

Successfully Managing Programs and Risk in the Aerospace and Defense Industry

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EXECUTIVE OVERVIEW

Companies in the aerospace and defense industry must address the demands of customers located around the globe to deliver products faster at lower cost while maintaining mission critical quality levels. At the same time, these companies face the demands of securing capital in the current tough economic conditions, dealing with escalating costs for manpower, materials and services and complying with increasingly complex regulations. Many companies must also coordinate a virtual enterprise consisting of contributors from a number of different organizations such as suppliers and contractors often scattered around the world. Succeeding in this difficult environment requires an enterprise software solution that enables aerospace and defense companies to plan and execute programs and projects, demonstrate earned value compliance and manage resources and costs. Enterprise project portfolio management (EPPM) applications help meet these challenges by aligning resources, controlling costs and improving program and project management practices. These applications deliver value and help build strong customer relationships.

Aerospace and defense companies must address challenges such as increasing complexity of programs and more stringent compliance requirements.

A MARKET IN FLUX

A number of factors are driving change in key sectors of the aerospace and defense market. In the commercial sector, airlines lost US\$8 billion during 2008 due to the combination of high jet fuel prices and falling traffic volumes. Some banks have exited the market of providing aircraft financing, which has made it difficult for airlines to finance orders. Globally, over 25 airlines have entered bankruptcy. As a result, commercial airline manufacturers and their suppliers have been forced to become far more nimble, adding or closing production lines, developing new partnerships, implementing infrastructure changes, and right-sizing and seeking additional qualified and skilled employees. The global virtual enterprise needs to respond quickly to a changing environment while avoiding delivery delays that might generate additional costs and cause customers to terminate orders.

In the defense sector, on the other hand, defense budgets around the world are under pressure as governments address declining tax revenues and competing national priorities. Companies in the defense industry must be prepared to deal with intense scrutiny of existing government funded programs and possible termination

termination of funding for these programs as well as new ones. Even long-term contracts and related orders are subject to cancellation or delay if funds are not appropriated in future time periods. The lack of stable funding greatly increases the requirements associated with managing long-term program schedules. Budgets are being squeezed and realigned for the programs that survive. This uncertainty increases the risk of exposure due to production changes, material cost escalation and other factors that are difficult or impossible to predict.

Success depends on adhering to schedules, meeting budgets and delivering results to customers. Now more than ever, proper risk assessment is absolutely crucial to ensure that programs and projects are successful.

THE CAUSES OF FAILURE

In an industry where companies bet their future on every major program, failure truly isn't an option. Companies must achieve excellence in the management and execution of every program. In difficult times, just one failed program has the potential to jeopardize both short-term success and the company's ability to further its long-term strategic goals.

The aerospace and defense industry is faced with the need to manage some of the most elaborate programs in existence. Programs that consist of over a million components and must be managed over a lifecycle of 50 years are not unusual. Aerospace and defense suppliers are developing new technology with the intention of providing customers with the best deliverables but this has the unintended consequence of increasing the complexity and the lifecycle of aerospace and defense programs. For example, the Government Accountability Office (GAO) recently issued a study of 95 weapons systems programs that indicated the average program was 21 months behind schedule and 26% over budget.

To manage these comprehensive programs, aerospace and defense companies have created global design and manufacturing teams consisting of suppliers, contractors and partners. But managing teams of contributors located around the world in many different organizations increases the scale of today's program management challenges.

Complexity is further exacerbated by growing regulatory requirements. Aerospace and defense contractors must comply with the US Office of Management and Budget 300 directive and the ANSI/EIA 748 Earned Value Management System (EVMS) standard required by the US and other governments. Missing key milestones may result in contractual payments being delayed or reduced, further threatening the company's ability to meet profitability objectives and damaging their reputation and efforts to secure future business.

As they attempt to manage these extensive programs, aerospace and defense companies also must confront escalating costs for capital, materials, services and employee compensation that are eroding the margins of most aerospace suppliers. For example, in recent years China has greatly increased its purchase of raw materials, causing supply shortages and substantial price increases. In the area of talent, the aerospace and defense industry is also being tried by the need to replace the many talented and often instrumental workers that are nearing retirement age. In many cases, talent shortages can make the difference between hitting or missing

contractual milestones and affect companies' ability to continuously innovate and compete in the global economy.

