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WASHINGTON, D.C. 20548

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The Honorable Jack Brooks
Chairman, Committee on
Government Operations
House of Representatives

HEED 150

Dear Mr. Chairman:

Subject: [Need for Improved Management and Increased Sharing of Computer Resources at the San Antonio Data Services Center] (FGMSD-80-82)

As you requested on January 21, 1980, we reviewed the Air Force's plans to realign the structure and operations of the San Antonio Data Services Center and the effect of such actions on the Center's ability to support regional data processing needs. On April 7, 1980, the Air Force directed that the Center be continued under a new operational evaluation plan and canceled the earlier realignment directives. In view of this action, we agreed to direct our efforts to determining how cost effective the Center is, whether it has met its original goals, and how it might be improved as a regional data processing center.

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HOW COST EFFECTIVE IS THE CENTER?

We found that the San Antonio Data Services Center has provided responsive computer support at favorable cost to a small number of highly satisfied users. The Center's operating costs compare favorably to commercial computer centers and similar Air Force installations in the area. However, many additional economies that could be expected from a regional data processing center have not been realized because neither the Air Force nor other Federal users has taken full advantage of opportunities to consolidate facilities, share resources, and reduce computer hardware and personnel costs. Also, the Center is not fully recovering its costs. We believe the Air Force missed these opportunities because its top management failed to support the regional concept which the Center represented.



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HAS THE CENTER MET ITS ORIGINAL GOALS?

During the period 1972 to 1979, Air Force management failed to take actions and allowed situations to occur which prohibited achievement of the Center's goals. These included not consolidating any base level processing workload other than Brooks Air Force Base, alienating customers by indicating several times the imminent closure of the Center, not actively pursuing new customers, and allowing other San Antonio area Air Force organizations to acquire six major computer systems.

The Blue Ribbon Panel to study the Department of Defense (DoD) recommended, in 1970, that each service study regional computer center concepts in order to test the economic and operational feasibility of such centers. The Air Force selected the San Antonio area for its study and established the Center. The goals of the Center were to consolidate facilities, share resources, and reduce computer hardware and personnel costs. The Blue Ribbon Panel believed achievement of such goals in either command or geographic centers would provide economies of scale by furnishing automatic data processing support to many users while preventing computer proliferation and eliminating the substantial underutilization which they had found in their study of DoD. The panel also thought the development of such centers would provide a model for the future development of Defense-wide computer service utilities.

HOW CAN THE CENTER BE IMPROVED?

The Air Force now recognizes that additional efforts should have been made to increase the Center's efficiency and effectiveness. The Air Force has committed itself to several positive actions, such as reducing the Center's operating costs, attracting more customers, and enhancing computer capabilities. If aggressively pursued together with our recommendations, these actions can significantly improve the Center's operations and help ensure a successful regional data processing center in San Antonio.

To most effectively address the Government's automatic data processing needs in the San Antonio area, we recommend that the Secretary of the Air Force

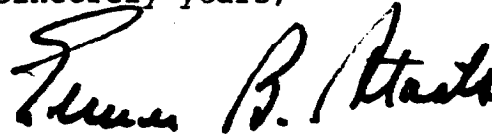
- prepare, in cooperation with the General Services Administration, a long range plan for meeting these needs;
- develop a formal management policy encouraging the effective use and sharing of the Center's computer resources across service and command lines;

- develop cost accounting procedures and user rates that provide for full cost recovery as described in GAO's Federal Government Accounting Pamphlet Number 4 (1978);
- determine future equipment needs based on current and projected user requirements; and
- obtain authorization from the General Services Administration to augment existing capabilities to best meet future needs.

These matters are discussed in detail in the enclosure.

As you requested, no official comments were obtained from the Air Force on our findings, conclusions, and recommendations. Also, as arranged with your office, unless you publicly announce its contents earlier we plan no further distribution of this report until 30 days from its issue date. At that time we will send copies to the Director, Office of Management and Budget, Secretary of the Air Force, the Secretary of Defense and the Administrator of General Services, and make copies available to other interested parties.

Sincerely yours,



Comptroller General
of the United States

Enclosure



NEED FOR IMPROVED MANAGEMENT AND
INCREASED SHARING OF COMPUTER RESOURCES
AT THE SAN ANTONIO DATA SERVICES CENTER

INTRODUCTION

The San Antonio Data Services Center was established in 1972 to test the economic and operational feasibility of a regional data processing center. Since there are four Air Force bases, a large Army installation, and several other Government activities in the San Antonio, Texas, area, the Center serves a large automatic data processing (ADP) user community. Under the management of the Air Force Communications Command, the Center operates on a fee-for-service basis with users reimbursing a large portion of the operating costs. In fiscal 1979, operating costs for the Center amounted to \$2,755,000. Reimbursable expenses totaled \$2,281,000, with \$2,094,000 paid by the users and \$187,000 funded directly by the Air Force. The remaining costs, amounting to \$474,000, were incurred for military pay, building lease, and capital equipment investments, none of which were included in reimbursable expenses charged to users.

