STUDY PROJECT

THE FUTURE OF LOGISTICS AUTOMATION

BY

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United States Army

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Since the mid-1960s the Army has integrated automation into almost every aspect of logistics. The Army Logistician's start point for fielding an automated system was little more than a sophisticated accounting machine, the National Cash Register model NCR 500. The NCR 500 did nothing more than automate an existing manual process. In the next thirty years the Army's logistics community has done little more than continue to automate manual processes.

Each branch, and branch subset, has independently developed "their" system, because they felt their functions to be unique. Today we have logistics systems that do not share information with other logistics systems and that have different names for the same thing. Logisticians have a difficult time understanding their own automated systems.

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" The Future of Logistics Automation "

AN INDIVIDUAL STUDY PROJECT

by

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ABSTRACT

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Since the mid-1960s the Army has integrated automation into almost every aspect of logistics. The Army Logistician's start point for fielding an automated system was little more than a sophisticated accounting machine, the National Cash Register model NCR 500. The NCR 500 did nothing more than automate an existing manual process. In the next thirty years the Army's logistics community has done little more than continue to automate manual processes.

Each branch, and branch subset, has independently developed "their" system, because they felt their functions to be unique. Today we have logistics systems that do not share information with other logistics systems and that have different names for the same thing. Logisticians have a difficult time understanding their own automated systems. The rest of the Army generally does not try. The Army tactical commander does not have direct, easy, access to logistics information regarding his unit's logistical status. Most battalion and brigade commanders, logisticians and non-logisticians alike, feel that logistics systems are developed without a view towards Army needs.

This paper will look at where Army logistics automation has been, where it is today, and where current planning will take it in the future. The paper concludes with where the author thinks logistics automation should be going, why and how. This paper is not a technical treatise on logistics automation. There will be no discussions of what goes in card column 39 nor what a AOA card does within the system. It is rather a concerned conceptual look at the topic, with a view towards Army logistics for the remainder of this century and into the twenty-first century.

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INTRODUCTION

Over the last thirty years the Army has developed one of the largest, most sophisticated, and most complex logistics systems in the World. The size and scope of the system requires automation in order for it to function. Since the mid-1960s the Army has integrated automation into almost every aspect of logistics.

The Army logistician's start point for fielding an automated system was little more than a sophisticated accounting machine, the National Cash Register Corporation's model NCR 500. The NCR 500 did nothing more than automate an existing manual process. For the next thirty years the Army's logistics community has done little more than continue to automate manual processes.

Most technical service branches, and branch subsets, have independently developed "their" own system. Each felt their particular functions were unique. These so called "stovepipe" systems each maintain their own data base, not sharing data or information with other related logistics functions. Today we have logistics systems that

have different names for the same thing. One system may call a data element "nomenclature", while another system calls the same information "description". While this does not seem like much of a problem it inhibits the different systems from sharing data. Much of the incompatibility was designed into the various systems for the single purpose of making the system "safe" from other logistics systems. From time to time the naming problem is addressed by getting the various data base managers together. Even today the proponents for the various logistics systems cannot, or will not, agree on the naming of logistics data elements, mostly as a form of "Turf Protection.[1]"

Because of the variety of hardware, number of separately developed systems and the differences between systems, even the logisticians have a difficult time understanding their own automated systems. The rest of the Army generally does not try. Neither the tactical commander nor his logistics staff officer has direct, easy, access to required information regarding his units logistical status. Battalion and brigade commanders, logisticians and non-logisticians alike, feel that logistics systems are developed without a view towards the Army's needs. Commanders feel that there is a need now for the logistics community to develop a logistics system that is more user friendly.[2] The new system must provide information to

commanders when needed and in a format that they, and their staff, can understand and use.

YESTERDAY

In 1968, at Fort Hood, Texas, a group of new Ordnance second lieutenants, who were assigned to the 169th Maintenance Battalion (Non-Divisional), 13th Support Brigade, were bussed to the 124th Maintenance Battalion, 2d Armored Division. The purpose of the trip was for the lieutenants to see the "Computer." This was to be the first look at a computer for many of them.

The group was given a brief orientation outside the van that housed the computer. They were told the computer was an NCR 500 and was designed to manage the repair parts inventory in the direct support maintenance company. After wiping off their boots, top and bottom, putting on a white linen smock, and being told to not touch anything, they were allowed to go into the van and actually see the "computer". To this group of lieutenants it was reality meeting science fiction. After the visit the lieutenants all went back to their non-divisional companies, got out their yellow number two pencils, and continued to manage repair parts just as good Ordnance lieutenants had for years.

During the 1970s the NCR 500 was replaced with more capable equipment, the Direct Support Supply System (DAS^3). This equipment provided a much needed capability, providing connectivity with the Army wholesale logistics system. The DAS^3 satisfied most of the requirements for supply, with the exception of medical, subsistence, ammunition, and petroleum products. These commodities were thought to be "unique" and required separate systems. The proponents for each vehemently argued that the other logisticians just didn't understand. In their case supply wasn't really supply, even the measurements and names used by the other systems were different. The final argument for having a separate automated system for these three commodities revolved around the issue of how long an item could be kept in inventory, or "shelf life". If there was a solution for an issue of concern another issue would arise, like lot integrity or special safety requirements in the case of ammunition.[3] For someone totally unfamiliar with automation, which was generally the case in the 1970s, these arguments appeared to be valid. For vendors, who knew better, these arguments meant more systems to develop and more money to be made.

