Interview with: GENERAL WALTER T. KERWIN, JR.

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MIS QUARTERLY: What do you believe that top executives, in your case top military officers, expect from their information function compared to what they actually receive?

GENERAL KERWIN: In the military, and specifically the United States Army, I think that we expect the same thing that any company or industrial organization expects. We expect to have information which is accurate, timely, current, and certainly information which is complete.

We've all learned that in the real world we have all sorts of variations on the ideal. For example, what we get one time may not be very timely, whereas another time it may not be very accurate. I think most of the top executives in the military, as with people in all walks of life, realize that we're not going to get all the things we want consistently.

We have to recognize that in the Army today we're about 80% dependent on ADP for such major functions as personnel management, logistics, finance, and command and control. We're now in a position where we are beginning to have our expectations met more consistently, and the capability we anticipated is now emerging. We think that we can meet our expectations with our current systems plus those coming into our inventory in the near future.

These objectives cannot be met unless top management is involved in ADP. When I first came into this job, I had the daily responsibility for overseeing the ADP for the entire Army. One of my biggest thrusts was, and is, to get top management involved in the whole ADP system. We began to recognize the importance of this factor back in the mid- or late '60's. We started to move the control and supervision of ADP slowly up within the organization. Finally, we placed this responsibility in the Office of the Chief of Staff.

It wasn't until just about a year ago that we established the Director of Army Automation. This move gave the manager much more responsibility than had ever been possible before. We began to recognize that expectations for ADP existed, and, even though our capabilities were rising, we had to get top management people involved in ADP in order to meet the expectations. We have made major changes and have pushed ADP responsibility up to the very highest level within the general staff in order to get proper ADP supervision.

MIS QUARTERLY: Do you expect any significant changes in the quality of the information you receive?

GENERAL KERWIN: We have new systems coming in all the time. My emphasis has been on these new systems in the last year. Still, do we really understand what our requirements are? Are we really moving toward meeting those requirements? Does everybody realize that the systems we have now, and the systems that are coming in, are not just peacetime systems? They must also be capable of being wartime systems. People have to start out with the basic premise that, even if we can meet peacetime requirements, if we cannot meet wartime requirements, we're a total failure.

Thus, my main thrust with the ADP people has been that we have to treat ADP with the same diligence that we treat our weapons systems acquisitions. I have tried to impress upon all the managers and the proponents building ADP systems that they must meet my one objective — if it doesn't work in wartime, I don't want it.

MIS QUARTERLY: A lot of the top executive information, in general, is likely not to be produced by computers. What would you describe as your principal current sources of useful information, keeping in mind that you just said that eighty percent is related to data processing?

GENERAL KERWIN: Eighty percent is related to computers, but the function of the Army Staff is to provide the Chief of Staff, Vice Chief of Staff, and senior management that information which is needed to make critical decisions. Thus, the top management of the Army gets information from external sources, such as the major commands, divisions, and installations; and from internal sources, such as from what is already available within the Army Staff.

Much of the information we get is already available from existing ADP systems, but we may have to go out and gain additional information. The major method of presentation, whether it be from files or from an ADP system, or from external sources, is by decision memos or briefings given to the Chief of Staff and myself. This is how we integrate all the information and present it for use in the decision making process.

MIS QUARTERLY: Let me get a better perspective. How big is the U. S. Army?

GENERAL KERWIN: The U. S. Army is a big organization — it is a diverse and complex organization. We have about 780,000 active military personnel. We have about 600,000 reserve personnel, which includes the Army Reserve and the Army National Guard. Finally, we employ 370,000 civilians, so we're talking about roughly 1.6 to 1.7 million people.

In addition, we have to consider the families of our officers and enlisted people. For instance, we have dependent schools in Europe and provide family housing all over the world. Intertwined in all of this activity are the ADP systems.

MIS QUARTERLY: In order to convey to our readers some idea of the magnitude of the Army, what, for example, is your annual budget?

GENERAL KERWIN: Our budget, in rounded terms, is 30 to 32 billion dollars a year. We're more diverse and complex than any corporation, even those with international affiliates.

We have sub-elements, such as Fort Hood in Texas which has roughly 55,000 people. We have close to 200,000 people in Europe, just in the Army itself. All of these worldwide forces are linked together by a complex network of information systems.

