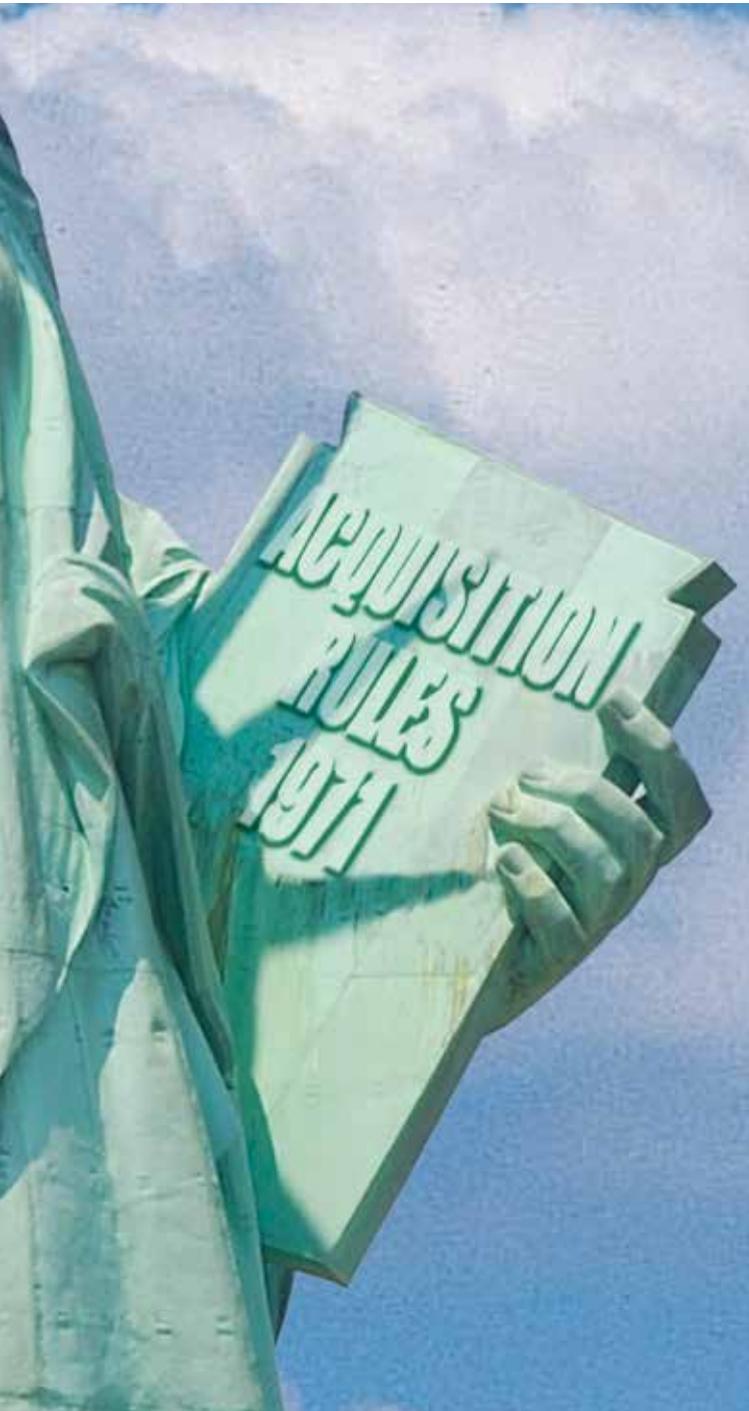




# The Original Better Buying Power— David Packard Acquisition Rules 1971

Frank Kendall



In this article, I thought I would give us all a break from our budget woes, sequestration, and continuing resolutions—issues I hope will be resolved before this goes to print.

In 1971, I graduated from West Point. This was also the same year that David Packard, the Packard in Hewlett Packard, who was then the Deputy Secretary of Defense (there was no Under Secretary for Acquisition), published his rules for Defense Acquisition. I wouldn't say there has been nothing new under the sun since then, but some things do endure.

Recall that by 1971 we had already been to the moon, and the digital age, enabled by solid state electronics, had just begun. By the fall of 1971, I was at Caltech where I designed logic circuits using solid state integrated components that included a few specific logic functions—several orders of magnitude from current technology, and I was reducing experimental data using the first engineering math function digital calculator. My slide rule had become obsolete. Deputy Secretary Packard's rules, however, still resonate. I recently had them put on a poster and hung it in the Pentagon in the room we use for Defense Acquisition Board (DAB) meetings. Here they are with a little commentary from both David Packard and me. You should recognize a number of areas of overlap with Better Buying Power.

