REMARKS OF PAUL STRASSMANN

My subject is cutting costs, and increasing defense effectiveness, through information management. The Defense Department is confronted with a phenomena which is encountered in private business only rarely. For the past forty years the Defense Department designed its information systems to deal with a single customer. With the demise of our wholesale customer, we suddenly find ourselves in the retail business. It is a retail business which is totally unpredictable, where we don't know where the next customer will come from, and how that customer has to be served.

To deal with that reality, this changed configuration of warfare and support, the Chairman of the Joint Chiefs of Staff put together on October 1991 a report on command and control functional analysis for consideration review. It is a very profound document, if you have an opportunity to obtain the document I highly recommend it to you. It outlines the specifications and the requirements for command, control, and intelligence for the 21st century. It shows the kind of distribution of information that is necessary to deal with low intensity and medium intensity warfare, and to cope with terrorists, drug lords, and local threats to our security. Basically the philosophy and the thinking of the Chairman of the Joint Chiefs of Staff report is incorporated into a new version of the National Military Strategy, the document, and it basically says that the shift of information management has to take place under conditions where regional counter-actions, contingencies, and conventional command & control, computer support capabilities must support rapid deployment. **One of the key variables of the new command & control environment is speed.** A brigade in two days is worth a division five months later. And therefore, precision warfare, precision delivery of violence, precision delivery of deterrence becomes a currency which requires a different configuration of information management.

Information that previously was available to a commander on the theater level, now has to be available down to the brigade level, and perhaps, in the case of Special Forces, has to be available to the platoon level. In other words, real-time display of both friendly and unfriendly estimated positions must be available to the platoon leader because the violence and the defense and the force of the thrust must be applied in a very measured way. The alternative of course is to use another form of warfare to which we have been accustomed, the so-called Clausewitzian form of warfare, which really relies on the massive application of force and massive destructive power which politically may not be acceptable, either due to the fact that our own casualties are politically unacceptable, but also to the fact that collateral casualties namely cannot be annihilated and dealt with the way warfare in other wars created casualties among civilians. Therefore a thorough understanding of the target, and rapid deployment, wars that perhaps may take less than 100 hours, actions that may take less than 100 hours, and we are talking about casualties of less than half a per cent is the kind of model of warfare that our information systems must deliver.

Now the question is, how do you move, and how do you provide that kind of support in the 21st century when you are confronted with a 20-30% cut in the defense budget. How

do you take the assets of information management from the Department of Defense, which today account for about 1.4 billion lines of code. If you want to do the multiplication, it costs us about $250 a line of code and then it costs us a quarter of that to maintain it. There simply is not enough cash flow, you don't even need a spread sheet to figure out there is not enough to support the modernization of an infrastructure for the Department of Defense that would be adaptable to the new requirements of the future, the new environment. **In fact, when you look at the Department of Defense, you discover that we have inherited an information structure that reflects an organizational design of the past. The organizational design provided for information systems that were built contract by contract. The Department of Defense has ten thousand integrated systems except none of them integrate with one another.** So we have eleven thousand mainframes in more than a thousand data centers. The average age of that asset is 11.8 years. This is during a technology cycle where the technology is running on a five year cycle and cutting down to four years.

The information assets that we have in place are very labor intensive, and they do not have adequate protection for security. Under conditions of terrorist attack on any CONUS (continental United States) base, the primary target of any future hostile attack on the United States, the most attractive target will not be tarmacs, on which you have airplanes, or shipyards. The most attractive target, which yields the best result, for the first ten kilos of gelignite will be the switching stations for information. Now I am not disclosing any secret information here, everyone knows it, so the question is, how secure are we. There is no way of hardening any data center against terrorist attack. Any determined, trained terrorist squad can take any data center they want, because that skill is available today, and therefore hardening is not the answer, the only answer is redundancy, the protection of information assets of the future, on the physical side, is redundancy. And therefore you should be able to kill five out of six nodes and still be able to operate and provide the essential support for the warfighters.

The doctrine of the Department of Defense also looked at the centralization of design. In the kind of war that we have been accustomed to over the last forty years, in many respects we imitated the enemy. When you fight somebody you become like them sooner or later. So we have these big monolythic organizations which are highly centralized and out of them span out something like a million workstations. Except these million workstations are cobbled together on little networks called Local Area Networks that you can today buy, just by going to the local store, and do your own local area network. The good news is you can create a local area network to satisfy your peculiar needs, and convert many of your bored people into fairly bad amateur programmers, never-the-less they get the work done. From the manpower standpoint the cost of supporting a million workstations by an amateur group is horrendous. We are talking about support costs which are 1/20th of what they should be. So clearly the Department of Defense is confronted with an enormous challenge, how to take a basically 1970s kind of distributed contract-oriented architecture, and converting it into an interoperable, survivable, secure, and highly responsive distributed architecture.