MIS QUARTERLY: Since ADP or information services impacts upon, and is impacted by, all parts of your organization, are they represented in the planning process from the beginning, or are they the recipients of the end product of your planning process?

GENERAL KERWIN: Within the Army, the primary responsibility for all planning is placed upon the senior staff people. The Deputy Chief of Staff for Personnel is responsible for certain systems, the Deputy Chief of Staff for Operations for others, the Deputy Chief of Staff for Logistics for still others, and the Comptroller for all of the financial management systems. We get all of these people directly involved in both the definition and the documentation of their requirements.

First we get the proponent to state what the requirement is; each must understand what is needed. The magnitude of the problem and the resources necessary to accomplish it must be understood. Whether or not it is going to work in peacetime or wartime, it is kept as simple as possible.

On the Army Staff, the Director of Automation is the one who is responsible for the automation program. This Director is responsible for the review of the whole program, and for the allocation of resources.

MIS QUARTERLY: What is the rank of this Director?

GENERAL KERWIN: He is a Major General. He is responsible for ensuring that all of the separate systems are integrated. As in many industrial companies, these systems originally were developed in response to functional needs, but they were not coordinated, integrated, or properly managed.

Advising him is an Automation Steering Committee which consists of generals representing all of the major functions of the Army. This steering committee acts like a board of directors for the Director of Automation. This committee is responsible to the senior Army leadership for overseeing the entire automation program.

Below these people are the functional managers. The functional managers have systems reporting directly to them. Then, as we move down to the major commands, there are the combat forces in the Continental United States, Europe, Korea, Japan, Alaska, Puerto Rico, Panama, and Hawaii. All of these commands have systems, too, which they manage through automation offices with their own staffs.

MIS QUARTERLY: Does the Director of Automation participate in major planning sessions at your level, or is this person told what the plans are, and to develop the systems to accommodate the plans?

GENERAL KERWIN: It is sort of 50-50. He *participates* in all of the planning. Also, since he is responsible for policy, planning, programming, and systems integration, he advises the Army Staff proponents and the field commanders regarding whether or not a proposed system actually improves the warfighting capability of the Army. It is up to the Director of Army Automation ultimately to tell me whether a system is good or not good.

MIS QUARTERLY: What criteria or methods do you employ in evaluating your information services function?

GENERAL KERWIN: We have some very large problems in this area. Just to give you an order of magnitude, the entire program we have today spends almost $1 billion for ADP. Looking at those systems, and the amount of money involved, the complexity and the magnitude of the problems we face worldwide can be appreciated.

MIS QUARTERLY: Does that expenditure include telecommunications?

GENERAL KERWIN: No, it does not.

MIS QUARTERLY: How do you measure the effectiveness of your effort?

GENERAL KERWIN: I think we measure it by the fact that we only have so much money to spend each year. Pay and allowances of people take a considerable portion of that. This is a fairly constant factor and a large consideration. Then we add inflation and all of the other considerations, *e.g.*, growth, and we strip these out of the monies available; then, the rest of the money that we have goes into the force readiness of the Army. So, the Automation Director's job is to make the best utilization of these funds in order to improve force readiness of the Army through the application of automatic data processing.

If we can make the *people* more responsive, then we have what we call a "force multiplier." The force multiplier enables all the people in the system to be more efficient and more effective. It makes them more timely, and more accurate.

The Director of Automation has to understand and have a broad appreciation of the entire Army. He has to have an in-depth understanding of all of the functions of the Army in order to oversee the systems which are presently in effect, to understand the systems which people are proposing, and then to integrate the whole thing. Now, if this can be accomplished, then we are making progress.

But on the other hand, if we get too many systems, and the systems won't work in wartime, we have a problem. We're conducting a "scrub" at the present time to find out how many systems we have that we think we don't need. For example, how many are overlapping? How many are really not cost effective? How many work fairly well here in the United States, but if put in Europe in a wartime environment, wouldn't work?

One of the jobs of the Director of Automation is to take a look at the present — how many systems do we think we ought to get in place and how many should be eliminated?

MIS QUARTERLY: In other words, part of the job is doing defeasibility studies?

GENERAL KERWIN: Defeasibility, just as well as feasibility, if you want to call it that.

MIS QUARTERLY: Let me ask a question which is particularly naive in this particular environment. Do you have a relatively good feel for the incremental benefits that the Army gets from the fact that it may have superior information — superior, let's say, to a competitor?