## **1. Help the Services Do a Better Job.**

*Improvement in the development and acquisition of new weapons systems will be achieved to the extent the Services are willing and able to improve their management practices. The Services have the primary responsibility to get the job done. OSD offices should see that appropriate policies are established and evaluate the performance of the Services in implementing these policies.*

I continue to struggle with achieving the appropriate degree of staff "oversight," but I certainly agree with this sentiment. Services manage programs. As Defense Acquisition Executive (DAE), I set policy and I make specific decisions about major investment commitments for large programs, usually at Milestone Reviews. The staff supports me in those decisions, and I expect solid independent "due diligence" assessments for

those decisions from the staff of the Office of the Secretary of Defense (OSD). All other staff activities should be about helping the Services be more effective, ensuring that our policies are well defined, and getting feedback on what works and what needs to be improved in our acquisition practices.

## **2. Have Good Program Managers with Authority and Responsibility.**

*If the Services are to do a better job, they must assign better program managers to these projects. These managers must be given an appropriate staff and the responsibility and the authority to do the job, and they must be kept in the job long enough to get something done.*

I don't know anything more basic and important to our success than this imperative. Having seen more than 4 decades of defense acquisition policy changes, I am absolutely convinced that nothing matters as much as competent, professional leadership. Once you have that, the rest is details. It

purpose. I've seen several variations of this; during my first tour of duty in OSD, we used "Cost as an Independent Variable" to try to capture this idea. The approach we are using now relies on the affordability caps (which are based on future budget expectations—not on cost estimates) that we are establishing early in the design process or product life cycle (Milestones A and B). The requirement to deliver products that meet the affordability caps is intended to force requirements prioritization and trade-offs among competing needs. I plan to insert a Requirements Decision Point prior to Milestone (MS) B to help facilitate this. I will continue to put these affordability caps in place and will be enforcing them over the next several years. For non-ACAT I programs, the Services and Agencies should be doing the same.

## **4. Make the First Decision Right.**

*The initial decision to go ahead with full-scale development of a particular program is the most important decision of the program. If this decision is wrong, the program is doomed to failure. To make*



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was my concern for the professionalism of the acquisition workforce that led to the inclusion of an additional category of initiatives focused on our workforce in BBP 2.0. We have a lot of good, even great, extremely dedicated, professionals working in Defense Acquisition. But we need a deeper bench, and every one of us can improve on our own abilities. In the tough budget climate of today, managers at all levels, including Military Department and Agency leadership, should pay a great deal of attention to retaining and managing our talent pool. At the tactical level, I'm looking for some opportunities to take a "skunk works"-like approach to a pilot program in each Service. The key to implementing this approach, however, and what I want to be sure of before I authorize it, will be a highly qualified and appropriately staffed government team that will be with the project until the product is delivered.

## **3. Control Cost by Trade-Offs.**

*The most effective way to control the cost of a development program is to make practical trade-offs between operating requirements and engineering design.*

The affordability as a requirement element of Better Buying Power is intended to provide a forcing function for just this

*this decision correctly generally will require that the program be kept in advanced development long enough to resolve the key technical uncertainties, and to see that they are matched with key operating requirements before the decision to go ahead is made.*

