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"DoD-Sponsored FFRDCs: Critical to National Security"

**Address of
The Under Secretary of Defense for Acquisition and Technology
Honorable Paul G. Kaminski**

**to the
MITRE Corporation
Air Force Electronic Systems Center, Hanscom AFB, MA**

October 2, 1996

Vic, thank you very much for that introduction. It's a pleasure to be with you today. This is a special place for me. In 1964, I graduated from the U.S. Air Force Academy and drove from Colorado Springs to Boston. I spent the next two years at MIT. As I look at you today, I am reminded of the fact that this area has some special significance to the nation as well – there are many key centers of system engineering and technology excellence here.

Thomas Paine, one of the leading patriots of the American Revolution, once said "those who expect to reap the blessings of freedom must undergo the fatigue of supporting it." I think some of us have been bearing the "fatigue of support" for some time.

For nearly a half century now, America has invested heavily in the growth of a strong research and development establishment to sustain the technological supremacy of US combat forces. Our investment has served us well through the years. Today, the Department of Defense (DoD) sponsors 12 not-for-profit, federally funded research and development centers. Each of them have some very different missions. And they have some very different compositions.

FFRDCs: A CRITICAL NATIONAL ASSET

FFRDCs are a very critical national asset. I believe so for four basic reasons. First, they maintain long-term strategic relationships with their DoD sponsor – here at Hanscom, it's the Air Force. MITRE retains important strategic relationships with elements of the Intelligence Community and the FAA. Second, they perform the research, development and analytic tasks that are integral to the mission and operations of their DoD sponsor. Third, they maintain "core" competencies in areas important to their sponsors and employ this expertise to perform high quality, objective work that cannot be carried out as effectively by other private or public organizations. And fourth, they operate in the public interest, free from real or perceived conflicts of

interest. These are really the four key underlying reasons why FFRDCs are indispensable to national security.

These factors were among the considerations which led the Defense Science Board to conclude about a year and half ago in their independent review that: "FFRDCs should be retained on the strength of their quality and the special relationships they have with their sponsor's on matters of great importance to the DoD." And incidently, every single independent review and every inquiry that I have conducted has come back to confirm this basic fact. It's my sense that as the Department downsizes, FFRDCs have become increasingly important as centers of independent technical expertise and support.

The bottom line is that I believe – and this belief is held widely in the Department, both by civilian and military leaders – that FFRDCs are doing high-quality, high-value technical and analytic work that could not be provided as effectively by other means. Let me assure you that the people who are complaining about FFRDCs are not the users of their services or the recipients of their products. FFRDCs are doing their jobs for DoD and they're doing them well.

The essence of their value to DoD lies in the qualities that I mentioned previously, starting with the long-term strategic relationship. I might note that this is one area where DoD has been in front of the commercial sector in its acquisition practices. Successful commercial firms are moving increasingly in the direction of establishing long-term, strategic relationships with our key suppliers. They have found the result is often a higher quality product, at lower overall costs, in contrast to the previous practice of changing suppliers based on recurring, short-term low bids. DoD has long realized this benefit from FFRDCs.

I am not arguing that competition is inappropriate. The Department uses competitive processes to obtain the overwhelming majority of the goods and services that we require. But there are some circumstances and some kinds of work, for which the value provided by a strategic relationship far outweighs the potential gains of competition. Even in a long term relationship, if we are dissatisfied with the work performed, we have the opportunity for a "dissimilar competition" and outsource that work with another FFRDC.

PROGRESS WITH THE CONGRESS

We have had a very difficult period over the last three years. We've seen the Congress put various restraints on FFRDCs, including the somewhat arbitrary ceilings placed on expenditures, various restrictions on management, executive and employee compensation limits, and various other restraints on operations. One might almost get

the message that you are not wanted if you look at this list of restrictions and constraints.

I've made a commitment over the last 18 months to work with the Congress on these issues because I believe that our FFRDCs in general and MITRE in particular, are a very critical national asset that we need to continue to nurture and effectively exploit to leverage DoD operations.