GENERAL KERWIN: I suppose, if you're talking in terms of competitors, you would be talking in terms of our possible enemies. The ultimate aim of all of our systems is to make us more effective in wartime. If we can do this, then we'll probably be more effective in peacetime.

Take, for example, any one of our battlefield systems. If we have an automatic system that can enable us to find the enemy, track where he is, target him with accuracy, get the information to whomever is going to deliver the ordinance on the target, and get it there faster by means of automation, then that is one of the measurements of the effectiveness of automation. This is one attribute that can be measured easily.

MIS QUARTERLY: What special considerations emerge in wartime that make systems not work, that otherwise work in peacetime? What are the special stresses or traumas that are involved?

GENERAL KERWIN: Take the personnel system. We have an installation in Fort Bragg, North Carolina; an installation in Fort Hood, Texas; and one out in the state of Washington. As in any automation system, everybody wants more and more information.

If they want something on an individual in one of these locations, they want name, rank, and serial number, and many other items. This could require putting in 150 items of information on each individual. We may be able to deliver these in peacetime; but when we take this system and install it in Europe, and we're fighting in Europe, the question is, do we need 150 items of information on that individual to fight the war? Do we really need to know when he had his last photograph taken or whether he has been to the Command and General Staff College? What are the essential elements of information that are needed to support that individual and service that person in the wartime environment?

Our problem is, we build up the systems in the States, and then, when we suddenly transfer them elsewhere in wartime, they may not be appropriate. The critical error that may be made is that we didn't stop to figure out how much information is needed in the Continental United States in peacetime to satisfy all of the administrative aspects of that person's life, versus what we really need elsewhere in wartime. Maybe we only need fifteen items of information on each person.

MIS QUARTERLY: Do you have some kind of a structure for putting information into the computer so that on level A this is strictly for wartime and level B might be for peacetime, so that during wartime you just scrub all of B?

GENERAL KERWIN: This is what we're now trying to do. We're presently taking a look at the personnel system. I realize that we don't need all of the present information for wartime. If we cut down on the amount of information on each individual by ten-fold and still obtain the objective, maybe we don't need any more computers. But, if we gather the 150 items of information, maybe we need 15 more computers.

MIS QUARTERLY: What approaches do you recommend that the CEO, in this case the Joint Chiefs, take to identify information needs and provide the resources to meet them?

GENERAL KERWIN: This is something that the Chief Executive Officer, whether it be of the Army or of any corporation, must identify. These needs are identified in the ordinary course of business, and turned over to the experts to automate, whether they be within functions or within a central automation agency. This process is the same as in the ordinary course of the business — the information needs are identified, automated or not.

MIS QUARTERLY: If you were looking for someone to head up your information services function, what kind of person would you look for?

GENERAL KERWIN: I think I touched on that as part of another question. Specifically we are looking for a person who is able to understand all of the functions of the Army. Within functions, this person needs to understand in depth, and understand what has to be done to integrate the various functions in order to meet the requirements and objectives.

This must be a person who can work with all of the other people. He must be able to work with the Deputy Chief of Staff for Personnel, understand what the Deputy Chief of Staff for Personnel's general requirements are, and how those requirements are going to be met, in both the peacetime and the wartime environments. In addition to this understanding of the staff function here at the department and on the Army level, an understanding that a lot of work must be done among the major commands is needed. This must be a person in whom we can have confidence that when he takes a look at a system, the requirement is thoroughly understood.

This individual must thoroughly understand how a system is going to be implemented and integrated, because, as it becomes complex, matters become more difficult. It's not just what happens up here in the Department of the Army that counts; it is what happens at the various levels as we start down, and finally end up down there at the soldier level, that is important.

MIS QUARTERLY: Is there a civilian counterpart to the General in charge of automation?

GENERAL KERWIN: No, there is no civilian counterpart in that sense, but all through the entire system, we have civilians. There are civilians in the Director of Automation's Office, as well as civilian technical advisors. The automation people at the various levels are not all necessarily military. We don't have a military system and a civilian system.

MIS QUARTERLY: Does your highest ranking civilian in data processing report to the major general who is your Director of Automation?

GENERAL KERWIN: Yes, but the point that I want to make is that just because we're military doesn't mean we have an all military staff. As a matter of fact, there are more civilians involved with the ADP than there are military.