LTG Joseph M. Heiser, Jr., a former Department of the Army, Deputy Chief of Staff for Logistics, stated that "The salesmen know the equipment, and they know better than

anyone the kinds of programs that work efficiently with their hardware. However they do not always know the logistics functions that need to be automated. If we are not careful, we can find ourselves accepting programs to automate logistics that do not meet our requirements."[4] This warning should have been heeded in the past and should be heeded today as well. In the past we had the excuse that we didn't understand automation as well as the vendor. This is no longer the case. The Army now has its own source of automation experts, civilian and military, many of whom are logisticians as well as automators.

Most of the early automation development was in areas of logistics that were easily quantifiable: inventory functions and requisitioning. Transportation, maintenance, personnel, and medical supply functions began to be fielded during the 1980s. Each was developed independently, with the exception of the maintenance system. The Standard Army Maintenance Management System (SAMMS) manages all maintenance activities within a direct support maintenance company and battalion and for supported units. This system also requests repair parts, through the Direct Support Unit Standard Supply System (DS4), for both the direct support maintenance company and its supported units, if the latter is equipped with the Unit Level Logistics System (ULLS). This feature was not a break in the branch

oriented stovepipe paradigm. Historically the Ordnance Corps has managed repair parts so logically repair parts considerations would be included in the design of the automated maintenance system.

Through the remainder of the 1980s logistics systems continued to be developed and replaced. The list of systems is a plethora of acronyms, AFMIS (Army Food Management Information System), CSSCS (Combat Service Support Control System), SAAS (Standard Army Ammunition System), SARSS (Standard Army Retail Supply System), SIDPERS (Standard Installation / Division Personnel System), TAMMIS (The Army Medical Management Information System), and TC ACCIS (Transportation Coordinator Automated Command and Control Information System) just to name a few. These seven are prime examples of how the technical service branches have independently developed automated systems. Parochialism on the part of the branches is a major contributor to the lack of interface between systems or cooperation when developing or attempting to integrate systems.[5]

DESERT SHIELD AND DESERT STORM

During operation DESERT SHIELD and DESERT STORM the automated logistics systems received their most difficult test. COL Douglas Starr, the Commander of the 3d Armored Cavalry Regiment, referring to DESERT STORM, said "This was a logistical campaign more than an operational campaign."[6] Some of the systems did not make passing grades. In VII Corps after an almost total loss of accountability and control of ammunition assets, the commanding general of the 2d Corps Support Command (COSCOM), BG Robert P. McFarlin, ordered the SAAS to be turned off. SAAS was designed primarily to receive, store, and issue ammunition. In Saudi Arabia ammunition was received by the ammunition supply points and immediately reissued without a requirement for storage. SAAS could not handle the fact that there was no storage involved. SAAS was designed for a post or installation ammunition storage facility or an ammunition company operating in a peacetime role. SAAS was designed with all of the peacetime functions, such as segregation by lot and various safety requirements. SAAS needed to have

the capability to allow the user to turn off functions not needed in combat. In Saudi Arabia the two solutions to the problem presented by SAAS were to enter dummy data and fool the system or turn the system off. The Commanding General decided that the latter was the correct answer. This was the correct decision. Again the Ordnance lieutenants could use their number two pencils, and it was 1991.

SAAS was not the only system to have problems in the fast paced environment of DESERT SHIELD and DESERT STORM. The DS^4 system within theater had difficulty communicating with the gateway in Saint Louis, Missouri. The main problem was the lack of communications assets for the logisticians. The 24th Infantry Division, Division Support Command, produced output from their DS^4 on floppy disks and drove 190 miles to Dhahran to transmit the data back to the States. Within theater this was referred to as the "Sneaker Net" and was practiced by most of the units in both Corps.[7]

In Viet Nam our logistics systems used batch processing. Twenty-three years later in the desert of Saudi Arabia we were still harnessed with batch processing. The significance of this is that batch files are consumers of scarce communications assets. Logistics systems are in competition for communications assets with all of the command and control requirements that normally receive a

higher priority from the tactical commanders. While DESERT STORM was being conducted a contractor had "informal discussions with DCA [Defense Communications Agency] about the potential Strategic Logistics Agency (SLA) requirements, the head of the R400 satellite communications engineering group at the Defense Communications Engineering Center (DCEC) indicated that no DSCS capacity was now available from the Middle East to support the expected volumes."[8] The Achilles' Heel of deployed automated logistics systems, more than anything else, is communications. The Army's deployment to Southwest Asia revalidated this fact.

