

The Real Cost of Risk

Reducing cost and schedule overruns at the U.S. Department of Defense

Cost and schedule overruns are common hurdles for Department of Defense (DoD) programs, but this need not be the case. By improving the focus and precision of existing risk management tools, program executive officers, wing commanders and other senior leaders can better identify, analyze, understand and manage the cost and impact of their programs. This will be vital as tighter budgets and congressional oversight require a systematic and disciplined understanding of where technical and schedule risks are likely to occur—and the probable costs.

There are plenty of reasons for the recurring cost and schedule overruns in Department of Defense major acquisition programs—and they tend to fall into several common categories. An unproven technology winds up costing more and taking longer to implement than initially anticipated. Quality issues arise among suppliers forcing schedule delays. Funding for a project or a system is suddenly reduced.

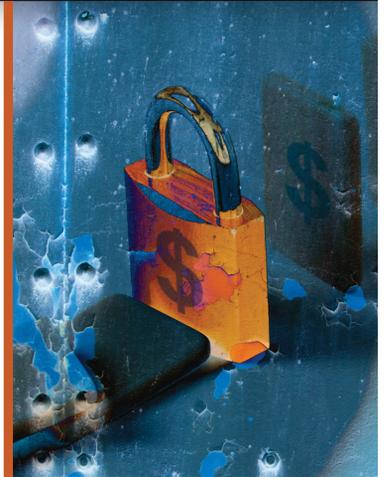
The DOD already has many of the tools that can help predict and mitigate such problems before they happen. But to address them more thoroughly, an advanced risk management approach is required. Advanced risk management provides a thorough and preemptive approach to managing unexpected threats as it puts a monetary value on risk, provides a mechanism for evaluating program scope, requirements and budget, and reduces project costs and schedule overruns.

Risk: A Preemptive Approach

Contractors typically address potential program risk by dispersing anticipated costs throughout their cost estimates or burying them in fees. This “peanut butter spread” approach impedes transparency, as you never know the true underlying risks of a program, or if all threats are being sufficiently addressed and mitigated.

A preemptive risk-management approach places a financial value on threats, calculating the real costs of potential risks in a program, thus improving the ability to meet cost estimates and schedule deadlines. This is far more effective at reducing scheduling and budgetary overruns than the more generic “management reserves” normally put in place to cover overages that occur after a program has begun (see sidebar: *Putting a Dollar Value on Risk on the following page*).

The analysis also plans for the ever-present execution setbacks, so program leaders can budget resources



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Putting a Dollar Value on Risk

In a recent business case analysis (BCA) performed for a client in the U.S. Department of Defense, we were asked to examine two potential systems, evaluate the associated requirements and related costs, and make a purchase recommendation. Our team analyzed and evaluated technical risks, created a risk heat map, and calculated a dollar-risk premium for each system. The risk premiums were significant—more than \$100 million, or 15 to 25 percent of the system budget for each. We identified the capabilities and functional elements that would have the largest impact and pinpointed which ones were most likely to affect each system.

Enter the “Heat Map”

Analyzing risks based on requirements and capabilities alone does not provide sufficient detail about where in a program or system true threats could occur. A more detailed analysis is needed to map risks along the entire spectrum—from the larger-scale capabilities down to the functional elements. We use a risk “heat map” to allow visibility into how certain requirements and capabilities are tied to particular setbacks, and how issues unfold throughout a system or program (see figure 1).