MIS QUARTERLY: How do you set priorities within the Army for the allocation of the resources of the information function? How do you decide how much to spend? I know one of the statements that is voiced by many people about the Army or any of the military is that any time you want a computer, you just go out and get it. So, how do you decide how much to spend and who sets priorities?

GENERAL KERWIN: Perhaps in the past, quite some time ago, we could have been accused, and rightly so, of not setting priorities. Again, I think this was much the same in industry at that time. One of the problems we've had is that our structure for planning, programming, and budgeting has not been responsive to the identification of the automation systems that we need. This resulted in insufficient detail for the management element to identify which systems addressed which priorities.

At the present time, we're working on a planning, programming, and evaluation system for Army automation. We are going to be able to identify, by line item and by line detail, what is needed in order that our top management can identify what the systems are and what is needed to integrate the systems. What this system also does is enable us to pull out of the great mass of information that gets into the planning, programming, and budgeting of a system, and take a look at ADP so that we can be sure that we identify the resources which must be present.

One of our biggest problems before was that costs got so buried that we never did realize what we had in the way of ADP. Also, we might not have given ADP the resources which were necessary, or else we struck something out without realizing how it touched upon the automation system. Then, when the time came, we didn't have enough money and the proper allocation of resources to meet requirements. We think that this new planning, programming, and evaluation system is going to help us quite a bit.

MIS QUARTERLY: Do you have financial restraints imposed on you?

GENERAL KERWIN: You better believe it. Of course, the financial restraints are the overall constraints that we start out with. I'm not just talking about automation. We have to justify our expenses to the Department of Defense. The Department of Defense and OMB work together. Once the President's budget is drawn up, we have to go before the Congress. So, as we move up the line from what we think our requirements are, we start to get our budget cut. And, of course, the question is left as to how to allocate what remains.

We have what we call a planning, programming, budgeting system. First we come up with our program, and this goes through a whole series of committees. They take a look at what we're trying to do in terms of programming. Then we do the same thing once the program is approved. We may not get the monies to support some of the proposed programs, so we have to start again down with the budgeting committee where it is all fought out as to the allocation of resources.

Next, it comes up to what we call the SELCOM, or Select Committee. I head this committee, and it consists of all of the senior people on the DA staff. Depending upon the subject, we have had representation from the major commands. We decide what we will recommend to the Chief of Staff and to the Secretary of the Army regarding what the program should be, and/or, in the budgeting process, what the allocation of resources should be.

Finally, the process ends up with the Secretary of the Army and the Chief of Staff making a combined appearance before the Secretary of Defense, presenting what they think the issues are and where they would like to have their allocation of resources.

This is a continuous process. Right now, we're implementing the Fiscal Year 1978 budget. We have recently submitted the fiscal year 1979 budget to the Congress. The staff is now working on fiscal year 1980 budget which won't get up to my level until the action officers and division chiefs and so forth down in the staff put the budget plan together. Then it comes up to the planning committee, and up through the programming committee to the SELCOM. Next, the Chief of Staff and the Secretary of the Army receive the plan, and finally up to the Secretary of Defense.

MIS QUARTERLY: As in industry, if you were the president of an oil company, the data processing budgets compete with putting holes in the ground or putting up another chemical plant or another plastics plant. What you're saying is that your data processing budgets compete with another helicopter or another tank. You've got the people getting into sort of a "Donnybrook" internally, because each one thinks his own area is more important and someone has got to make the major decisions at the top.

GENERAL KERWIN: The ultimate decision, of course, is up to the Chief of Staff and the Secretary of the Army. The staffing process to come to that ultimate recommendation to the Chief and the Secretary of the Army, is the Select Committee. When I listen to all of them, and sometimes it takes six to eight hours at a time over a period of days and weeks, then it's finally up to me. Once I've listened to all the recommendations and listened to the proponents, the decision is made as to which way we're going to go.

Do all of the tanks get cut? Do all of the helicopters get cut? Does all of the automation program get cut? Of course, I'm exaggerating; *all* of them are not cut at one time. But the question is — where does the allocation go? It may vary from year to year. Maybe this year we need tanks so badly that several areas will have to suffer. That happens. Maybe the next year we suddenly realize that we haven't been putting enough resources into automation, so this is the reason we're emphasizing automation to get these battlefield systems up to date.

