



## **SUPPLY CHAIN INTEGRATION AND RISK ANALYSIS PROGRAM MANAGEMENT ROUNDTABLE**

*written by Carole Rickard Hedden*

November 13, 2006

*Aerospace and defense program management leaders met Nov. 13 in Phoenix for the first AVIATION WEEK Program Management Roundtable: Supply Chain Integration and Risk Analysis. The meeting allowed leaders to evaluate some of the most significant issues they face in improving program performance and developing a cadre of program leaders*

Hosted by co-chairmen Larry Lawson, vice president of the F-22 Raptor program for Lockheed Martin Aeronautics, and Joe Anselmo, the business editor of *Aviation Week & Space Technology*, the roundtable was convened to address the issues in a working group format. The discussions began with an acknowledgement that today's aerospace and defense industry programs "are not your daddy's programs." They are more complex in terms of technology, market environment, variety of systems, risk management and budgeting volatility. AVIATION WEEK sponsored the leadership discussion in association with KPMG LLP.

In a post-meeting survey, participants at the roundtable unanimously asked for continued dialog through more program management roundtables. Topics identified for future roundtables include addressing: 1) supply chain integration and incentives; 2) the talent/engineering crisis; 3) risks associated with phased transition; 4) program startup and transition, from proposal to capture to delivery and sustainment; 5) customer interface and integration; and 6) new analysis techniques.

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## SCORECARD: PROGRAM MANAGEMENT ROUNDTABLE 2006

The Program Management Roundtable identified three critical points to achieving performance excellence in all types of programs, from the simplest to the most complex:

- Identify metrics that will better link financial, technological, customer and supplier goals to include risk analysis and mitigation.
- Choose partners early and collaborate.
- Abide by the letter of the contract.

The AVIATION WEEK Program Management Roundtable was launched as an outcome of the overall Executive Roundtable effort and on the basis of common issues identified in the AVIATION WEEK Program Excellence Awards process. AVIATION WEEK's Program Management Roundtable is self-governed, and success depends upon individuals' efforts to benefit the industry as a whole. The roundtable was established as a community for program executives and managers with three goals:

- > Enhance program performance and excellence, from development through sustainment.
- > Accelerate the velocity with which program leaders develop and evolve through sharing of expertise and experiences.
- > Identify critical issues and work toward common resolution to the benefit of programs throughout the industry.

Lawson and Anselmo opened the meeting, citing the constant flux of funding and direction that every program leader faces—whether imposed by the Defense Dept., other government agency or the customer's market environment. Lawson noted that strict discipline with regard to tools, standards and constant evaluation are vital to achieving superior program performance. The roundtable participants are committed to continuous improvement and the need to address those factors that can undermine program performance—over-optimism, pervasive scope/requirements creep and the lack of holistic program management that combines varied business, technological and people skills.

More than 40 leaders gathered for the roundtable, representing the Defense Dept., NASA, Defense Acquisition University, Stevens Institute of Technology, Analytical Graphics, ITT Defense, Moog, Raytheon, Rockwell Collins, Boeing, Bell Helicopter, Smiths Aerospace, Northrop Grumman, Honeywell Defense and Space, Lockheed Martin and KPMG LLP. Participants divided into five working groups, each tasked with addressing various critical issues. The working groups then presented findings, with the overall roundtable selecting the elements that have the most impact on improving program performance.

In the debriefing and discussion stage, program leaders noted that the most common flaw they find is that programs are priced to win, and optimism in achieving program performance criteria permeates the program team, from customer through user. A more effective approach would be to evolve programs over time instead of massive contracting, establishing caps on the program that balance requirements and dollars available.

## RESULTS OF THE ROUNDTABLE WORKING GROUPS

**Table 1: Metrics to combine financial, technological, corporate, customer, program and supplier goals**

In addition to the commonly accepted metrics of schedule, budget and earned value, the roundtable participants called for additional measures.

- A. Percent of risk mitigated and opportunity realized as a percentage of time.
- B. Earned value management metric based on objective criteria linked to original scope/contract.
- C. Magnitude of baseline change (in scope, technology, etc.) as a function of time.
- D. Percent reuse of commercial or proven technology across software and hardware components.
- E. Consistent/timely review of trend data/leading indicators.