Now let me just give you some numbers. I will only talk about the infrastructure. This infrastructure, and this is not the applications. This infrastructure currently is running at the rate of eleven and a half billion dollars a year. With the reduction in the budget, over the next five, six years, and you can guess at that as well as anybody, you clearly see that there will be less money. The question is, where will the money come from for reconstitution and modernization of an obsolete Department of Defense infrastructure. To rebuilt the DoD infrastructure is about 25 billion dollars. It would cost about 25 billion dollars to take the current non-interoperable system, and create an interoperable, supportable, survivable structure for low intensity and medium intensity warfare. The point is that if you run the numbers, the only way how you can make the numbers, with what is important, namely a highly responsive warfighting capability, a highly responsive capability to deal with the future threat, in fact coming up an information infrastructure that will give our fighting men and women the predominant competitive edge, must be preserved. There is no compromise, as far as I am concerned with rebuilding the infrastructure of the Department of Defense.

With a reduced budget, then, the only way you can generate the cash, is through a reduction in operating costs. And this is where I would like to talk to all of you, who will be confronted with budget reductions, I will talk about a particular case, which is of interest to me, which is DoD, clearly there are cost-reduction implications for how you maintain national security under a different set of requirements, under reduced budget considerations. And I would like to recommend to you that you ought to give serious attention to a process which is now widely applied in the private sector, which is called competitive benchmarking.

Competitive benchmarking basically means that you find the best there is, and that becomes your minimum standard. Our fighting men and women deserve nothing but the very best, for their lives are at stake, and therefore they must also have the best technology at the lowest possible cost, and therefore we just have to be smart and try to get it. And that means that you have to find surrogates. Now let me give you an example from experience, Xerox. Now Xerox, and it should not come as any surprise, is among other things one of the world's largest merchant vendors of paper. In fact there is more money in the selling of paper than you make in the selling of copiers. The question, then, is, what is the cheapest way of supporting customers with inexpensive paper. And our bureaucratic establishment typically went to study IBM. Now IBM was actually in bigger trouble than Xerox back then, so our man would come back, and say, it cost IBM $8.50 to handle an order, and it cost Xerox $8.25, "now ain't we great". Now most likely what you will do, and I don't know what particular business you are in, but if you are CIA, maybe you will benchmark itself against GRU or DIA, now, I don't know how you do competitive benchmarking. My answer is "don't do that".

What you should do is go around and ask, "well who is the smartest, fastest, lowest cost distributor of mail order and telephone ordering in this country? Well, the answer is LL Bean. And so we went up to Maine, and we spent, my crew, two weeks, studying how LL Bean processes orders. And in fact their costs were by far the lowest. Their costs were about $1.20. A significant difference between Xerox costs and LL Bean costs because LL

Bean, uninhibited by the bureaucracy and acquisition rules, just did what made sense--that's what you do in Maine. There's nothing else to do. And so we decided to benchmark Xerox against LL Bean, and so forth. What is really happening today in competitive America, is people are looking at companies like Wallmart, and Federal Express, as the models of behavior for an organization. For instance, General Motors spare parts warehouse today is looking at Federal Express spare parts and inventory management techniques as a way of improving organization.

Well, the first thing I did, here at DoD, I started looking at cost-reduction potentials which were shown at companies which have to be down-sized. And by the way, you have an ample sample in the United States, starting with General Motors, Ford Motor Company, AT&T, IBM, Xerox, International Harvester. We have a bigger collection of organizations that have been down-sized, than just about anywhere you want to reach, and therefore the federal sector has no excuse for not looking for examples of how people slim down. And for instance we found, businesses, like GT&E, that they were able to reduce operating costs 25% per year; Texas Instruments, consolidated 36 centers into four mega-centers, got in 18 months a 50% reduction. EDS was showing consistent cost reductions on transaction costs of 27% a year.

In fact, there are organizations today that do bench-marking, there are commercial intelligence organizations that compile data and compile reports, that actually know the price of a ten-page report with or without color, and can tell you in detail. It is a very sobering exercise, and this is what we are doing today. I'm engaged in a massive, massive thrust to actually go and look at business processes. The business process methodology that is today applied in the Department of Defense is in place and we are now scaling up abut two new business analysis projects a week. These projects really rely on a technique that was developed by the U.S. Air Force in the 70s and remained dormant in the DoD except fore Corps of Engineers. They were really hard up, they had to earn their money, so I guess they went through this business process. But that technique, called IDES, was exported to Boeing and others, and the electronics part of General Motors. Basically the process consists of doing value-added engineering, on who does what to whom.