Any of these demands has the potential to take an otherwise sound program off track. Risk elements are growing and becoming more complicated, creating the potential to add to the scope of the program or delay it. Identifying risk is not an intuitive process and that no one person can accurately identify the innumerable contingencies that can and do arise.

This challenging environment and its associated risks clearly demands program management excellence. Yet half the respondents in a recent Aviation Week and Space Technology survey said the aerospace and defense industry does only a "moderate" job of program management. Nearly 60 percent of respondents "expressed deep concern about the ability of their suppliers or partners to meet schedule requirements." Approximately 80 percent said that they were using different metrics than their suppliers which often leads to misalignment of goals.

So it should come as no surprise that more than a few programs are running into difficulties. For example, Airbus saw the budget for its A380 super-jumbo jet program rise to €12 billion from €8.8 billion amid delays to wiring systems and penalties for late deliveries. The result has been substantial losses for parent EADS.

Aerospace and defense companies need a better way to contend with the paradox of managing long-term programs in an environment of short-term change. They must improve their agility by anticipating and planning for the risk these changes invariably create. Continuing to build expertise in program and risk management will go a long way to helping them see further down the program road.

PORTFOLIO, PROGRAM, PROJECT & RISK MANAGEMENT TODAY

How can aerospace and defense industry companies meet these enormous threats and survive and thrive in the future? Let's get the opinion of several key industry experts. According to Jim McNerney, Chairman, President and Chief Executive Officer, The Boeing Company, it all comes down to execution: "Setting aside the risk of further economic weakness or larger-than expected adjustments in defense spending, our biggest single task over the next few years is to execute. It is to do everything we say we are going to do—in designing, developing and delivering new airplanes and other products and services on schedule and within budget."¹

Hans Peter Ring, Chief Financial Officer, EADS, points out the importance of agility in matching the company's efforts with the demands of the customer: "There is a mismatch between the top-down macroeconomic scenario and the bottom-up position of our order backlog at the end of 2008. To understand this, we are closely following the macroeconomic and air traffic developments while micro-managing

¹ The Boeing Company – 2008 Annual Report,

With the help of Primavera and a significant culture shift to focus on earned value management (EVM), Bell Helicopter has significantly improved its performance. In 2009, DCMA returned for an audit and found Bell Helicopter to be compliant in all 32 areas that it evaluates, which places the company among only three other companies worldwide to achieve that level of proficiency. This achievement has restored customer confidence in Bell Helicopter and also enabled the company to recapture previously withheld payments.

our delivery positions through close contact with airlines. From what we learn, we will make proactive decisions about production rates.”²

Finally, a recent PriceWaterhouseCoopers study³ says that the key to success in this formidable environment is effective program management: “Those companies that consistently achieve their goals and deliver on the promises made to customers and owners alike have one thing in common. They effectively assess and manage programs and risk, and they therefore invest time, resources, and talent in successful endeavors that further the company’s strategic objectives.”

Effective management of programs and risk requires meeting exacting schedule, cost and resource constraints while relying heavily on a virtual enterprise that is scattered around the world and in many cases only loosely under its control. To make the sound decisions needed to accomplish this goal, program managers need to have visibility into the programs and how their subcontractors are performing. Only the ability to measure performance in real time across a common set of metrics makes it possible to take corrective action and communicate progress to customers, higher management and business partners. Likewise, visibility is essential to the effective identification and management of program risks.

Program management issues cannot be solved by simply adding people armed with spreadsheets that contain data from many different sources. Much of the data contained in spreadsheets may be duplicated in other tools and often is outdated or inconsistent and a large amount of manual effort is typically required to perform data rollups. In addition, managers need adequate training in the discipline of program and project management to manage the complexity in these programs.

Enterprise project portfolio management applications such as Oracle’s Primavera solutions enable program and project managers to collect and analyze the necessary information to successfully manage programs and risk. These solutions provide seamless visibility into program status, ensuring that every phase of the project meets the changing needs of the customer and the program is delivered on time and within budget. They help meet EVMS standards by integrating detailed cost information from relevant systems with the program schedule. EPPM applications also promote collaboration across the global enterprise by providing real-time information flow, common metrics and workflow tools. While no enterprise project management tool can ensure sound project management practices, Oracle’s Primavera solutions provide the basis to build methodologies to help managers understand and follow a disciplined project management approach.