**Table 2: Incentivizing and integrating the supply chain with overall program effort**

Larry Lawson identified supply chain integration as among the top differentiators in superior program performance, particularly as relationships within the supply chain evolve to shared risk and investment.

- A. Choose partners early and collaborate.
  - Involve the supply chain in technology needs and share the business plan.
  - Select suppliers early and allow them to offer a baseline approach to achieve goals in the most efficient and effective manner.
  - Co-locate wherever possible; perform Kaizen activities at design inception.
  - Ensure common specification requirements. For example, on a single program that has a team of prime partners, each partner may have a different engineering specification for the same item, which would require suppliers to respond three different ways.
- B. Establish long-term relationships whenever possible.
  - Allow the supplier to move up the chain where possible (increase value).
  - Reduce contracting burden whenever possible.
  - Support integration of common design and communication tools.

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Enhancing program management and performance is critical in dealing with typical conflicts between customer budget and time constraints and the contractors' profitability. One approach is to structure contracts and risk/reward models to ensure that each vendor is motivated in the way that best suits the requirements of the program.

It is here that KPMG can help by analyzing programs and providing advice on how companies can integrate processes to manage risk and share in functional performance incentives. The company's multidisciplinary team and integrated

approach help address client needs—across the spectrum of their programs and the lifespan of their businesses. It all adds up to a team that can help clients move beyond reports and achieve measurable results—results that can go right to the bottom line.

Douglas Gates, KPMG LLP, 345 Park Avenue, New York, NY 10154-0102, (678) 472-0137, [dkgates@kpmg.com](mailto:dkgates@kpmg.com) or [www.kpmg.com](http://www.kpmg.com)

- C. Incentivize performance through objective, measurable criteria linked to the program business plan and capability delivered to users, as compared to requirements.
- D. Trust required
  - Aid in identifying/mitigating risk.
  - Require a new approach for organizations not known for having an "open" culture.

**Table 3: The right contract for the right program**

Programs frequently transition from capture team to program team, creating a breach in the process that includes contracting.

- A. Abide by the letter of the contract.
  - Don't expect funding make up.
  - Avoid inclusion of options.
  - Clearly define scope.
  - Establish a contract change board to gauge the impact of any changes in delivery, acceptance, requirements or funding.
- B. The program manager should be in place during program proposal and capture to ensure consistency of vision and definition of contract.
- C. Program managers must have adequate contracting skills.
- D. The team must clearly identify level of complexity (technological development, product/system/array, pace, market environment) and apply the contract based on that complexity.
  - Research and development
  - Production
  - Sustainment
  - Combination

**Table 4: Identification of the most common unplanned/underestimated business risks at the program level**

Most programs have risk identification, mitigation and support aspects to their planning. This group identified the types of risks that tend not to be anticipated and, therefore, pose a significant threat to the program.

- A. The skill mix required of team members differs during different phases of programs.
  - Requires early definition of phases.
  - Requires constant monitoring of skill requirements. Must include identification of weak/unavailable engineering skills.
- B. No common understanding of requirements among customer, end user, developer or test.
- C. "Miracle" factor or unrealistic optimism.
  - Integration of varied companies, research capabilities, cultures, actual systems and products.
  - Hopeful versus realistic financial estimates.
- D. Inaccurate estimate of technical complexity.
- E. Impact of personnel changes.
- F. Consistent and thorough review.
  - By team
  - By customer
  - By non advocates, current on technology

**Table 5: Identification of best tools to identify program performance**

Program leaders know when they are succeeding based on what the metrics show them.

However, the common metrics of EVM, schedule and budget are not comprehensive.

A. Failure-mode affects analysis.

- Can it happen?
- How frequently will it occur?
- Is there some indicator?
- Impact to program, but also to business.

B. Lessons learned

- Standardized knowledge capture.
- Tribal knowledge shared in a planned, executable way (on-boarding, as part of capture process, etc.).
- Preparing next generation of program managers—where does bench strength reside (as program assistants, in engineering, in finance)?

C. Team member/supplier scorecard

- Based on objectives/goals of program relative to organization/business, customer, end user, program.
- Communicated frequently and objectively.
- Agreed to by all; change appropriately as program moves through phases.