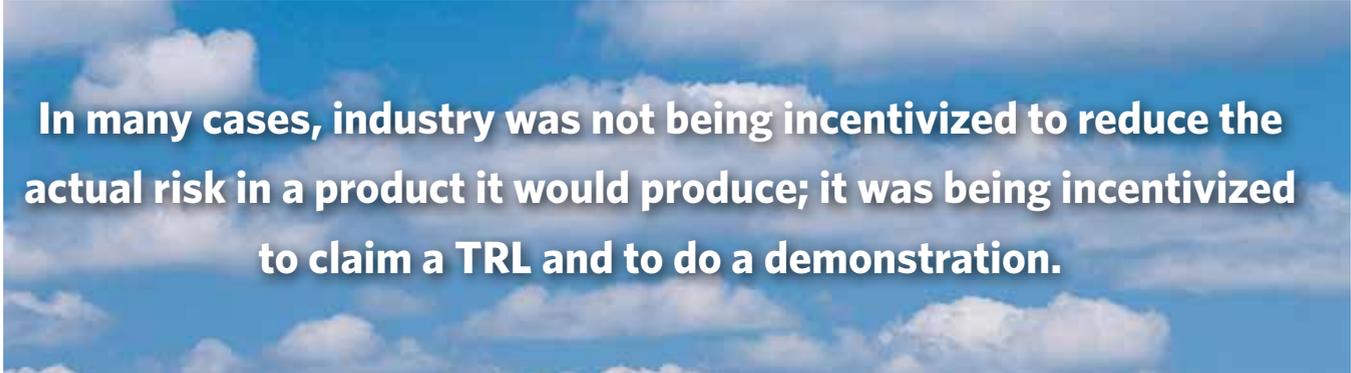
I have long regarded the decision to enter Engineering and Manufacturing Development (EMD) as the single most important decision in a program's life cycle. The name has changed several times over my career, and Deputy Secretary Packard refers to it as full-scale development—but we are talking about the commitment to go on contract for design of a producible product that meets stated requirements, engineering development test articles, and for the tests that will be necessary to confirm performance prior to starting production.

At this point, we are committing to on average about 10 percent to 20 percent of the product's life-cycle cost to years of development work, and to getting a product that we will field ready for production. Among the most disturbing sources of waste in our system are the programs we put into EMD, spend billions on, and then cancel—sometimes before EMD is complete and sometimes after some initial production. Part of getting this decision right (in addition to affordability) is having the

risk associated with the product and its requirements under control and sufficiently understood and reduced so EMD can be executed efficiently and successfully. In recent years, we have focused on the Technology Readiness Level (TRL) as a metric for maturity. I find this metric to be useful, but not adequate to the task of assuring readiness to enter EMD, and not a substitute for a thorough understanding of the actual risk in the program—necessary but not sufficient, in other words. In addition to technology risk, we have to manage engineering and integration risks. More importantly, we have to deeply understand the actual risk, what it implies, and what the tools are to mitigate it before and during EMD. I commissioned a review of programs transitioning from Technology Development into EMD over a year ago and discovered we are not paying adequate attention to the actual risk associated with the actual product we intend to acquire. In many cases, industry was not being incentivized to reduce the actual risk in a product it

The decision to enter production at MS C is different. Here the emphasis is on whether the design meets requirements and is stable. I would regard this decision as a close second to the EMD decision in importance. Once we start production, we are effectively committed, and it will be very difficult to stop. I seriously considered stopping F-35 production a year ago, but I believe I made the right decision to continue. We shouldn't put ourselves in the position of having to make that sort of a choice.

Before the commitment to production, the ability to meet requirements and the stability of the design should be demonstrated by developmental testing of EMD prototypes that are close to the production design. Some degree of concurrency usually is acceptable; all testing doesn't usually have to be complete before the start of low-rate production. The degree of concurrency will vary with the urgency of the need for the



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would produce; it was being incentivized to claim a TRL and to do a demonstration. This isn't necessarily the same thing as reducing the risk in an actual product. The label of a TRL isn't enough to ensure that the risks of a product development are under control; we have to look deeper. This decision is too important to get wrong.

### **5. Fly Before You Buy.**

*Engineering development must be completed before substantial commitment to production is made.*

If you have read any article about the F-35 Joint Strike Fighter in the last year, you probably saw a quote of my comment about "acquisition malpractice." I was talking specifically about the decision to enter production well before the first flight of a production representative EMD prototype. The earlier Milestones in our Materiel Development Decisions (MDD) system for weapons acquisition—MS A and MS B—generally are based on planning documents and analysis. MS B also is based on risk-reduction activities, but if these have been completed, the balance of the review is about intended business approaches, engineering, test planning, and funding adequacy.

product and the specific risks remaining. But as a general practice, we should "fly before we buy."

### **6. Put More Emphasis on Hardware, Less on Paper Studies.**

*Logistics support, training, and maintenance problems must be considered early in the development, but premature implementation of these matters tends to be wasteful.*

Most of the costs of our products are neither development nor production costs. It is support costs that predominate. These costs do need to be considered up front, early in the requirements and design processes and as the acquisition strategy is being formulated. They drive considerations of the data and property rights we will acquire and the implementation of open systems and modular designs (all features of Better Buying Power). While we should avoid setting up support functions too much in advance of need, we also should ensure that the ability to meet support requirements is designed in and tested at the appropriate places in the development program, and we must ensure that an adequate budget will be available to sustain the product. Better Buying Power's affordability caps on

sustainment costs are designed to ensure that these upfront analyses are conducted early in development, preferably while there is still competition for the development work, and before the design concept has matured to the point that trade-offs to improve supportability no longer are possible.