² EADS Annual Review 2008

³ PricewaterhouseCoopers LLP, “Creating Competitive Advantage – How to Transform Program Management”, 2007

BENEFITS OF ENTERPRISE PORTFOLIO, PROGRAM, PROJECT & RISK MANAGEMENT

The latest generation of enterprise project portfolio management (EPPM) tools help aerospace and defense industry program managers meet the challenge of doing what they say they are going to do when they say they are going to do it by helping to select, manage and execute programs and projects while managing the associated risk. These tools enable leaders and project team members to

- Leverage one version of the truth with real-time data across all programs and projects rolled up to divisions or groups, with accurate and relevant reports
- Increase engineering and manufacturing productivity through better planning, allocation of resources, and cross-training to optimize operating costs
- Obtain immediate transparency and access to budgets, resource allocations and project status
- See performance details for each business unit that can drive down costs and free up cash
- Swiftly respond to changing priorities while effectively coordinating multiple programs and projects
- Leverage probabilistic cash flow analysis at both the project level and across projects—taking into consideration the risk and uncertainty of the project—to help identify possible areas of over- and under-allocation.
- Pose “what-if?” scenarios, allowing stakeholders to see in real terms how even a slight contingency will affect the project and how different responses will impact the budget and schedule.
- Provide the visibility needed to manage risk in a volatile business environment
- Promote collaboration across the virtual enterprise
- Successfully obtain top performance from virtual enterprises while delivering programs and providing exceptional customer value.

Bell Helicopter Textron, Inc., an industry-leading producer of military and commercial aircrafts, was able to transform their business by implementing Oracle’s Primavera solutions. Yancy Qualls, Manager, Integrated Program Scheduling at Bell Helicopter, explained how Oracle Primavera helped them achieve earned value management and program success. “Our cost information previously resided in a home-grown system and many spreadsheets and we had many non-integrated schedules in Microsoft Project. The integration of cost and scheduling was manual and error-prone. Earned value [EV] was not a part of our management culture but rather was treated as a reporting tool. After we lost our EV validation and had money withheld on several projects, EV started receiving management attention.

“Primavera Risk Analysis provides better metrics to improve our estimates and accuracies and gives us an early look at identifiable risks that will help us improve our target dates and more efficiently evaluate our business opportunities.”

- Stuart Retter, Risk Management and Earned Value Management Integration Lead, Bell Helicopter Textron, Inc.

We looked at several alternatives and selected Oracle Primavera because it best met our needs. Our choice was well received by our customers with one saying we had picked the ‘Cadillac of scheduling tools.’ EV has evolved to an essential part of managing our business. DCMA brought in four teams to audit us and found that we were only the fourth company ever that was compliant with all 32 guidelines. Our money withholds were returned. Our end users love Oracle’s Primavera applications because it provides an unmatched combination of power and ease of operation. We have already integrated them with several essential Bell management systems and are working to integrate others.”

Another area that Bell Helicopter has improved is risk analysis. In particular, the company was looking for a solution that would help it not only meet, but exceed, the requirements for probabilistic analysis of key contract completion dates under the U.S. government’s Data Item Description (DID) document that defines the contractual requirements for all major defense contractors. The DID was the catalyst for Bell Helicopter to begin working on internal processes that would yield a stricter adherence to project management and risk management standards that exceeded government standards. Bell Helicopter also felt a solid risk analysis platform would also serve to stabilize estimates and projections.

With Primavera Risk Analysis, Bell Helicopter is able to incorporate risk analysis processes into all projects, from proposals to in-progress projects to cost reduction initiatives. The Primavera tools help Bell Helicopter identify common scheduling pitfalls that may result in misleading schedule or risk analysis results and report confidence levels with regards to finish dates and costs, among other factors. “Now, we can more accurately predict the success of a project based on schedule and cost,” said Kim Herrington, Vice President, Cost Management Integration, Bell Helicopter Textron Inc.

CONCLUSION

As the need to successfully plan and execute programs and projects grows, those with a strategic understanding of project management and risk assessment will be best positioned to succeed. Enterprise project portfolio management (EPPM) applications, such as Oracle’s Primavera solutions, allow aerospace and defense industry leaders to succeed by developing far-sighted strategies and executing them in a rapidly-changing and risk-prone environment. By deploying EPPM solutions that provide complete visibility throughout the virtual enterprise, aerospace and defense companies will be able to make decisions that will enable them to do what they said they were going to do when they said they were going to do it in order to survive and thrive during challenging economic times.

Enterprise project portfolio management applications, such as Oracle’s Primavera solutions, enable aerospace and defense companies to survive and thrive in tough economic times.



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