The Center maintains two large-scale computer systems--a Burroughs 4700, which is leased from the manufacturer, and a Government-owned IBM 360/65. Both systems are operated by a commercial firm under a service contract with the Air Force. The contractor operations are staffed by approximately 34 civilian employees, while the Air Force management function is supported by 26 military and civilian personnel.

The IBM 360/65 computer system provides regionalized data processing support to many of the bases in the San Antonio area, as well as to other Federal activities, both local and nationwide. The Navy uses the system to support remote terminals throughout the United States.

The Burroughs 4700 computer system supports all base-level processing requirements for Brooks Air Force Base and unique processing requirements for the San Antonio Contracting Center, the San Antonio Real Property Maintenance Agency, and Wilford Hall Medical Center--all located in the San Antonio area.

We determined that even though the customers using the IBM and Burroughs systems are few, the Center has provided cost-effective support of satisfactory quality. We also determined how the Center can be improved to raise both the quality and level of support.

HOW COST EFFECTIVE IS THE CENTER?

Adjusting for operational differences, we analyzed the Center's Burroughs 4700 operating costs and found them to compare favorably with Burroughs operations at Randolph and Kelly Air Force Bases. We also found that the IBM operations costs compare favorably with commercial computer services. During the development of our cost analysis, we discussed with Center customers the quality of service provided to them.

Burroughs 4700 operating costs compare favorably

After adjusting costs to reflect known differences, our analysis indicated that the Center's monthly Burroughs 4700 costs compare favorably with the Burroughs operations at Randolph and Kelly bases. The Center's average monthly total operating costs are much higher than those of Randolph or Kelly primarily because of the following:

- Computer hardware configurations differ. The Center has substantially more disk and remote terminal hardware than either Kelly or Randolph because it must support more on-line users.
- Operational use hours differ. The Center staffs its computer system about 100 additional hours each month to support Wilford Hall Medical Center on weekends.
- Communications requirements differ. The Center supports more users with commercial communications lines, while both Randolph and Kelly support mostly on-base users with Government-owned communications lines.

The table on the following page shows that the Center's monthly operating costs compare favorably with Randolph and Kelly after adjusting for these operational differences.

<u>Type of cost</u>	<u>Average monthly operating cost for Burroughs computer systems in San Antonio</u>		
	<u>San Antonio Data Services Center (4700)</u>	<u>Randolph Air Force Base (4700)</u>	<u>Kelly Air Force Base (3700)</u>
Personnel	\$ 39,788	\$35,191	\$43,128
Equipment	54,408	36,622	30,123
Space occupancy	2,128	1,488	802
Electrical power	1,677	2,557	2,323
Supplies	7,923	8,064	5,150
Communications	2,428	748	994
Support services	<u>2,801</u>	<u>582</u>	<u>117</u>
Total	<u>\$111,153</u>	<u>\$85,252</u>	<u>\$82,637</u>
Adjustments for operational differences			
Extra disk and terminal hardware to support more remote, on-line users	(15,643)		
Extra staff required to operate longer use hours	(3,062)		
Extra communications lines to support more remote, on-line users	<u>(2,228)</u>		
	<u>(\$20,933)</u>		
Adjusted total	<u>\$90,220</u>		

The Air Force has been trying to close the Center for several years, believing the operations have not been cost effective. A May 1978 Air Force study recommended that the Center's Burroughs 4700 system be discontinued and that base-level support be totally decentralized, with each base operating its own Burroughs computer system. This study reported that potential savings were insufficient to justify further consolidations of base-level workloads. Thus, after consolidating the Brooks Air Force Base workload, the Air Force is continuing to operate six separate Burroughs computer systems at five different data processing installations:

	<u>Burroughs computer systems</u>		
	<u>B3500</u>	<u>B3700</u>	<u>B4700</u>
Air Training Command:			
Randolph Air Force Base	X		X
Lackland Air Force Base	X		
Air Force Logistics Command:			
Kelly Air Force Base		X	
Air Force Security Service:			
Kelly Air Force Base	X		
Air Force Communications Command:			
San Antonio Data Services Center			X

Because workloads have increased substantially since the Air Force study was conducted in 1978, we made a separate analysis of computer installations in the San Antonio area. We found that the user environments supported by these installations varied widely, with the Center's Burroughs 4700 computer supporting more remote, on-line users than any of the other systems.