## 7. Eliminate Total Package Procurement.

*It is not possible to determine the production cost of a complex new weapon before it is developed. The total package procurement procedure is unworkable. It should not be used.*

Total Package Procurement is one of those acquisition ideas that come along occasionally and are embraced for a time until it becomes apparent they are not panaceas. I'm speculating, but I would guess the Deputy Secretary had seen some disasters come out of this approach. The idea is to get prices (as options, presumably) for the production run at the time we start development. I'm not quite as pessimistic as Deputy Secretary Packard was about the ability to predict production costs, but I'm pretty close. We are tempted occasionally to ask for production prices as options at the time we are doing a competitive down-select for EMD. This is tempting because we can take advantage of competitive pressure that we will lose after we enter EMD. While I wouldn't close out this idea entirely as Deputy Secretary Packard did in this rule, I think we have to consider this approach carefully before adopting it. There are other ways to provide incentives to control production costs, and we need to consider the full range of options and the pros and cons and the risks associated with them before we decide on an acquisition strategy or a contract structure for a specific product. BBP 2.0 takes this approach.

## 8. Use the Type of Contract Appropriate for the Job.

*Development contracts for new major weapons systems should be cost-incentive type contracts. (a) Cost control of a development program can be achieved by better management. (b) A prime objective of every development program must be to minimize the life-cycle cost as well as the production cost of the article or system being developed. (c) Price competition is virtually meaningless in selecting a contractor for a cost-incentive program. Other factors must control the selection.*

We seem to work in 20-year cycles. In 1971, David Packard supported the use of cost-plus contracts for development. About 20 years later in the late 1980s, we tried a policy or requiring firm fixed-price contracts for development. I lived that dream from the perspective of having, in the early 1990s, to extricate the Department from the disasters that ensued—not least among them the Navy's A-12 program cancelation, which still is in litigation more than 20 years later. Fast forward another 20 years, and we are seeing suggestions of using this approach again. Recently, I wrote at length about the times

With the assistance of the Office of the Secretary of Defense, *Defense AT&L* publishes the names of incoming and outgoing program managers for major defense acquisition programs (MDAPs) and major automated information system (MAIS) programs. This announcement lists all such changes of leadership, for both civilian and military program managers for January and February 2013, with some dating to December of last year.

### Marine Corps

**Col. Steven Girard** relieved **Col. Harry Hewson** as program manager for USMC Light/Attack Helicopter Program (PMA 276) on Feb. 1.

### Air Force

**Lt. Col. Michael W. Bishop** relieved **Scott C. Hardimann** as program manager of the Global Broadcast Service on Feb. 11.

**Col. Shaun Q. Morris** assumed the duty of program manager for the KC-46 Tanker as part of the Air Force Materiel Command reorganization on Jan. 14.

**Lt. Gen. Christopher C. Bogdan** relieved **Vice Adm. David J. Venlet** as program manager for the F-35 Lightning II on Dec. 6, 2012.

**Mr. Randall Culpepper** assumed the duty of program executive officer of combat and mission support on Dec. 2, 2012. &

when a fixed-price development approach might be appropriate, and I won't repeat that material here. There are times when fixed price is the right approach to development contracts, but it is the exception rather than the rule. I completely agree with David Packard that costs can be controlled on a cost-plus contract by better management. It requires hands-on management and a willingness to confront industry about excessive and unnecessary costs or activities. It also requires strong incentives to reward the performance we should expect, coupled with the will and expertise to use those incentives effectively. The importance of controlling life-cycle costs has been discussed earlier. I don't entirely agree that price competition is meaningless in selecting a contractor for a development contract, but I do agree that other factors should usually be of greater significance to the government. Most of all, I fully concur with Deputy Secretary Packard's overarching point: Use the contract type appropriate for the job.

If you get a chance to attend a DAB or DAES meeting, or just to come into the Pentagon, you can see David Packard's rules on the wall in Room 3B912. They still resonate. We have tough jobs, and the professionalism needed to do them effectively is a constant. There are no rules that can be a substitute for that. &