



Bob Pattie

The Integrated Program Management Initiative Joint Team Receives the David Packard “Excellence In Acquisition Award”

Dr. Jacques Gansler, Under Secretary of Defense (Acquisition & Technology), selected the Integrated Program Management Initiative (IPMI) Joint Team, consisting of 55 members in three subteams (Executive Steering Group, Industry EVMS Guidelines and EVM Implementation Guidance), as a David Packard Award winner. The team was recognized by Dr. Gansler and the Mr. William Cohen, Secretary of Defense, at a Pentagon ceremony during Acquisition Reform Week and by team leader Gary Christle during the PMA conference in Florida. The award cited the team for shifting ownership for earned value management from government to industry and creating an internationally accepted best practice. The David Packard Award for Excellence in Acquisition, the Department’s highest acquisition award, honors teams that have made a significant contribution to acquisition. Our diverse team included dedicated professionals from NASA, FAA, the Services and Defense agencies, Australia, and Industry, working together in the best spirit of acquisition reform.

“The IPMI Joint Team has implemented a shift in Earned Value Management ownership and responsibility from government to industry and has created a recognized international best practice.”

The David Packard Excellence in Acquisition Award was established in 1995, to recognize DoD civilian and/or military organizations, groups, or teams, who have made highly significant contributions which demonstrated exemplary innovation and best acquisition practices. There are multiple awards reflecting achievements that exemplify goals and objectives established for furthering life cycle cost reduction and/or acquisition excellence in DoD. In 1998, fourteen teams were nominated for the award, with five receiving the award.

The Management System Subcommittee of
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A Message -- From the President (Elect)

I am pleased to be the new PMA President (elect). I will take over from Marilyn McCauley on July 1, 1998. She will become Chairman of the PMA Board and will remain very active in PMA. Marilyn has done an excellent job in leading PMA the past two years and I want to thank her for her fine contributions. It will be a challenge to match her excellent record and I look forward to her mentoring from her role as Chairman of the Board.



After consulting with several leaders within our EVM community, I elected to run for PMA President. I want to thank those of you that voted in the election. It is my hope that I provide the energy and ideas (or ability to talk with those that do) and combine that with the flexibility to successfully lead our association.

Earned Value Management (EVM) has and is undergoing a great deal of change as we modernize our approaches to management within Industry and the Government. While change can be painful, it also has had a beneficial impact on the EVM practitioner. Our horizons have been expanded creating job growth involving increased responsibility and authority.

I bring these things up because I feel PMA's role is to provide the members support, advice, and training they need. PMA also provides a forum to discuss, understand, and develop new ideas and processes. While the EVM fundamentals have not changed, we now have a need to better understand all the program management functions such as organizing, scheduling, budgeting, contracts, and risk. This change in focus is to allow the EVM practitioners to integrate the data from these functions into information, not just for the sake of reporting, but for the program manager's team use in managing the project. I think we all agree that the EVM processes and data within the integrated program management discipline must add value and make a program manager's job easier. EVM should make the Program Manager more effective and should be one of our goals as EVM practitioners. I feel this is the essence of the change we are undergoing.

While demands have been placed on the EVM practitioner, our association has had difficulty in developing consensus to keep up. I look to our association developing and implementing new ideas rather than reacting to change and being more directly involved with the Program Management Community. I also look to expanding our training given in conferences to cover all the necessary functions of integrated project management. To do this, I am asking for some flexibility from each of you with the realization that operating our association will cost more. But, I feel we must pay this price to maintain our leadership role and enhance our members' job growth potential. If we don't, we may lose our strong current position as well as our membership base.

Integrating Risk Management with Earned Value Management

(Risk Management Comes Out of the Closet)

Risk Management (RM) is required by government acquisition policies and is implicit in the tools and tasks of earned value management (EVM) and program management. However, there is little guidance on how to effectively implement RM with EVM and the benefits of doing this. The following discussion urges that guidance is needed, offers some candidates for Best Practices and attempts to provoke some thought and discussion.