On the whole, I've been working with very good support from most of the Congress in general on all of these issues. We were successful this year in having our issues heard in a full hearing before the House Military R&D Subcommittee. I think this session went very well. We have been working to move away from the arbitrary caps, instead to work to a program that I would describe as "core workload" – and manage on this basis rather than the imposition of arbitrary financial ceilings. The core concept gets at the heart of the special strategic relationship that exists between the DOD and our FFRDCs. It is difficult in some cases to define "core workload" with two or three digits of accuracy, but we have developed definitions that are gaining wide acceptance as a workable approach.

We have also been working to systematically move away from what I would call impositions on management of FFRDC operations. The Department's management initiatives, such as the FFRDC Management Plan and Five-year Plan, have convinced most of our critics that we have effectively addressed their concerns about our management and use of FFRDCs. Specifically, I think we are becoming effective in making the case that the Department will "stick to its knitting" where FFRDCs are concerned – to go back to using FFRDCs to perform only this critical "core" work for which they were established. And for those we have not fully convinced, I pledge to continue my efforts to work to convert the few remaining critics.

This is not something that was completely solved in this session of Congress, but I believe we have made significant steps forward at this point. And I believe we will see the momentum generated thus far carry us through the next year – I see the glass as a little more than half full. We've had generally supportive language in the Congress this year, but there's still some work ahead as we begin to resurrect and provide the kind of long-term basis for planning and stability that we need to be able to exploit the full potential of our FFRDCs.

For the first time since post-Cold War downsizing began, the fiscal 1997 Defense Authorization Act does not mandate a reduction in the funding requested for DoD sponsored FFRDCs. The fiscal 1997 Defense Appropriations Act – which was signed into Law by the President just two days ago – still placed ceilings on FFRDCs. But unlike previous years, these ceilings are no longer financial. And no longer, as a result of ceilings, does the law mandate a reduction in FFRDC support. The appropriators

have broken new ground in recognizing the Department's core concept and management by "staff technical equivalents" rather than arbitrary financial limits. This is a big step forward. There have been some quite sizeable funding cuts, but we have the flexibility to come back to the Congress with a reprogramming to restore funding.

I am cautiously optimistic that continued sound management by DoD will result in elimination of ceilings and compensation caps by Congress in fiscal year 1998. These are issues that will continue to be at the core of my priorities. I will tell you that I've devoted a lot of time to these issues because it's a battle that must be fought and won.

MITRE RESTRUCTURE

I want to reiterate the Department's general support for the MITRE Corporation's split into two separate, non-affiliated companies, with no common Trustees, officers or staff. As many of you know, the "MITRE Corporation" will continue to operate its two existing FFRDCs—the C3I FFRDC for the Department of Defense and the Center for Advanced Aviation System Development FFRDC for the Federal Aviation Administration. The new entity, created earlier this year, is a not-for-profit corporation formed out of the two non-FFRDC divisions from the old parent MITRE.

The Department believes that the split will focus the MITRE Corporation on its FFRDC operations and neutralize concerns where they existed about the use of FFRDC status to gain an unfair advantage over commercial firms. The Department did not specifically mandate this split, but it did establish the "core concept" and firm new rules regarding non-FFRDC activities—the split, in the end, was MITRE's decision.

I want to take this opportunity to thank all of you, the MITRE workforce, for their understanding, patience and dedication to excellence during this difficult period of transition when MITRE divided into two separate corporations. I expect the tradition of outstanding services to the Nation to continue as the new MITRE focuses more directly on the mission needs of its DoD and FAA FFRDCs. And I believe the results of that tighter focus will enable MITRE to strengthen and enhance its strategic relationship with the DoD.

AEROSPACE—SAIC MERGER

Now there has been another issue in the news which probably has your attention and that is the proposed merger of SAIC and the Aerospace Corporation—a DoD sponsored FFRDC. SAIC is a private for-profit corporation. The leadership of SAIC have presented the Department with a proposal to operate Aerospace on a for-profit, non-FFRDC basis. You have probably heard rumors that if the SAIC bid is successful—the fallout will impact MITRE.

I can assure you that as a Department, no decisions have been made. We are evaluating the SAIC-Aerospace merger proposal. The Air Force and members of my staff are carefully analyzing all aspects of the proposal. In this process, we are evaluating the issues that could impact the other FFRDCs, including MITRE.