As an example of automated systems in the military, we have what we call a TACFIRE system. This is a system, and I'm being overly simplistic, to acquire our target and get the information back to a computer, then get the fire commands out of that computer down to the guns which will fire back on the target. Again being simplistic, prior to the time of TACFIRE we could look to a forward observer as a soldier standing out there on a hill with a

radio or a telephone. He would contact his battery of artillery or his battalion and tell them what to fire at by means of certain commands. It was all manually computed and sent back by radio or telephone down to the firing battery. There it was translated into firing commands for the battery, and finally they fired.

Now with TACFIRE, which is a computerized system, we have a digital message device. It is a little box. The forward observer sitting out there just pushes the fire commands in that box. In five seconds we can do what might have taken us as much as 12-15 minutes to do before.

MIS QUARTERLY: How does this system integrate with other services? I could see a situation where you might want the Air Force or the Navy to get in on the action. How do you do that? Is there somewhere a master box that puts it all together?

GENERAL KERWIN: What we're talking about here is a subject that we just discussed with the Chief of Staff this morning. It is called Fusion Center. This is the center back at Division or Corps in which all the information from all sources is received. Maybe it is sensors, maybe it's helicopters, maybe it's the forward observer, or maybe it's just a soldier who saw something from a hilltop. All that comes in to the Fusion Center where it is put on computers, analyzed, and may even be put up on display boards. The center is integrated with the Air Force and the Army, too.

MIS QUARTERLY: Who makes the decision, or how is the decision made? Let's assume you're in a land engagement, but you're near a sea somewhere. At what particular point is the Navy brought in, or is the Air Force brought in? I understand the Fusion Center, but who makes the decisions?

GENERAL KERWIN: The decision is always made by the Commander or his battle staff. The Commander is not standing there continuously making decisions to fire on a particular target, but in the course of the battle, he gives his priorities to his staff: *where* he wants to look for targets and *how* he wants to attack the targets. He is not there in the Fusion Center or the Tactical Operations Center twenty-four hours a day. He establishes certain priorities, and how he wants to fight the battle. The staff then fights the battle for that commander within his priorities.

MIS QUARTERLY: I can easily see where this is a vastly different story from a personnel data system in peacetime, to say the least.

GENERAL KERWIN: Yes. And that is the reason I keep saying that the "people" system has to work in wartime, too, because if we are going to be sending people to Europe to meet the battle situation, we have to have the information very quickly. We have to have people ready throughout the United States to send over there. So the replacement system, in addition to the logistics system, is key.

MIS QUARTERLY: You may have begun to answer this next question. I normally ask CEO's about their use of the Chart or Information Room concept and ask if they see their uses as a trend. I assume that you use it very extensively in the Army.

GENERAL KERWIN: Very extensively. As a matter of fact, this is what a Fusion Center is. A TOC (Tactical Operations Center) is similar in a Division to the Corps. As a matter of fact, this process even goes down to the company level. The company has, just to be simplistic, a tank or a truck with a shelter on it, and inside is their own little fusion center. They can have a display system there. It won't be very sophisticated, but when we talk about going to these Centers, yes — we do it at every level. If you go downstairs in the Pentagon from where I sit, we have an Army operations center. There we have all sorts of computers. We can go down there and get almost any type of display we might want, and on a worldwide basis.

MIS QUARTERLY: I'm intrigued by the dichotomy here. You're talking about making decisions under extraordinary circumstances, and wild pressures when it is literally a series of questions of life and death. You use displays and yet an awful lot of companies think it is a lot of nonsense in industry. Many have tried this

approach, but many more have not. I wonder if it's a question of the style of the CEO more than anything else. I gather from what you were talking about, that it is so ingrained in the Army that it is absolutely critical here.

GENERAL KERWIN: I think it is critical. In the first place, we are so complex, so scattered, and so diverse, that we need information systems in order to be able to respond. We couldn't operate today without ADP. Now if you consider this just in terms of peacetime, imagine what we are trying to do in wartime.

We're trying to get there "firstest with the mostest" in order to win the battle. If an automation system will help us do that, then we're going to be better off. We can't go back to the World War II methods where we pitched a tent and we had three soldiers there to help us on fire commands. They sat there with a headphone over the top of a map board, laboriously plotted the targets, and gave the fire commands.

This is the reason I described TACFIRE. What used to take us minutes to accomplish now we can accomplish in 5-10 seconds. So that means if we can get out instructions to fire back on the enemy artillery very quickly once we've located him, he's not going to be there to fire back.