The multiplicity of non-interfacing logistics systems created an unnecessary burden on the logistics managers at all levels. At the Corps level the logistics manager had a difficult time obtaining the total logistics picture within his area of responsibility. On average, it took two hours each morning and another two each night to present a the current logistics status of the Corps to Commanding General of the 2d COSCOM. Much of the COSCOM staff spent the remaining twenty hours of the day accumulating data and preparing for the twice a day presentation. Over 90 percent of the data was obtained manually either because there was no system support for the subject or because the automated system was unable to provide the required information. LTG Frederick Franks, the Commanding General of the VII Corps,

was aware of the problems with logistics automation and that most actions were accomplished manually. At the conclusion of the war, LTG Franks spoke to the COSCOM and Corps G-4 soldiers. He congratulated those present for their efforts, stating that not one mission stopped or even slowed down because of lack of logistical support. He said that he was aware of the problems that we had and that he was proud of how his soldiers had accomplished their mission with "Brute Force Logistics."[9] The logistics soldiers of the VII Corps used a lot of number two pencils.

LOGISTICS AUTOMATION SURVEY

In November and December 1991, I mailed 114 surveys to Army officers who are assigned to the Army War College, Class of 1992. A copy of the survey is located at Appendix A. Of the 114 surveys mailed 94, or 82.5 percent, have been completed and returned. Of the officers surveyed, 97.8 percent have commanded battalions or higher. Even though this sample is not representative of the total Army officer corps, the results of the survey are relevant because these officers are the ones who are the closest to what the Army logistics system is about, unit readiness and supporting soldiers in the field.

The survey contained 52 questions, which were divided into three categories: Unit Automation, Logistics Systems, and Personal Background. The latter category provided checks to some questions in the first two categories and gave insight and credibility to those surveyed. The survey was designed to support or disprove my theory that "the current method of managing and operating the United States Army's logistics systems is inefficient, redundant, difficult to comprehend, and too costly. These characteristics must be designed out of the Army's logistics system, especially in this era of reducing resources. The thesis of this project is that the Army needs to break paradigms and overcome parochialism pertaining to logistics operations and management."

Of greatest significance to my research were the questions discussed below. The responses to these questions strongly supported my theory. To the question "Do you own or lease a computer for your personal use?", 79.3 percent of those who responded to the survey owned a computer. The significance of this statistic is that it indicates a high level of computer literacy among this group. Therefore, as a group, their automation expectations should be more realistic and knowledgeable. Follow on questions seem to substantiate this hypothesis.

The responses to the following eight questions indicate a general dissatisfaction with current logistics systems. One would expect to find that if the system provided adequate and accurate information in an easy to obtain and understand format that 79.3 percent of the respondents, who appear to be computer literate, would rate the system high. However, that is not the case as indicated by the following results. One question asked "How accurate was the status of requisitions that you received from your supporting direct support unit (DSU)?" 25.3 percent of the respondents felt that the requisition status received from their DSU was less than good. In response to the question "How do you feel that your DSU did their job, as far as providing you required information?", 27.7 percent felt that the DSU did not provide required information adequately. A further verification that the user of the logistics system did not trust the accuracy of the information they received from their DSU was that 32.5 percent of those surveyed stated that they always, or almost always, used the Logistics Information File (LIF) to verify information given to them by their DSU. Forty-six percent felt that the LIF was always or almost always more accurate than the status received from their DSU. When asked if they checked on the status of repair parts for equipment job ordered to their supporting maintenance unit, 73.4 percent stated that they always, or almost always, checked on the status of repair

parts that were ordered for their units equipment that was being repaired by their supporting maintenance unit.

The next area covered was the availability of information and the ease of obtaining it. When asked "Did you have to go to too many places to get the required information?", 44.8 percent of those who responded felt that they had to go too many places to find required all of the logistics information that was required for a commander to manage his battalion or brigade. 80.5 percent of those who responded felt that the logisticians need to make the logistics system more "user friendly" and 77.9 percent felt that the user of the Army logistics systems needed greater access to the system and the information it provides.

These responses, along with the other substantiating questions found in the survey, indicated that the Army is indeed in need of a new automated logistics system. On the basis of the respondents' answers the Army needs to change the way it manages and disseminates logistics information. One respondent wrote that he felt "the logisticians don't want anyone to know what they are doing, because they are all screwed up." Unfortunately, this is the perception of too many field commanders.[10] The logisticians who responded to the survey were generally in agreement with the non-logisticians, they too felt that the system needed to be

improved and information be made available to the users in a more user friendly format.

TODAY

In October 1991, LTG Jimmy Ross, the Department of the Army Deputy Chief of Staff for Logistics stated that "There are several excellent initiatives underway that do not address the whole logistics architecture. We must take advantage of the valuable work done to date and integrate these efforts into the CSS IM FAA. [Combat Service Support Information Management Functional Area Assessment]."[11] This statement by LTG Ross is an acknowledgment of the dysfunctional manner that the logistics community has been and continues to develop logistics systems.

In November 1991, I visited the Combined Arms Support Command. The purpose of the visit was to find out about the latest developments in logistics automation. What I found was that we are still developing separate systems for each technical service proponent. The ammunition community is working on correcting the problems found during DESERT STORM. However, they are still developing a stand alone system that will require a SAAS terminal to get information

about ammunition. There are planned future enhancements that will provide ammunition information to the battalion S-4, if the S-4 has ULLS.