Considering the type of service provided and the user environment supported, we believe the Center's Burroughs operation is as cost effective as other installations in the San Antonio area.

IBM 360 operating costs compare favorably

Our review also showed the Center's IBM 360/65 computer system has been and continues to be cost effective. Past Air Force evaluations reported that the IBM operations have been successful and the most recent study, completed in May 1978, recommended continuation of the system because of its demonstrated cost effectiveness.

In the May 1978 study, the Air Force compared the Center's costs of operations with the costs charged by commercial computer centers. The Air Force analysis showed that the annual cost of the Center's IBM system was at least \$578,000 less than one vendor and about \$1,241,000 less than another vendor. The analysis was biased in favor of the commercial alternatives and included adjustments for nonreimbursable expenses and the cost of military pay and the building lease for the Center. However, in February 1979, Air Force headquarters concluded that the analysis did not realistically reflect the costs for military pay, civilian benefits, building lease, and ADP equipment investments. The resulting adjustment increased the Center's cost by \$600,000, eliminating the cost advantage over one vendor and diminishing the advantage over the other. The Air Force concluded from this that commercial prices compare favorably with today's cost to operate the Center.

Our cost analysis showed, however, that the Center's current IBM operating costs are still less than the costs of the two commercial service centers compared in the Air Force's 1978 study--as shown by the following table.

	Center's current annual operating cost (note a)	Cost for commercial computer services (per 1978 study)	
		Vendor A	Vendor B
Data processing service charges	\$ -	\$2,549,054	\$1,886,143
Equipment (as if fully leased)	b/1,027,272	-	-
Personnel (military and civilian)	542,016	83,421	83,421
Facilities	31,596	10,000	10,000
Other	<u>189,168</u>	<u>(c)</u>	<u>(c)</u>
Total	<u>\$1,790,052</u>	<u>\$2,642,475</u>	<u>\$1,979,564</u>

a/These costs are based on a 16-month average (fiscal 1979-1/31/80); except for depreciation charges, they also represent costs accumulated in a manner consistent with Federal Government Accounting Pamphlet Number 4.

b/The Center's current IBM system is Government-owned; however, for comparative purposes, this analysis includes an estimate of equivalent lease cost for an IBM 360/65 computer. The Air force estimates that a current technology replacement system would result in equipment costs of \$725,940 annually, and thus a revised total annual cost of \$1,448,720.

c/The Air Force study indicated that substantial other costs would be incurred if services were obtained commercially.

In summary, our review indicates that the Center's IBM and Burroughs operations are providing effective service at a cost of less than--or at least comparable to--the commercial computer centers at nearby Air Force bases.

Operating costs borne by the Air Force

Although agreeing that the Center has proved to be a workable concept, the Air Force believes it has borne an unfair share of the Center's operating cost. The present method of reimbursing the Air Force for the Center's services recovers much of the direct and indirect computer operating costs, but the billing rates do not include the costs of military pay, leased facilities, and owned capital equipment. The Air Force argues that these costs, which totaled \$474,000 in fiscal 1979, are a continuing drain on its funds with no offsetting benefits--particularly since non-Air-Force organizations are the Center's primary users.

In analyzing the source of the Center's revenues, however, we found that the IBM users, which include all the non-Air-Force organizations, are reimbursing about 85 percent of the IBM system's operating costs. The Burroughs 4700 users, all of which are Air Force activities, are reimbursing only 64 percent of that system's operating costs. Thus, we believe the Air Force has not borne an unfair share of the costs.

We also found the Center was using the fee-for-service concept effectively for the IBM system and was charging users for actual resources used. However, it was not properly accounting for costs of resources used or charging users of the Burroughs 4700 system accordingly.

We believe user charges should recover the full cost of computer support and should be based on the actual time and resources consumed. The Air Force has agreed; it plans to identify the factors precluding full cost recovery and take appropriate actions to develop user charges recovering all costs.

ADP-related cost savings

Since the Center became operational in June 1973, users have reported ADP-related cost savings amounting to several million dollars. The Navy, for example, estimated it realized savings of \$382,000 in fiscal 1979 by using the Center instead of obtaining services commercially.

Center provides satisfactory level of service

Our discussions with users in the San Antonio area showed that the services provided by the Center have been very acceptable. Past Air Force evaluations have confirmed this; with few exceptions, users have rated the quality of service as equal to or better than that received before obtaining support at the Center. The Navy, which is the largest user of the IBM 360/65 computer system, rated the service as far superior to that received at any other Department of Defense service center.