RM was overlooked by the authors of the EVM Systems guidelines. The EVM Implementation Guideline acknowledges the existence of risk when it advises that all remaining risk areas be considered to arrive at the best possible Estimate at Completion (EAC) but it is silent on the subject of RM. The Industry Standard Guidelines do not mention risk at all. Its closest allusion to risk is in the EAC discussion. By stating that the EAC should be the "most likely" estimate of total costs it assumes that probability is assessed but does not discuss risk at all. Even the definition of Management Reserve (MR) is silent on risk because MR was conceived many years before RM. Not surprisingly, most contractor EVM system descriptions neither define the RM processes nor describe any linkages or integration between RM and EVM.

EVM provides early warning of program problems which have already occurred and are visible because of cost overrun or schedule slips. EVM also emphasizes that management analyze the impacts of adverse events and trends. However, EVM is success-oriented and consequently pays insufficient attention to the risks that planned events and outcomes will fail to be achieved, the consequences of those failures, and the RM plans for identifying, mitigating, tracking and controlling the risks.

GAO Reports on Understatement of Risk

Two recent GAO reports assert that DoD's review mechanisms tend to understate risks. The first report contends that areas of high risk are not identified by program management so as not to jeopardize funding and production launch decisions. This is borne out by problems or other unknowns discovered after product development.

The second report, which cites a specific development program, contends that the effort was funded based on the assumption that problems would not occur during testing. The report continues that most of the program's MR has been depleted

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"... Two recent GAO reports assert that DoD's review mechanisms tend to understate risks. . ."

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although the flight test program has one year remaining and it is probable that additional deficiencies will develop.

The integration of RM with EVM can ensure that program risk has better visibility and is assessed more realistically. The GAO's recommendations will be discussed later.

Let RM Out of the EVM Closet

It is time to let RM out of the EVM closet, to better define its role in using earned value to manage and to identify and publicize RM best practices which can improve the management value of EVM.

Government Requirements

There are two primary government requirements for RM. The DoD's procedures for major defense acquisition programs contained in the 5000 series of acquisition policies emphasize the best practices in assessing and mitigating risk during development. In DoD 5000.2-R, Mandatory Procedures for Major Defense Acquisition Programs and Major Automated Information System Acquisition Programs, RM is required "to identify and

control performance, cost, and schedule risks" (Par. 3.3.3). At the federal level, OMB Circular No. A-11, Planning, Budgeting, and Acquisition of Fixed Assets, Section 300.7, requires that analysis of goals (cost, schedule, performance) include a risk assessment that discusses the probability of achieving them.

In both cases, RM is the responsibility of the acquiring agency, not of the contractor. It is appropriate that RM not be a contractual requirement because a contractor is paid to deliver a product which meets performance requirements but is not told how to manage. Nonetheless, some voluntary guidelines and Best Practices are offered below for consideration.

Contractor's Practices

Contractors always manage risk and inherently address risk during program management activities which include:

- Developing Integrated Master Plans and Integrated Master Schedules (IMP/IMS)

- Establishing the Performance Measurement Baseline (PMB) and Management Reserve
- Conducting Integrated Baseline Reviews (IBR)
- Establishing and monitoring Technical Performance Metrics (TPM)
- Assessing cost, schedule and technical performance
- Developing Estimates at Completion (EAC)
- Trading off performance requirements to meet cost constraints in managing Cost As an Independent Variable (CAIV)
- Allocating budget from MR for risk handling plans

However, for many contractors, there is no documented process by which RM and EVM are integrated. This discussion will attempt to build a bridge between the acquisition policies which require RM and the EVM guidelines which ignore it. It will not

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be a guide to RM but will provide some practical suggestions on when and how to integrate the elements of RM with EVM processes. The elements of RM are risk planning, assessment (identification and analysis), handling (mitigation) and monitoring.