The maintenance community will still have SAMS for sometime. It will basically stay in its current form with upgrades and repairs, interfacing with ULLS. The supply community is developing, upgrading or expanding seven separate systems, the Standard Army Retail Supply System (SARSS), the Unit Level Logistics System (ULLS), the Standard Property Book System - Redesigned (SPBS-R), the Direct Support Unit Standard Supply System (DS^4), and the Standard Army Intermediate Level Supply System (SAILS). All of the supply systems interface with other supply systems. In addition ULLS, SARSS, and DS^4 interface with SAMS.

The transportation community is developing several different modules of the Department of the Army Movements Management System - Redesigned (DAMMS-R). The DAMMS-R has various modules designed to support transportation management for containers, freight, Transportation Master Address System (TMAS), support to Southwest Asia, highway regulation, unit moves, and operational movement. One module of DAMMS-R is using commercial software to replace several older transportation management systems. The transporters also have the Department of the Army Standard

Port System - Enhanced(DASPS-E), The Automated Air Load Planning System (AALPS), and the Transportation Operational Personal Property Standard System (TOPS). These are but a few of the automated logistics systems that are in operation today.

With today's automated logistics system, the Assistant Chief of Staff for Materiel (ACSMAT) of a COSCOM must have a working knowledge of all of the above systems, with the exception of the transportation systems. To obtain information required to manage all classes of supply, except medical, and to control the maintenance workload within the Corps the ACSMAT must go to organizations that are spread all over the Corps rear area, the CMMC, Corps Support Groups, and Theater level staff and units to obtain information that should be readily available to him.

There is an effort at CASCOM to develop another system, the Combat Service Support Control System (CSSCS). This system will obtain information from the other logistics systems. It will make the information available to tactical commander via the Maneuver Control System. In addition, CSSCS will assist the logistics planners at brigade level, and above, by anticipating outcomes, integrating support efforts, developing plans for continuity of logistics operations, being responsive to information requirements,

and improvising plans.[12] The drawback to CSSCS is that this system depends on the other logistics systems for data. If a commander requires information to make a critical decision now, current information may not be available. An example is that CSSCS needs supply status for a maneuver unit that will spearhead an attack in four hours. The commander needs to know the availability of weapon systems to replace battle losses. CSSCS seeks the information from the DS^4 system, but the DS^4 has just began to run a daily or weekly cycle and will not be done for several hours. Therefore, CSSCS is unable to obtain the required information and the commander must make his decision without what might be critical information.

The other negative aspect of CSSCS is that it is just an information system. Instead of replacing old systems, it depends on the older systems to provide the management information that it is designed to provide. The most significant drawback is that CSSCS heavily depends on a viable communication network to work. With the shortage of communications assets on the battlefield, it is questionable whether CSSCS will work when it is really needed. The Army does not need another SAAS in combat. What is needed is a system that troops can depend on in war and peace.

TOMORROW

The bright light in the future of logistics automation is the Strategic Logistics Agency (SLA) at Fort Belvior, Virginia. The multi-functional logisticians, civilian and military, at that Agency are following LTG Ross's guidance "We must insure that we are not just automating manual processes. We should not be driven by what is available or how we have conducted business in the past. We must take advantage of the latest technology and streamline CSS operations to best support the air / land battlefield."[13] The vision of these words and the direction that they provide are right on target.

The Army's strategic logistics automation plan for tomorrow and the twenty - first century is to provide a system that will allow the Army to do more with less. The plan is to reshape the Army's logistics system and the way it does business. This will be accomplished by enhancing the visibility of all Army assets, those found in maintenance, in the supply depots, in transit, and in procurement. By having "Total Asset Visibility" and making

supplies and equipment available where needed, the Army won't have to buy that which it already has.

The plan is to take actions that will speed up the supply flow. The new system would allow units to send high priority requisitions from their ULLS computer directly to the depot, bypassing the National Inventory Control Point (NICP), SAILS, and SARSS. The depot would then ship directly back to the unit, again bypassing the intermediate support activities. The depot would provide status back through the system to the unit, allowing for the NICP, SAILS, and SARSS to pick up the demand and record of the transaction. This process would provide supplies from the depot more rapidly and allow for less stockage to be retained at intermediate supply units.

SLA is developing these efforts looking towards an Army that is smaller, with less money, and a large worldwide mission. Every effort being designed requires a smart, efficient, and cost effective automated system.[14] As LTG Ross directed, the new system is to be integrated, which means no more parochialism between branches. The only branch that logisticians should be concerned with is the logistics branch. In todays environment all logisticians above the grade of Captain should be multi-functional, the Army can afford no less.[15]

THE VISION FOR THE FUTURE

To truly reach the goal established by LTG Ross's message, the Army's automated logistics system must be rebuilt from the bottom to the top. To accomplish this feat all new development of currently planned logistics systems should be stopped. The only logistics automation activity that should be conducted is the maintenance of the current systems and the development of the new modernized multifunctional Complete Logistics Automated Support System (CLASS).