MIS QUARTERLY: Let me ask a question you may not wish to even address. Are we ahead of others, particularly those who might be potential competitors or enemies?

GENERAL KERWIN: Yes, I think we are. Of course, all armies are moving into automation; some for better, some for worse. We think the people who might be possible competitors are moving into automation, too, but we think that we are ahead of them.

MIS QUARTERLY: I've heard from some friends that what happened in 1973 in the Middle East had significant impact on our thinking. Is this true?

GENERAL KERWIN: Yes. It had a significant impact since it revealed that, with the newer weapons we have and those that are coming into the inventory on the battlefield, there is going to be a much greater intensity of violence than has ever been before. In order to respond to that violence, to be able to have command and control, and communications and responsiveness, we must act quickly. We've got to be able to draw from all the information which is available to us, in order to be responsive at the proper time. If we don't have this capability, then we probably are not going to win the battle.

MIS QUARTERLY: My next question relates to looking at the 1980's where we ask business executives what they see as the two or three key problems facing business in general and how information services can help. Let me rephrase that a little bit and ask — what are some of the major problems that you see facing the Army, in general, and can information services help?

GENERAL KERWIN: We proved, at least to ourselves, that information systems do help. I'll go back to what I expanded on in a previous question. When we are working in an environment of constrained resources over what we think our requirements are, then we've got certain things which are almost fixed, like people, within those resources. Money is required to support and sustain the people. What falls out of the rest of it is what we've got in order to acquire weapon systems, service the people, sustain the people, supply the people, and perform all of the functions that are necessary for any military force. If we can make those people more responsive in the exercise of the functions such as servicing, supplying, and supporting, then we can reduce the number of people, and we can become more effective and do it faster. Therefore, we can have more resources within our own system to apply to the weapons, supply, support, servicing, and so forth.

MIS QUARTERLY: You sound like a good ADP salesman within the Army.

GENERAL KERWIN: I will be perfectly frank with you. When I started out in this position, I didn't have much of an appreciation of ADP and automation. I became the Deputy Chief of Staff for Personnel back in 1969 when I got back from Vietnam; I think that was just about the time that we began to come into the whole field of automation with a great burst.

I was then faced, as the Deputy Chief of Staff for Personnel, with a highly volatile people problem. As we were coming out of Vietnam and moving to an all volunteer Army, it was only then that I began to realize what automation couldn't do. Once I went through that experience, I began to realize that there were many people within the Army who really didn't understand what the limitations and capabilities of ADP are. So then I started to change the management system here in the Department of the Army to come up with a Director of Army Automation.

We've had several worldwide systems reviews to which I take all of the key people on the staff; we go to one of the installations, call in people worldwide, and sit down and discuss the automation problems. There may be as many as 400 of them, a great many of whom are general officers. There are commanders and people actually involved in the automation system. We spend two days discussing the various systems: what their capabilities are, what their limitations are, asking if we are headed in the right direction, finding out what we should be doing that we aren't, and what we aren't doing that we should be doing. It has been a very interesting experience.

MIS QUARTERLY: Where does the manager of information services exist in the organizational structure, and is this person responsible for all the automated data systems and communications?

GENERAL KERWIN: That principal person sits right up here along with me. He is not responsible for all the automated data systems and communications. This is an issue on which we had a very involved series of meetings in the last six or seven months. The question is, should the Director of Army Automation and the Director of Telecommunications merge all the systems?

We recognize that we have a problem. If you were to take a system in wartime and suddenly move it to Europe, in some systems the telecommunications would not support the automation system; that is, not to the degree that we need.

We are now in the process of looking at the entire telecommunications segment of our systems and seeing if we should merge, and if so, recognizing how it should be done in order to create the most effective systems.

MIS QUARTERLY: The industrial trend appears to be that more and more of the telecommunications functions are being put under the head of the information services function. In some cases the budget is greater in transmitting data, than it is for running the mainframes.

GENERAL KERWIN: If you think that this is a problem in industry, you can see what that problem is in the Army. Consider the problems on the battlefield in which we are moving around constantly with electronic warfare going on; and we must have security within our system and within our telecommunication system on top of that.

MIS QUARTERLY: With an organization as diverse and complex as the Army, how does the manager of information services structure the functional process, and how do you insure that the required integration among systems occurs?