One possible outcome of the proposed merger—if in fact this occurs and I'm not certain that the merger will go through—is to effectively compete, in “bite-sized pieces,” the tasks to be performed by the for-profit entities. This kind of outcome may discourage the merger. It does illustrate the kind of issues we must deal with as we evaluate the merger proposal.

FUTURE OPPORTUNITIES

Now, let me spend just a few minutes talking about the future—where we are headed and maybe a little about the role that you'll have to play in that future.

System-of-Systems Capabilities

The first trend I see is a greater move to what I call “system-of-systems” architectures. It places a premium on being able to put together the various components that we have developed in the way of sensor systems, communication systems and weapon systems. It's closing what is described as the “sensor-to-shooter links.”

There is a great range of opportunity for improvements here without major investments in the new system components themselves, simply by adding in the system engineering and the system integration glue to tie together in a better way those components. Many of you sitting in the audience today have a critical role to play in this kind of endeavor, understanding as you do, the aspects of many of these systems and how they can be better configured and tied together to be more effective in this closed cycle, or closed loop sense.

A chess analogy is useful for explaining what closing “sensor-to-shooter links” means for the changing nature of warfare. Today, precision weapons have now made it possible to take any piece on any square of the chessboard with no collateral damage to adjacent squares. Given this capability, it is important for our commanders to know what's on the chessboard. Commanders need to know where all one's forces are and where all the targets are on a 100 x 200 kilometer battlefield. This is analogous to seeing all the pieces on the chessboard—something we take for granted when we play chess. Imagine how fast you would win the game if you could see all the pieces on the board, but your opponent could see only his major pieces plus, perhaps, a few of your pawns. Now that's the way I like to play chess! And that's the way we want to be conducting

operations in the future. This is what it means to have "Dominant Battlefield Awareness."

A number of new systems are helping us see all the pieces—JSTARS and unmanned aerial vehicles like the Predator, for example. From the outside, JSTARS looks like an ordinary Boeing 707—one you might expect to find in some commercial air cargo fleets. As I work with my NATO counterparts on the Alliance Ground Surveillance system, it is beginning to dawn on many of them that JSTARS is more than just another sensor system—it's also a battle management system.

Early in my prior career as an Air Force officer, I had an opportunity to work on the predecessor to JSTARS—something called "Assault Breaker" with its PAVE MOVER radar. For nearly seven or eight years, our energy and focus was on the radar sensor. As we began to make the radar work, it occurred to us that the sensor was not the real issue.

The real issue was being able to fuse the information provided by this sensor with inputs from other sensors to form a coherent picture of the battlespace. And so we embarked upon a second phase of development—one that lasted another seven or eight years. If you go aboard a JSTARS aircraft today, you will now see 18 stations to fuse together this picture—to see the whole chessboard.

I think we are now engaged on a third phase of a development—one in which we develop the operational concepts that allows commanders to act on the fused ground picture within an adversary's decision cycle. Some of the same issues were encountered when we fielded AWACS—a system many of you know—to provide the complete air picture. The AWACS sensor provides part of the story in the Combined Air Operations Center—the CAOC. Inputs from other sensors, some of them satellite systems, are fused in the CAOC to provide a remarkable picture of the air battle—with each icon or "blip" on a display screen tagged with a wealth of information that is useful in dealing with the threat. This is where we are headed in putting together a picture of the ground battle as well. You have the critical core competencies to help make this system-of-systems construct happen.

Dual-Use Technology

A second key trend for the future is the growing opportunity to apply commercial technology and products to enhance the military capability of our forces. In this global economy we are living in today, everyone, including our potential adversaries, will gain increasing access to the same commercial technology base. And I think the military advantage will go to the nation which has the best cycle time to capture technologies that are commercially available; add the system engineering "glue" to incorporate them in weapon systems; and field new operational capabilities.

In this environment, we have no choice but to move from separate industrial sectors for defense and commercial products to a single, integrated national industrial base. Leveraging commercial technological advances to create military advantage is critical to ensuring that our equipment remains both affordable and the most advanced in the world.

We are already moving in the direction of not only using commercially developed technologies and co-producing defense items on commercial production lines – we are in some cases leasing commercial systems to support military operations. We are doing this today to support the NATO Implementation Force in Bosnia. Earlier this year, I approved the expenditure of about \$80 million on an information-communications system to improve the command, control and communications systems for the NATO Implementation Force about 3,000-fold.