CLASS would provide a relational data base at every level. Each data base would contain only that data required for its level to function for an established period of time, if the communication link was disrupted. The CLASS of a tank battalion would contain everything logistically the battalion requires to operate. The data base would contain information and unit data for all battalion level actions regarding personnel, medical, property book, supply, maintenance, and administration. CLASS at the brigade level

would contain everything logistically the brigade headquarters requires to operate. The data base would contain information and unit data for all brigade level actions regarding personnel, medical, property book, supply, maintenance, and administratic .. In addition, the brigade level CLASS would also contain the information contained in its battalion's data bases. The division level CLASS would contain all of the information from the brigade's data bases and corps would have the information from all of its divisional data bases.

The Army would establish a central CLASS location that would have the data base for all logistics functions within the Army. The Army CLASS data base would have one data base manager. This data base manager would be the controller for the naming of data elements. This would be the first step in integrating all classes of supply into the CLASS data base. Special data element could be designated for items that required special handling, like shelf life or lot identification.

Transportation would be part of the CLASS so that when supplies are released CLASS can automatically schedule the required transportation. When equipment is issued to a unit the equipment is automatically added to the AUEL. When a soldier receives orders, from CLASS, transportation of the

soldier's family, household goods, and automobile are scheduled. If a soldier is sick CLASS will maintain copies of profiles, designate the soldier as non-deployable, and schedule the soldier for a medical review board.

The view to the user would be one computer system in a headquarters. There can be many terminals, but to the user they all look the same. The added benefit is that a single system requires one set of instructions and for an individual to be trained only once. The terminals and the apearance of the screen would be the same at all levels. When a soldier uses CLASS he would only be allowed into applications program for which he is authorized. A soldier who works in the S-4 would not be able to look at information about personnel nor would the personnel clerk be able to order ammunition.

CLASS would provide upward and downward transfer of information. A division would be able to identify the location of all V-Packs for the M-1A1 tank within the Division and could direct their transfer. This feature would keep the wayward motor sergeant from hoarding. With CLASS, brigade could locate all 63B40 within the brigade and cut orders for the sergeants transfer, from the same terminal.

CLASS should be developed with its own communication capability. The communications capability should be a self contained satellite system. This would allow for CLASS to be mounted on a vehicle and operated from remote locations. It would also allow for CLASS to be able to collect data from within the unit. Each M-1 within a battalion would have a sending unit installed. The sending unit would transmit data to CLASS, such as ammunition usage, mileage and fuel consumption, and battle loss. All of this information would be sent without any action from the crew. When a round is removed from the ammunition compartment, a sending unit would let CLASS know what kind of round was used. CLASS would then order a like round for issue to the tank at the next reload point along with the proper amount of fuel and lubricants for the vehicle. The medics could also be waiting for scheduled immunization for the crew. The list of possibilities with CLASS is limitless.

CONCLUSION

A small, fast deploying Army needs an equally fast and mobile logistics system. The heart of an effective logistics system is a fast, light weight, multifunctional automated system that goes to war with the combat force. A

system like CLASS is what the Army needs. Logisticians need it to support the maneuver forces and the maneuver forces need it so that they will have some control over the support they receive.

The Chief of Staff, GEN Gordon Sullivan, says "No more Task Force Smith." Logisticians should be saying "No More Long Bien -- No More Dhahran." We can no longer afford to build an iron mountain so that we can be sure to have what is need to support our Army. In the next war, the logisticians will need to have technology on their side. The technology for everything that was portrayed in the vision of CLASS is here today. The capabilities can be bought off the shelf now. The problem is stopping the train long enough to accumulate the personnel required to start integrating all of the capabilities.

Some of the systems being developed today do not meet LTG Ross's guidance. The developers are not integrating "our current "Stove Pipe" STAMIS [Standard Army Management Information Systems] into one integrated relational data base management system (DBMS)."[16] Stopping development of all of the logistics systems now being developed is an order away. The logistics community would continue to operate with the present systems, which would be maintained until they are replaced.

The Army needs a new automated logistics system. A system that will provide support at all levels from an infantry company to an Army Materiel Command Depot, the Total Army Personnel Agency, or to Hospital Systems Command. It needs to be a seamless system that functions equally well in all areas and interfacing between areas when required. Logisticians do not need to go to another war with a number two pencil as their fall back means of managing logistics.

APPENDIX

MEMORANDUM FOR: Selected Army personnel; Active, Guard, and Reserve.

SUBJECT: Army Automated Logistics Systems

PURPOSE: To accumulate data from Army personnel based on their knowledge and experiences with the Army's current automated logistics systems. Questions will focus on automated logistics systems used for transportation, maintenance, and all classes of supply. The purpose of this survey is to seek the user's perception of the usefulness of the current logistics information systems. The survey will be used as a basis for a future automated logistics system. To assist with the analysis of the data collected personal background information is requested.

The results of this survey will be analyzed and used to make recommendations to the Deputy Chief of Staff of the Army for Logistics and the Commanding General of the Combined Arms Support Command. The results will also be made available to various Army agencies for use in developing future logistics systems.

Upon completion please return the survey to COL Donald M. Lauer, U.S. Army War College, Box 172, Carlisle, Pennsylvania, 17013-5050. In advance, thank you for your help and time.

DONALD M. LAUER
COL, OrdC

##########

DATA REQUIRED BY THE PRIVACY ACT OF 1974

PRESCRIBED DIRECTIVE: AR 70-1
AUTHORITY: 10 USC 4503
PRINCIPLE PURPOSE(s): To collect data on the Army's automated logistics systems, current and proposed. The data will be used for research purposes only.