GENERAL KERWIN: As I say, we are a complex, diverse, and widespread community, but we can break it down into seven or eight functions that we have to perform, so we can be simplistic about it.

For instance, I think that the first one would be that we have to *structure* some sort of a force. That is, what type of units do we need? So we need a Table of Organization and Equipment. We need so many artillery battalions, so many divisions, so many Corps, and so many logistical types to back it up. What they look like also must be established. Do they have 100 people, all with machine guns? Do they have 100 people, tanks, rifles, and machine guns and so forth? That is the first function.

Then we have to *staff* the Army, once we've determined its composition. So we must get the people, train them, and place them in the structure. This is the job of the Deputy Chief of Staff for Personnel. In peacetime we're talking about 1.3 or 1.4 million people; in wartime we might be talking about several million — nobody knows at the present time. Then we have to *train* them. They all must be trained in certain specialities. One has to be a machine gunner,

another has to be an artillery specialist, still another has to be something else. We assign each what we call a Military Occupational Specialty.

Then we must *equip* the force. This is the research, development, test, and acquisition of every type of equipment used by the Army. Then, we must *finance* the force. We have pay systems, appropriation systems, allocation systems, and accounting systems.

Then we have to *move* all of these people around worldwide. If we don't keep track of the people and the equipment, we'd need such a large inventory that we'd expend a lot of our resources just to keep a slush fund to try to fill all of those slots. Once we do that, we have to *support* the force. This means supply, maintenance, medical, construction, etc. I think last, but not least, we have to intelligently *command* the force. This involves both the command and control function as well as the intelligence function.

Each of these eight major functions and their supporting information systems is the responsibility of a senior general officer on the Army Staff. The Deputy Chief of Staff for Personnel is responsible for staffing the force. The Deputy Chief of Staff for Logistics is responsible for supporting the force. The Comptroller is responsible for financing the force.

Each one of these generals has to make sure that his information systems not only support his own function, but also interface as required with all other systems. Then as we go down each level to a major command, a corps, a division, or an installation, the commander of that level has to ensure that the whole system is integrated at his level. The Director of Army Automation here on the Army Staff has to ensure that all of these systems are integrated throughout the Army and that anyone who has any ideas or requirements for new systems considers integration issues before we accept them.

MIS QUARTERLY: Let us assume that you were addressing The Society for Management Information Systems, and you have just made a presentation describing how you satisfy your information requirements in running the Army. How would you conclude your remarks? Would you have any special thoughts or concerns to leave with the professionals in the MIS field?

GENERAL KERWIN: I would have to tell them things that they already know, or should know. First, management has to get involved. A system can't be left to technicians. This is one of the mistakes that we made when we first started. Second, requirements must be defined thoroughly. If the requirements are unclear, you'll end up with a system that is probably not responsive, since it doesn't give you what you want or it costs too much money. In our case, such a system may be fairly responsive in terms of peacetime in the continental United States, and yet not responsive in wartime. Last, but not least, don't let your automation get lost in your planning, programming, and budgeting.

MIS QUARTERLY: Let me ask another question which you may not wish to address. Are you restricted by the GSA procurement processes in acquiring hardware and software, or is that primarily the civilian government agencies?

GENERAL KERWIN: No, they're involved with the military, too. I wouldn't say we're restricted. GSA has certain responsibilities which are assigned to them by Congress. Of course, we're all bound to view our requirements in a different manner. We think that we need things that they think are not cost effective. They may feel that we have too many computers, that what we have are too expensive, or we should have consolidation. In these cases we can run into a conflict in terms of what we need in peacetime and what we need in wartime.

MIS QUARTERLY: What kind of reserve capacity is needed in your ADP systems to take care of the contingency you just mentioned — going from 1.3 to 1.4 million in just a few months?

GENERAL KERWIN: I cited the example in which to answer the queries on one person we may need 150 items of information, but maybe we don't need 150 in wartime — maybe we only need 15. So, if we can strip out all of the excess, maybe we can take care of the expansion.

MIS QUARTERLY: Is there anything else you'd like to tell our readers?

GENERAL KERWIN: I think automation is a fascinating business. The problem is that it is no longer a toy. It is so expensive, and so embedded and ingrained in all of society, not just the military, that our biggest problem is making all of the leadership understand what these things are, what they can do, and what they can't do. If we can do that, then the proponents of all the systems will be able to state their requirements better and better decisions will be made based on these better requirements.