Benefits of RM

RM is a program management responsibility and is the practice of controlling the risk drivers that may adversely affect the program. A good RM management program can provide an important tool for reducing a system's life cycle costs. Its benefits include earlier identification and declaration of risks to be handled, earlier analysis of potential impacts to cost and schedule goals and a disciplined, consistent approach for the program team to take offensive action against threats to the program's cost, schedule and technical objectives.

GAO Recommendations

The GAO report states that, compared with commercial best practices, the DoD launches product developments that embody more technical unknowns and less knowledge about the performance and production risks they entail. It recommends that the DoD take steps to ensure that sound standards for the timing and quality of the performance and production knowledge are applied to programs and used as a basis for assessing production risks and for making tradeoffs. Cited standards include release of engineering drawings, identification of key production processes and demonstration of risky or new production processes. The DoD responded to these recommendations, in part, by stating that it is identifying metrics to be used in assessing program risks and acquiring production-related knowledge.

The GAO concluded that the effective application of good metrics of production knowledge (or elimination of risk) is more pressing than identifying them. It recommends that improved metrics for production-related knowledge be applied to programs at key junctures in a way that will enforce standards for knowledge like those found at commercial companies (End note i, page 77).

The following discussion of Best Practices will incorporate the GAO's recommendations.

Solomon's Picks for Best Practices to Integrate RM with EVM

There is no consensus in the program management community that there are any good practices for integrating RM with EVM or even a need to integrate the two. Nonetheless, here are my opening picks for Best Practices. No odds are given that any will make it through the final gate. They are only offered to provoke thought and discussion.

1. Establish RM Milestones on the Baseline Schedule

The IMS normally includes the product development milestones which are based on expected success of the technology being used and its related design. RM milestones are not always included on the IMS or lower level schedules although RM requires a rigorous, event-oriented process. The process

monitors risk until a decision milestone is reached for the disposition of the risk. It is recommended that key RM milestones be included on the baseline schedules.

2. Define Exit Criteria for RM Decision Points

Document the exit criteria for RM decision points in the same manner as for any other discrete milestones in the PMB.

3. Budget the RM Effort

Many RM efforts, such as assessing and monitoring risk, occur as part of routine, product development activities and need not be discretely budgeted and tracked. However, significant RM effort for risk-handling options, such as the parallel development of alternate technical solutions, should be budgeted and its progress tracked with earned value.

When the RM tasks are identified at the beginning of the project, they should be included in the initial budget allocation. When the risk is identified later, significant RM effort should be budgeted either through an internal replan of allocated budget or from MR, as appropriate.

4. Use Technical Performance Metrics as a Basis for RM and EV

For baseline product development and test effort, it is recommended that both RM and EVM be based, in part, on TPM. This recommendation is consistent with the principles of Performance Based Contracts, as required by recent DOD and Executive Office policies.

DoD 5000.2-R states that developmental test and evaluation programs shall assess progress towards mitigation of acquisition technical risk (par. 3.4.2.4). Its systems engineering activities include the establishment of performance metrics to provide measures of how well the technical development and design are evolving relative to what was planned and relative to meeting system requirements in terms of performance, risk mitigation, producibility, cost and schedule and require that these metrics be traceable to performance parameters identified by the operational user (par. 4.3).

OMB Circular No. A-11, Part 3: Fixed Assets, requires that baseline performance goals are the standard against which actual work is measured and that performance goals should be expressed in quantitative terms as reflected in contractual statements of work.

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TPMs are commonly established to determine progress towards meeting technical requirements, both in terms of the technical performance at the end of test and during earlier development and testing. Because TPMs provide some of the best measurements of progress towards achieving program technical requirements, it is recommended that they be one of the bases for both RM and EV metrics along with other appropriate metrics.

It is further recommended that metrics selection should be identified up front and used to automatically trigger management reviews with predetermined limits. This Best Practice is included in "The Program Manager's Guide to Software Acquisition Best Practices" which is published by the DoD Software Acquisition Best Practices Initiative.

5. Address RM in Performance Analysis and Exception Reports

Earned value analysis evaluates program performance and identifies problems for more effective management actions. It segregates cost and schedule problems which have already occurred.