MANDATORY OR VOLUNTARY DISCLOSURE AND EFFECT ON INDIVIDUAL NOT PROVIDING INFORMATION: Your participation in this research is strictly voluntary. Individuals are encouraged to provide complete and accurate information in the interests of the research, but there will be no effect on individuals for not providing all or any part of the information.

APPENDIX

LOGISTICS AUTOMATION
SURVEY

Please answer each of the following questions marking the appropriate answer or circling the numeric value that indicates your answer. Use either pencil or pen. If you do not have the personal knowledge to answer the question place a "0" next to the answers.

****

PART 1
Unit Automation

The following questions are designed to ascertain the availability and usage of automation equipment within units. Questions relating to units refers to the highest level unit that you commanded.

1. Did your unit have the Tactical Army Combat Service Support Computer System (TACCS)?

Yes ___ No ___

2. Did your unit use the TACCS equipment primarily for the Standard Installation / Division Personnel System (SIDPERS)?

Yes ___ No ___

3. Did your unit have the Unit Level Logistics System (ULLS)?

Yes ___ No ___

4. In addition to the TACCS and the ULLS computers, did your unit have commercial computers?

Yes ___ No ___

APPENDIX

5. Did you have a computer in your office?

Yes ___ No ___

6. How frequently did you personally use the computer in your office?

Sometimes
V
Very frequently > 1 2 3 4 5 < Not at all

7. Do you feel that your unit had an adequate amount of automated equipment.

Adequate
V
Too Much > 1 2 3 4 5 < Not enough

8. How many different types of computer systems did you have within your unit?

0 1 2 3 4 5 6 or more

9. Was there a problem finding properly trained personnel to operate all of the automation within your unit?

Yes ____ Sometimes ___ No ___ Not Applicable ___

10. Were training facilities and instructors available to train personnel to operate the various automated systems?

Yes ____ Sometimes ___ No ___ Not Applicable ___

11. Did you use your TACCS in the field?

Yes ____ Sometimes ___ No ___ Not Applicable ___

12. Did you use your ULLS in the field.

Yes ____ Sometimes ___ No ___ Not Applicable ___

13. Did you use commercial computers in the field?

Yes ____ Sometimes ___ No ___ Not Applicable ___

14. What form of electric power did you use for your computers while in the field?

TOE Military Generator ____
Scrounged Generators ____
Commercial Generators ____
Commercial electricity ___
Batteries ____
Did not take computers to the field ____

15. Do you own or lease a computer for your personal use?

Yes ___ No ___

****

Comments: **This space is provided for you to make comment about Part 1 of this survey or Unit Automation.**

PART 3

Logistics Systems

Authorized Unit Equipment List (AUEL)

16. Did your unit maintain a current AUEL, updated as MTOE changes occurred?

Yes ____ No ___ Not Applicable ___

17. Was your AUEL accurate upon deployment? (I.E. No frustrated cargo)

Yes ____ No ___ Not Applicable ___

18. Did you periodically verify your units AUEL for accuracy and content?

Yes ____ No ___ Not Applicable ___

19. Were you able to track your units equipment from home station to destination easily?

Yes ____ No ___ Not Applicable ___

Supply

20. How accurate was the status of requisition that you received from your supporting direct support unit (DSU)?

Good
V
Excellent > 1 2 3 4 5 < Poor

21. How do you feel that your DSU did their job as far as providing you required information?

Good
V
Excellent > 1 2 3 4 5 < Poor

22. Was your next higher level commander satisfied with the supply status that you were able to provide?

Sometimes
V
Always > 1 2 3 4 5 < Never

23. Did you use the Logistics Information File (LIF) to obtain status on requisition?

Sometimes
V
Always > 1 2 3 4 5 < Never

24. Did you find the LIF more accurate than the status received from your DSU?

Sometimes
V
Always > 1 2 3 4 5 < Never

25. Do you feel that you had an adequate picture of your units overall supply posture.

Sometimes
V
Always > 1 2 3 4 5 < Never

26. Did you have adequate status on requisitions for Class VIII (Medical) supplies?

Sometimes
V
Always > 1 2 3 4 5 < Never

27. How was your units Class VIII supplies obtained?

The same as other classes of supply ___
Did not need to requisition Class VIII ___
Do not know ____

28. How did your unit obtain Class I (Subsistence)?

The same as other classes of supply ___
Did not need to requisition Class I ___
Do not know ____

Maintenance

29. Was the maintenance status provided by your supporting maintenance company adequate for your management requirements?