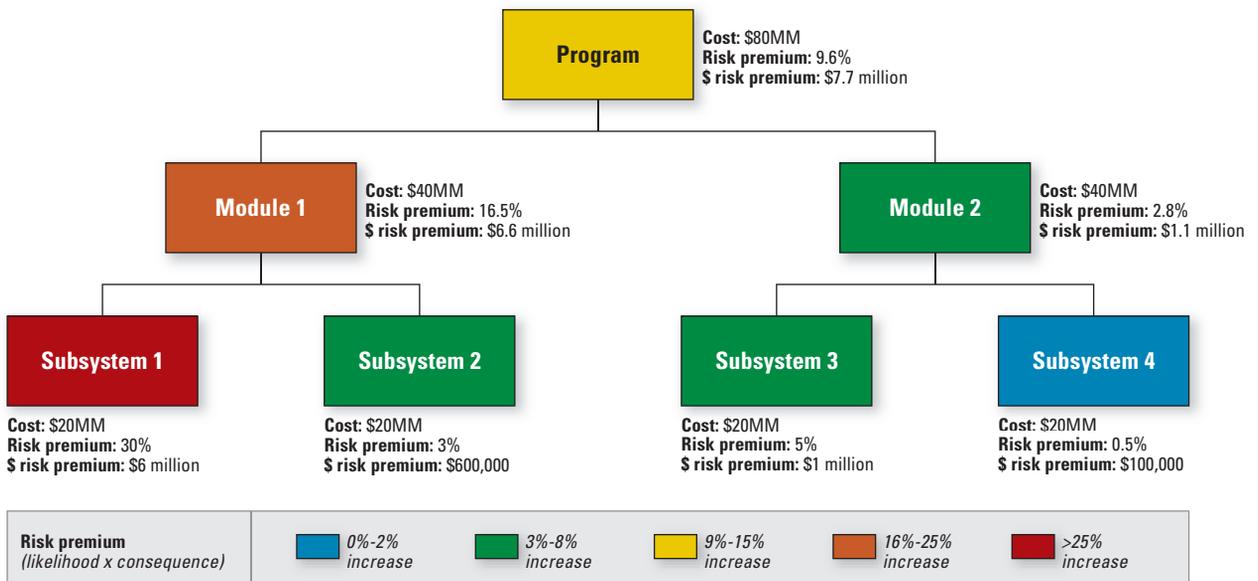
A heat map is a real-time management and communication tool. It focuses limited resources on the highest risk areas that could have the biggest impact on the system if they were to occur. Armed with this knowledge, program leaders can make informed decisions about scope and design

appropriately and anticipate problems before they arise. And developing a mitigation plan for high-risk areas can save time and money when and if a problem actually manifests. It compares how often an event could occur with how the event might affect scheduling.

The beauty of a preemptive approach is that it forces all stake-

holders to examine scope, budget and requirements of a program before production begins or implementation takes place. Identifying potential setbacks early in the design and acquisition phases, for instance, increases the probability that a program will be completed on schedule and within budget.

FIGURE 1: A “heat map” illustrates how risks manifest throughout a system or program



Source: A.T. Kearney analysis

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changes to avoid potential threats, and to chart a realistic schedule. Figure 2 demonstrates how a schedule can be altered as modifications are made to deal with additional requirements such as new technologies.

Furthermore, a heat map can be revised in terms of downscaling decisions, offer an understanding of how mitigation actions can reduce overall system risk, and can be used to plan

for “what if” scenarios.

Indeed, in work for the U.S. Department of Defense, we were asked to evaluate the risks associated with the proposed timeline of a new system. We examined the technical risk, created a functional element heat map, and explored the impact of all potential disruptions on the proposed baseline schedule. Based on the assessed impact of the potential risks

that we identified, we determined that development costs could increase by 38 percent and could take two additional years to complete the system. By understanding the causes of potential risks, and identifying which ones were most likely to affect the timeline, program officers were able to employ mitigation plans and develop procedures to stay on schedule.

Conclusion

A preemptive approach to risk management provides a way to monitor potential disruptions, offers monetary incentives for handling them, and grants support for those in decision-making positions—thus helping program executive officers reduce those costly time and budget overruns before they happen.

FIGURE 2: Schedules change as new requirements are introduced

Schedule slippage estimation									
Base schedule (total staff size = 100 FTEs)									
Activities	Required effort	Dependencies	June				June		
			Week 1	Week 2	Week 3	Week 4	Week 1	Week 2	
Capability 1 development	400 man weeks	None	100	100	100	100			
Capability 2 development	100 man weeks	Capability 1 complete					100		
Modified schedule (total staff size = 100 FTEs) ■ Denotes additional time									
Activities	Required effort	Dependencies	June				June		
			Week 1	Week 2	Week 3	Week 4	Week 1	Week 2	
Capability 1 development	400 man weeks	None	100	100	100	100	50		
Capability 2 development	100 man weeks	Capability 1 complete					50	100 (50)	100 (50)
Total schedule slippage: 1 week (20%)									

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