I must tell you it is a very sobering and traumatic exercise for a team of people to look at inputs and outputs for every activity in your respective organizations. we find organizations that have no outputs, and lots of inputs. We have organizations that have no inputs, and lots of outputs. We have quite a collection of diagrams in a big book, that I collect of these diagrams. And very intriguing because they reveal that **over the years, because of the organizational design that has been pursued, some people call it "turfing" around this town, in fact an enormous amount of redundancy has resulted. We have just looked at 90 out of 485 financial systems--the redundancy ratio is generally about 1 in 15; in other words, there are basically about 15 travel voucher systems being supported by separate programming staffs. They have no fundamental difference, but they generate enough additional disparity to warrant the employment of additional staffs when you consolidate the travel vouchers.**

The other peculiarity of the Department of Defense is the promiscuity of data dictionary. Many of you know how that the good lord found that one way of confounding any human venture was to confound the language. We gave started compiling a data dictionary for DoD which perhaps may be the most ambitious effort; but the policy that is that data does not below to the service or agency, but belongs to DoD, data is to be shared. And the liberties that organizations take in building their own data dictionaries creates an enormous amount of labor redundancy and error rates, enormous error rates. The recent example, for instance is, and I don't mean to pick on the Army--there is a Marine here so I am safe--in the Army there are 162 synonyms for the word "unit". So if you send a report to somebody saying we have such and such units, then you need extra staff to interpret what that means. Clearly in a combat situation this is not affordable, because if you want to disseminate data on the battlefield, the integrity of the data must be absolutely warranted. Therefore the definitions cannot be as varied and as open and as liberal as is currently the case. We are proceeding with a massive data dictionary building of data dictionaries, particularly in the area command & control, and message formats, and **we find for instance in the financial area alone we find that of 90 systems, only seven, actually, are necessary actually to get the job done. You save enormous amounts of operating costs, but you also simplify the system,for the redundancy automatically generates delays and error rates.** That of course then allows you to go into the diagrams, and do something that is totally unheard of in the federal sector, and that is to do activity-based costing.

Whether you are doing intelligence, or accounting, or material dispatch, or blood management, all information work is a variable cost. The fundamental view of the federal department, that cost is a sort of feudal privilege that the monarchy yields to you after a certain amount of bickering in the court is an obsolete view of how business is transacted. Organizations earn the ability to conduct business by selling transactions at the lowest cost. Consequently we have gone to activity based costing, so we can look at a base, or a warehouse, or medical supply depot, and start looking at what do they cost, and we are discovering some very unique attributes. Average orders, by the way, in DoD, cost about $85.00, just in administrative costs. Approximately 2 million orders per month are actually valued at less than $40.00. So the ordering cost exceeds the value of the merchandise. Of course you comply with all the procedures, and the auditors get ample employment by checking on your compliance with those procedures. But from the standpoint of information management you are basically robbing DoD assets and the security of the United States by putting money into low-value work, thereby you are depriving the ability and the security of the United States by having those funds available for high-value added work and security.

Let me just conclude with you what is achievable in the private sector. I do not want to generalize. But, when you look at the estimates which are available in the private sector, from an operating cost standpoint, the operating cost has to be reduced as a way of paying for the modernization --and we need modernization. **In this way of achieving the modernization, you should be able to look over a seven year period, operating cost reduction of on the order of 30-45%, strictly from getting agreement from the**

competing bureaucracies on joint requirements. It does not mean imposing absolute uniformity, because people want to look at some things differently, this is at the output end. But it clearly does not warrant that you have 20 payroll systems and 125 logistics systems. I understand, I will be trying to count certain image production systems in place, and I understand the number is classified, so I cannot tell you what the reduction potential is.

So once you have slimmed down the unnecessary variety in basic data and applications, that immediately squeezes out an enormous amount of hand-holding, supervisory, error-checking labor, you are then ready to go for the next round, and **on top of the prior saving get another 20% saving by going into the innards and doing value-engineering on the underlying flow of the business process.** It is called business process redesign. Now, can you do better than that, the answer is you bet you can. After you have simplified and streamlined, that is when technology comes in. That is when you can go from mainframes, which today cost about half a million dollars in operating costs per MIP (Million Instructions per Second), to distributed client-server architecture, which is also safer, less vulnerable, that runs now in the neighborhood of $60,000 per MIP, fully loaded operating cost. **So you are talking 8 to 1, 10 to 1, cost reduction, which gives you the money to do the conversion in the first place. So that gives you another 30% technology advantage.** My suggestion is, don't start technology solutions first. There is no reason why advanced technology should be used to run faster obsolete systems. First streamline, simplify, and only then apply advanced technology. The cardinal rule is to work precisely the other way. And that by the way is the bad new about information technology, it makes bad systems, and bad management, only worse. What does it all add up. These savings are not additive, they are multiplicative. But **somewhere here, in the public sector, there lies anywhere from 50-70% operating unit cost productivity-gain opportunity.** Now I beseech you to seriously consider that this is a worthwhile objective. We must have effectiveness in our infrastructure, in order to be able to increase the security of the United State, under conditions of a reduced budget. Thank you very much.

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