Sometimes
V
Always > 1 2 3 4 5 < Never

30. Did your supporting maintenance unit have the Standard Army Maintenance Management System?

Yes ___ No ____ Do not know ___

31. Was information from your supporting maintenance unit readily available to you?

Sometimes
V
Always > 1 2 3 4 5 < Never

32. Did you check on status of Class IX (Repair Parts) for equipment job ordered to your supporting maintenance unit?

Sometimes
V
Always > 1 2 3 4 5 < Never

Logistics Information

33. How easy was it to obtain a total picture of your units logistics posture (dining facility, motor pool, supply room, medical supplies, and personnel status)

Good
V
Very easy > 1 2 3 4 5 < Impossible

34. Did you have enough assets to manage the logistics within your unit?

Sometimes
V
Always > 1 2 3 4 5 < Never

35. Did you have to go to too many places to get the required information?

Yes ___ No ____ Do not know ___

APPENDIX

PART 3

Personal Background

38. Your current rank is:

LTC ___
COL ___

39. Your Year Group is:

66 ___	70 ___	Other ___
67 ___	71 ___	
68 ___	72 ___	
69 ___	73 ___	

40. Your Branch and Primary Military Occupational Specialty is:

Branch _____ MOS _____.

41. Your Functional Area is: FA _____.

42. Your component is :

Active ___
National Guard ___
Army Reserve ___

43. Indicate which of the following conflicts you participated in: (mark all that apply)

Viet Nam ___	Sudden Fury ___
Just Cause ___	Desert Shield ___
Desert Storm ___	Provide Comfort ___
None ____	

44. What is the highest level you have commanded?

Company ___	Battalion ____
Brigade ___	None ____

36. Do you think the logisticians need to make the system more "user friendly"?

Yes ___ No ____ Do not know ___

37. Do you think the user needs greater access to logistics information?

Yes ___ No ____ Do not know ___

****

Comments: This space is provided for you to make comment about Part 2 of this survey or Unit Logistics.

***** Questions 45 through 47 refers to the highest level unit you commanded. *****

45. Your unit was:

TOE ____ TDA ____

46. Your unit was located in:

CONUS ___ Germany ___ Korea ___
Hawaii ___ Italy ___ Panama ___
Other ___

47. The ALO of your unit was:

ALO 1 ___ ALO 2 ___ ALO 3 ___ ALO 4 ___
ALO 5 ___ N/A ___

***** Questions 48 through 52 address assignments held during your career. *****

48. What logistics assignment have you had at the unit level? (mark all that apply)

Executive Officer ___ S-1 ___
S-4 ___ Mess Officer ___
Motor Officer ___ Supply Officer ___
None ___

49. Have you served in a Division Support Command (DISCOM)?

Yes ___ No ___

50. Have you been assigned to the Army Materiel Command (AMC)?

Yes ___ No ___

51. Have you been assigned to the Health Services Command (HSC)?

Yes ___ No ___

52. Have you served on the Department of the Army Deputy Chief of Staff for Logistics staff?

Yes ___ No ___

Comments: This space is provided for you to make comment about Part 3 of this survey or any area of logistics management.

ENDNOTES

[1]Colonel Roger Griffin, Commander, US Army Information Systems Software Development Center Lee, Interviewed by Author, 7 November 1991.

[2]Department of the Army, Army War College, Logistics Automation Survey, Carlisle Barracks, PA, 1 December 1991.

[3]Lieutenant Colonel Herbert D. Miller, Chief, Ammunition Systems Division, Logistics Automation Directorate, Combined Arms Support Command, Fort Lee, Interviewed by Author, 8 November 1991.

[4]Lieutenant General Joseph M. Heiser, Jr., A Soldier Supporting Soldiers, (Washington, D.C: Center of Military History, United States Army, 1991), 251-252.

[5]Colonel Roger Griffin, Commander, US Army Information Systems Software Development Center Lee, Interviewed by Author, 7 November 1991.

[6]Major Michael J. Stine, Trip Report -- Fort Bliss, Texas 29 April - 2 May 1991, Memorandum for Director, Total Armor Force Readiness, Fort Knox, KY, passim.

[7]Captain Brian Buchanan, Project Officer, Combat Service Support Control System, Logistics Automation Directorate, Combined Arms Support Command, Fort Lee, Interviewed by Author, 8 November 1991.

[8] John Doby, Kuwait Theater of Operations Bulk Data Transfer Analysis, (Bethesda, MD; Logistics Management Institute, 1991), 2-1.

[9]Lieutenant General Fredrick Franks, Commanding General, VII Corps. Speech at Al Quasumma, Suadia Arabia, 8 Mar 1992.

[10]Department of the Army, Army War College, Logistics Automation Survey, Carlisle Barracks, PA, 1 December 1991.

[11]Lieutenant General Jimmy Ross to Lieutenant General Leon Salomon, 3 October 1991, Electronic Message "CSS Functional Information Management (IM) Functional Area Assessment (FAA)", Paragraph 6.

[12]William Dates, Project Manager, Integrated Logistics Systems, Fort Lee, Interviewed by Author, 7 November 1991.

[13]Lieutenant General Jimmy Ross to Lieutenant General Leon Salomon, "CSS Functional Information Management (IM)", Paragraph 4.

[14]Colonel Charles T. Chase, Deputy Director, Strategic Planning, US Army Strategic Logistics Agency, Fort Belvior, VA, Inteviewd by Author, 21 November 1991.

[15]Colonel James Linke, Deputy Commanding Officer, Combined Arms Support Command, Fort Lee, Interviewed by Author, 8 November 1991.

[16]Lieutenant General Jimmy Ross to Lieutenant General Leon Salomon, "CSS Functional Information Management (IM)", Paragraph 5.