Recently, Brooks Air Force Base personnel studied available alternatives for base-level support and concluded that the best course of action was to continue obtaining support from the Center's Burroughs 4700 computer system. Factors considered in this decision were that (1) the current service and support are more than satisfactory, (2) any transfer of workload would cause a disruption of service, (3) the problems associated with reactivating a base-level computer operation would be avoided, (4) support from the Center is less costly, and (5) the proven, working concept of operation could be continued.

HAS THE CENTER MET ITS ORIGINAL GOALS?

The San Antonio Data Services Center has not realized all the cost savings that are possible for a regional data processing center. Most Air Force and other Federal users have not consolidated facilities or shared resources to reduce computer hardware and personnel costs. Although these savings were primary objectives in establishing the Center, they have never been fully achieved because top Air Force management has not supported the Center's original goals and has taken few initiatives to increase sharing. Further, the user agencies have not realistically considered the Center's potential as an effective, long term alternative for meeting their growing processing requirements.

From its inception in 1972, the Center's overall objective was to economically consolidate computer facilities in the San Antonio area. In November 1974, the Assistant Secretary of the Air Force (Financial Management) stated that the Center had demonstrated the workability of the service center concept and could provide satisfactory support. The Secretary also stated, however, that before hard dollar savings could be shown, some of the data processing installations in the San Antonio area would have to be closed. The plan was to eliminate selected installations and move their workload to the San Antonio Data Services Center.

Air Force failed to consolidate
all base-level workload

The only consolidation effort that actually took place, however, was the Air Force transfer of its Burroughs 3500 workload at Brooks Air Force Base to the Center's Burroughs 4700 system. This initial consolidation effort eventually resulted in releasing the Burroughs 3500 at Brooks 8 months after the workload transfer was made and satisfactorily supported by the Center.

The Air Force Audit Agency, in a 1977 evaluation of the Center, reported that computer facilities in the San Antonio area had not been consolidated because of low user support. Major commands want control over data processing equipment, and potential users in the area consider their own data processing facilities as a "free" resource. The audit agency also reported that no consolidations were being planned; in fact, potential users' existing computers had been upgraded and large sums had been spent for new data processing installations and for improving existing installations.

Air Force added six computer
systems in San Antonio area

At least six major computer systems have been added to installations in the San Antonio area since the Air Force adopted the regional center in 1972. Two of the systems, a Honeywell 6060 installed at the Air Training Command (Randolph Air Force Base), and a Univac 1108 installed at the Human Resources Laboratory (Brooks Air Force Base), were originally intended to be installed at the Center, but Air Force headquarters decided against this plan. Also, another computer, a Burroughs 3500, was moved from the Center to Randolph Air Force Base. The Air Force spent over \$1.5 million to construct two new ADP installations to house these computer systems. As pointed out by the Air Force Audit Agency, these actions were counter to the consolidation concept, and we believe they illustrate a lack of management support for the concept.

Another example of the continuing proliferation of Federal computers in the San Antonio area is the Army's move of its base-level IBM 360/50 computer system into a new facility at the San Antonio Air Force Station adjacent to Fort Sam Houston. This move required conversion of an existing Government building to a modern computer facility at a cost of about \$500,000. The Army also plans major equipment upgrades at this new facility. Other area Federal ADP users have also upgraded equipment and some are planning upgrades in the near

future. We found little indication that the Center has been considered as a viable alternative for meeting the Federal users' growing ADP requirements.

In justifying its earlier plans to close the Center, the Air Force's Directorate of Computer Resources stated that Air Force user acceptance has been far short of expectations and that soliciting additional workloads has attracted only non-Air-Force customers.

Air Force failed to pursue new customers and alienated others

We found, however, that the Air Force has made little effort to increase sharing. In fact, some actions have been very detrimental to attaining optimum use of the Center's computer resources. Numerous studies have been made of its cost effectiveness, and recently, the Center's continued existence was questioned by one of the major commands. By 1979, Air Force headquarters had explicitly directed the Center not to solicit or accept new workloads which would extend beyond 90 days. The major air commands and bases appear to view regionalization as a threat to their own computer facilities. Our review indicated that these parochial views do exist and have been prevalent since the Center was established.