This initiative has improved our communications capabilities in two ways: first, by leasing a transponder on an ORION television satellite to provide a direct broadcast communications capability; and secondly, by fielding a wide bandwidth, secure tactical internet connection through fiber and commercial satellite transponders.

These communications allow war planners and logisticians, on the ground in Bosnia, in the European Command Headquarters in Germany and back in the Pentagon to have access to the same data at the same time – this access is available to virtually anyone with a 20 inch receive antenna, cryptologic equipment and authentication codes. We've designed the system in such a way that we are giving local commanders a 5000 mile remote control to select the programming that they receive over their 30 megabits-per-second downlinks from direct broadcast satellites. The programming allows field commanders to receive weather reports, geospatial information in the form of digital maps, intelligence photographs, or secure video teleconferencing.

This system was deployed in six months. If we did this the old way, it would have taken something on the order of ten years. The secret behind this success was the use of the latest available dual-use commercial technologies, application of system engineering to develop the mission applications and architecture, and adding the system integration "glue" to missionize the equipment.

These are the kind of core competencies of the MITRE FFRDC. It is something the Department will continue rely on as we integrate dual use technologies in large system-of-systems architectures.

Acquisition Reform

The third future opportunity I'd like to discuss today is how to realize the benefits of our whole program of acquisition reform – the principal benefit being reduced acquisition cycle times. You play a major role here too.

Sometimes many of us in the acquisition business forget that our main aim is to field systems, not to review or slow down system development by imposing hurdles. My objective is to get systems fielded that will be useful to our combat forces and to do that as quickly and with as low a cost as we possibly can. And cycle time is a key measure of progress.

The importance of empowering the people in our acquisition system cannot be overemphasized. As I travel around and visit various programs and conduct sessions such as this one today, it is apparent that the principal advantage in our system comes down to our people. We are enormously blessed in this country with extremely talented people – both operationally and on the engineering side as well. In most situations, the issue is one of empowerment – that is, turning our people loose to really allow them to operate in an effective and efficient way.

A major goal of our acquisition reform activities is to begin to change that culture that we've all been operating under. A culture that has grown up from all the procedures we've established over the years to stop all the problems that have ever happened in the past, not realizing the horrendous opportunity cost that comes with being restrained from executing in a more productive way. It has produced a situation where we may be spending billions in order to save millions.

So one of the major thrusts of our acquisition reform activities is to remove all these restrictions in a systematic way, and it cannot all be done from the top. It does not good to sign a policy memorandum in Washington and say "OK, that's it, it's fixed." The communication channels need to be open – top down, bottom up and horizontally among peers. We need to not just be talking the talk, but walking the walk.

This was part of the reason for having an "Acquisition Reform Stand Down Day" and why you will begin seeing some new initiatives as a result of the feedback you have provided. It is my sense that we have made a lot of progress on our major programs. There is less progress on smaller programs as well as in our depots and base level contracting activities. Our goal is to create an environment in which it's sensible for program managers to take prudent risks, to use commercial items, to move the program on and to reduce our acquisition cycle times.

SUMMARY

In closing, let me underscore my own sense and that of the Department's senior leadership team about the value of FFRDCs.

FFRDCs are critically important national assets. They have provided key contributions in the past—contributions that I'm personally familiar with. And they will address critical needs now and in the future. Proactive management on the part of the Department will ensure the right environment exists for you to make these contributions. FFRDCs are the kind of assets that take a very long time to develop. Unfortunately, they can be destroyed in a short period of time by a few damaging actions.

We have made great progress with convincing the Congress of this fact. But there is more to do, and I am personally committed to working with the Congress to remove the remaining constraints on the operation of our FFRDCs. I am cautiously optimistic that we will be successful in reaching this objective.

The work of the FFRDCs is not over. I see an increasing—not decreasing—need for the kind of system engineering and integration skills that can make system-of-systems architectures work. These traditional FFRDC core competencies are vital.

The late David Packard once said, "Defense acquisition is the largest and the most important business enterprise in the world. It deserves to be managed with the highest standards."

I think we would have great difficulty in managing to the highest standards without your support.

Thank you all.