BIBLIOGRAPHY

Buchanan, Brian, Captain, Project Officer, Combat Service Support Control System, Logistics Automation Directorate, Combined Arms Support Command, Fort Lee, Interviewed by Author, 8 November 1991.

Builder, Carl H., Santa Monica, CA, to Lt Col Richard Green, Carlisle Barracks, PA, copy in the hands of Author.

Chase, Charles T., Colonel, Deputy Director, Strategic Planning, US Army Strategic Logistics Agency, Fort Belvior, VA, Inteviewd by Author, 21 November 1991.

Dates, William, Project Manager, Integrated Logistics Systems, Fort Lee, Interviewed by Author, 7 November 1991.

Department of the Army, 1st Corps Support Command, Operation Desert Shield / Storm, After Action Review, Undated, Fort Bragg, NC.

Department of the Army, 24th Mechanized Infanry Division, Operation Desert Storm After Action Report, 17 Jun 1991, Fort Stewart, GA.

Department of the Army, Army War College, Logistics Automation Survey, Carlisle Barracks, PA, 1 December 1991.

Department of the Army, Combined Arms Support Command, Memorandum, "Near Term Disconnects, Battlefield CSS Automation / Communications Projects", undated.

Department of the Army, Combined Arms Support Command, Memorandum, "Battlefield CSS Automation / Communications Projects", 13 Aug, 1991.

Department of the Army, Deputy Chief of Staff, Logistics to Commander Combined Arms Support Command, 4 Jun 1991, Electronic Message "CSS Battlefield Automation / Communications Support".

Department of the Army, Deputy Chief of Staff, Logistics, 21 Aug 1991, Electronic Message "Combat Service Support (CSS) Information Systems Laydown".

Department of the Army, Deputy Chief of Staff, Logistics to Commander Combined Arms Support Command, 4 Jun 1991, Electronic Message "CSS Battlefield Automation / Communications Support".

Department of the Army, Deputy Chief of Staff, Logistics, Operation Desert Storm Sustainment, Undated, Washington, D.C..

Department of the Army, Deputy Chief of Staff, Logistics, Operation Desert Shield Deployment Lessons, December 1991, Washington, D.C..

Department of the Army, Space Command, Satellite Communications / Tracking Requirements Conference, GEODYNAMICS Corporation, Colorado Springs, CO, 9 Jan 1992.

Department of the Army, Space Command, TRACC3 System Final Report, GEODYNAMICS Corporation, Colorado Springs, CO, 27 Sep 1991.

Doby, John, "Kuwait Theater of Operation Bulk Data Transfer Analysis", (Bethesda, MD: Logistics Management Institute, 1991).

Franks, Fredrick, Lieutenant General, Commanding General, VII Corps. Speech at Al Quasumma, Suadia Arabia, 8 Mar 1992.

Griffin, Roger, Colonel, Commander, US Army Information Systems Software Development Center Lee, Interviewed by Author, 7 November 1991.

Hazer, Kaleem, Jr. Colonel, Deputy Commander for Logistics Automation, Combined Arms Support Command, Fort Lee, Interviewed by Author, 8 November 1991.

Heiser, Joseph M., Jr., Lieutenant General (Retired), A Soldier Supporting Soldiers, (Washington, D.C.: Center of Military History, United States Army, 1991).

Hulen, Howard D., Captian, Project Officer, Logistics Automation Directorate, Combined Arms Support Command, Fort Lee, Interviewed by Author, 8 November 1991.

King, James C., Colonel, Former Commander, Division Support Command, 24th Infantry Division (Mechanized), Interviewed by Author, 17 December 1991.

Linke, James, Colonel, Deputy Commanding Officer, Combined Arms Support Command, Fort Lee, Interviewed by Author, 8 November 1991.

Miller, Herbert D. Lieutenant Colonel, Chief, Ammunition Systems Division, Logistics Automation Directorate, Combined Arms Support Command, Fort Lee, Interviewed by Author, 8 November 1991.

Program Executive Officer, Standard Army Management Information systems, Fort Belvior, Virginia, 30 August 1991, Electronic Message "Automation / Communication Working Group Meeting".

Ross, Jimmy, Lieutenant General, to Lieutenant General Leon Salomon, 3 Oct 1991, Electronic Message "CSS Functional Information Management (IM) Functional Area Assessment (FAA)".

Salomon, Leon E. Lieutenant General, Commanding General, Combined Arms Support Command, Fort Lee, Interviewed by Author, 8 November 1991.

Stine, Michael J., Major, Trip Report -- Fort Bliss, Texas 29 April - 2 May 1991, Memorandum for the Director, Total Armor Force Readiness, Fort Knox, KY.

Wood, Brian, Deputy Director, Logistics Automation Directorate, Combined Arms Support Command, Fort Lee, Interviewed by Author, 8 November 1991.

Williams, Michael, Lieutenant Colonel, Executive Officer, Logistics Automation Directorate, Combined Arms Support Command, Fort Lee, Interviewed by Author, 8 November 1991.

Wilson, Donald, Deputy Commander, US Army Information Systems Software Development Center Lee, Interviewed by Author, 8 November 1991.