. Wittman

Paul Solomon
3307 Meadow Oak Drive
Westlake Village, CA 91361
Paul.solomon@pb-ev.com

December 16, 2023

The Honorable Robert J. Wittman
Vice Chairman, HASC
2055 Rayburn House Office Building
Washington, DC, 20515-4601

Subj: "Something of Value" not "Earned Value"

Dear Vice Chairman Wittman:

I recommended that DFARS be revised to exempt *all* contracts of the DoD from EVMS requirements based on the EVMS standard, EIA-748. Now, I recommend that DoD provide *incentives* for contractors to replace compliance with the EIA-748 guidelines with something of value from the GAO.

Something of Value is a book that portrayed the Mau Mau uprising in Kenya. A quote from that book is pertinent: "When we take away from a man his traditional way of life, his customs, his religion, we had better make certain to replace it with *Something of Value*."

In my white paper, I cited the Sec. 809 Panel report that "another substantial shortcoming of EVM is that it does not measure product quality. A program could perform ahead of schedule and under cost according to EVM metrics but deliver a capability that is unusable by the customer...Traditional measurement using EVM provides *less value* to a program than an Agile process in which the end user continuously verifies that the *product meets the requirement*."

In 1999, Gary Christle, one of the founding fathers of EVM, stated his vision in terms of the following:

- The quality of a management system is determined not by the absence of defects, but by the presence of *management value*.
- Integrate cost, schedule, technical performance, and risk management

GAO provides guidance to obtain management value in the best practices of the following guides:

- GAO-24-105506: *GAO Agile Assessment Guide: Best Practices for Adoption and Implementation*
- GAO-20-195G: *GAO Cost Estimating and Assessment Guide*
- GAO-16-89G: *GAO Schedule Assessment Guide*

Please prod DoD to fix its acquisition policies and guides by adding incentives for contractors to implement those best practices. Then, provide oversight of the extent to which DoD and the contractors achieve integrated program management by implementing those practices.



Appendix 4 Project Management Best Practices from Capability Maturity Model® Integration (CMMI®) Model V3.0 but Absent from EIA-748).

Best Project Management Leading Practices from ISACA CMMI Model V3.0 (per GAO Report GAO-24-106886) but Absent from EIA-748	
Practice Number	Practice Statement
Requirements Development and Management (RDM) RDM 2.4	Develop, record, and keep updated bidirectional traceability among requirements and activities or work products.
RDM 2.5	Ensure that plans and activities or work products remain consistent with requirements.
RDM 3.4	Identify, develop, and keep updated interface or connection requirements.
RDM 3.7	Validate requirements to ensure the resulting solution will perform as intended in the target environment.
Product Integration (PI) PI 3.1	Review and keep updated interface or connection descriptions for coverage, completeness, and consistency throughout the solution’s life.
Risk and Opportunity Management (RSK) RSK 3.5	Manage risks or opportunities by implementing planned risk or opportunity management activities.
Supplier Agreement Management (SAM) SAM 4.1	Select measures and apply analytical techniques to quantitatively manage suppliers against their performance targets.
Verification and Validation (VV) 1.1	Perform verification to ensure the requirements are implemented and record communication results.
VV 1.2	Perform validation to ensure the solution will function as intended in its target environment and record communication result.
VV 3.1	Develop, keep updated, and use criteria for verification and validation.
VV 3.2	Analyze and communicate verification and validation result.