It is recommended that performance analysis also include discussion of significant adverse deviations and trends which arise from risk mitigation and monitoring.

6. Establish MR for Risk Resolution

MR is established and used for work scope growth, rate changes and other program unknowns, per the Guidelines. It is recommended that the amount of MR established (both cost and schedule reserves) be related to the risk drivers identified by the program manager, with prioritized risks assigned an estimated value. It is also recommended that after risk-handling options are budgeted from MR, risk reserve reevaluations and updates be performed along with risk projections and assessments.

This Best Practice is also included in "The Program Manager's Guide to Software Acquisition Best Practices".

7. Consider RM in EAC Development

RM involves assessing both the probability of failing to achieve a particular outcome and consequences of failing. If failure is assessed as being likely to occur and the consequences include significant cost growth, then the EAC should be revised to incorporate the cost impact. This recommendation is consistent with the guidance that the EAC should be the "most likely" estimate of total costs.

In the era of EVM Before RM, EAC revisions were usually triggered by cost or schedule variances. It is recommended that the Program Manager establish guidelines to initiate EAC analyses when the probability of failing to achieve a baseline plan is greater than 50% or another, predetermined threshold.

Challenges and Issues

The integration of RM with EVM has not been sufficiently addressed by the project management and EVM stakeholders. You are invited to advance this discussion, to share lessons learned, to identify best practices, and to recommend if published guidelines for project management and EVM could be enhanced by including guidance on integrating RM with EVM.

Suggested questions for discussion are:

- What are best practices for integrating RM with EVM?
- Should the Industry Standard Guidelines for EVMS be revised to address RM?
- Should other policies or guides address the integration of RM with EVM?

Paul Solomon is the EVMS Monitor at the Northrop Grumman Military Aircraft Systems Division. He is a member of the team which received the 1998 David Packard Excellence in Acquisition Award for development of the Industry Guidelines for EVMS. Paul can be reached at (562) 948-8567 or email: solompa@mail.northgrum.com.

Govt. Perf Measurement . . . (continued from page seventeen)

about "JPL and In-House Earned Value Management." JPL is re-engineering their seven institutional domains. The desired state of "Develop New Products" is to achieve one seamless integrated process, aligning with the customers, partners and beneficiaries as well as the stakeholders. The Project Leadership Process is one of the five sub-domains within Develop New Products, and Project Resource Management a part of that sub-domain. Cost/Schedule Integration is part of the JPL Project Resource Management Process. The recently issued NASA Policy Directive for EVM has helped JPL in formalizing the requirements. The success of JPL's re-engineering efforts in their cost-schedule integration process, Cal attributed to the EVMS Guidelines, in that many "traditional" disciplines have been relaxed. The project managers are beginning to see value in the data.

Army Corps of Engineers: John Singley of the Army Corps of Engineers talked to the group on "Earned Value Project Management in the Corps of Engineers". New business tools being deployed by the Corps will technically enable the Corps to use earned value in its project management process. The Corps found EVMS much easier to embrace as EVPM, Earned Value Project Management. Way to GO John! The Corps conducted an extensive research study to determine how important cost/schedule is to their program managers. The survey revealed a low 19% of the PM's sometimes use earned value, and only 14% use it all the time. Their program management workshops' revealed 80% of their PM's believed they needed earned value, however were concerned with the time and money to implement. Micro management was another major concern expressed by the PM's. The process requirements were identified as reduction in reporting, reasonable thresholds, efficient labor posting and decentralization of use. To implement EVMS, the program managers wanted to be kept involved in the process, and they wanted the "system" automated with "one-step" analysis.

John attributed the success of the Corps efforts to the Headquarters NOT mandating EVMS. When mandated, people have a tendency to "gloss over". John took an opposite approach in showing the advantages of EVM to the corps program managers. He believes there is value added in making EVMS voluntary, and to be successful we need to communicate an opportunity to the PM's.

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