In discussions with various user organizations, we found that continual uncertainties about the Center's future existence have prevented ADP users from planning to use its resources and have affected the Air Force's ability to attract new customers. To retain the computer capability required by all users and yet realize the economies dependent on optimum utilization, the Center's resources must be shared even more. The Navy plans to remove most of its workload from the Center in the near future, which would leave the IBM 360/65 computer significantly underutilized. However, a large workload is being transferred to the Center from the Office of the Secretary of Defense and this plus other expected workload increases should replace any lost work.

Our discussions with area users and officials at the General Services Administration lead us to believe that demand for the Center's resources will increase if the Air Force takes positive steps to offer effective and efficient ADP support and to ensure continuity of service. Many of the users in the ADP community are small in terms of their annual processing requirements and can be more effectively and economically supported in the sharing environment of a regional computer center.

HOW CAN THE CENTER BE IMPROVED?

In its new directives, the Air Force plans to initiate some positive steps to increase sharing of the Center's resources. The Acting Assistant Secretary of the Air Force (Financial Management) described the following steps:

- The Center should make concerted efforts to further improve its efficiency, cut overhead costs, and expand the number of customers.
- Other Air Force, Department of Defense, and Federal agencies should be advised of and provided the services offered by the Center.
- Air Force requirements for IBM-compatible computers and Burroughs upgrades should be reviewed by the Directorate of Computer Resources to ensure that the Center is considered as a possible source of support.

We believe these actions will help to increase sharing of the Center's resources and improve its operations.

Additional efforts should be made to increase efficiency and effectiveness

Although the Center has effectively supported its users, continuation of this will depend on its ability to provide modern, responsive services at competitive cost. The Center's current capabilities are limited to the 15-year-old computer technology of the Burroughs 4700 and the IBM 360/65. Unless this equipment and the operating systems are updated, the Center will be unable to satisfy user requirements or to attract and maintain enough customers for economical operations.

The Air Force plans to replace the base-level Burroughs computer systems at all its bases under the Phase IV computer system acquisition program. However, the Phase IV program includes no plan to replace the Burroughs 4700 computer system at the Center. According to current Air Force plans, the Center will continue to support base-level standard systems and other Burroughs customer needs until the Phase IV program is completed in the San Antonio area. Thereafter, the Burroughs 4700, or a system appropriately sized for the residual workload, will support all remaining Air Force, Department of Defense, and other Federal Burroughs workloads appropriate for a regional service center.

As part of a recent redirection of the Phase IV program, the Air Force plans a major reduction in the number of bases

equipped with two computer systems. The new plan calls for several regional centers in the United States. According to one implementation scenario, two of the centers would be located in San Antonio at Randolph and Kelly Air Force Bases. Most of the Center's current Burroughs workload is planned for eventual consolidation at these two centers. Therefore, as currently projected, very little workload would remain for the Center's Burroughs 4700 computer.

Also, to reduce operating costs, the Air Force is considering relocating the Center to Government-owned facilities. It is evaluating facilities at the San Antonio Air Force Station, where space has been reserved for the Center for the past several years. As mentioned previously, the Army recently spent \$500,000 to convert similar space at this location to a modern ADP facility. The Air Force also plans to construct a \$6-million computer facility at Kelly Air Force Base, partly to house the new Phase IV equipment but also to provide adequate facilities for other ADP equipment that the Air Force Logistics Command requires.

We recognize that many issues remain unresolved at this time regarding eventual implementation of the new Phase IV computer equipment. Nevertheless, we believe the Air Force should carefully consider its consolidation approach, particularly in view of the facilities required to house the new equipment. Consolidating the Center's current IBM and Burroughs computers with the new Phase IV computers at Government facilities, such as those available at the San Antonio Air Force Station, may well be the most economical and effective approach.

Regardless of the consolidation approach taken, continuing a Burroughs computer capability at the Center after the new Phase IV computers are implemented provides some practical advantages:

- The Center could support application systems not yet ready for conversion to the new equipment, allowing early release of Burroughs computers elsewhere in the San Antonio area.
- The Center could continue providing service for Air Force systems that are more effectively supported by the Burroughs computer.
- Other Federal agencies could obtain Burroughs computer support as necessary.

Obtain new equipment as necessary

The Air Force has identified deficiencies in the IBM 360/65 computer system and is preparing a proposal to replace this hardware with new, fully compatible equipment. According to Center officials, current operations are hampered by frequent hardware malfunctions, resulting in degradation of service to users. Although the computer is not saturated at this time, improved service cannot be provided during the heaviest demand period without a hardware upgrade--primarily memory and direct access storage. The Center's workload is expected to increase, but the system's growth potential is limited by both hardware and software constraints. Officials have pointed out that the Center is expected to provide timely, needed support to Air Force and other Government users, but its ability to respond to additional processing requirements is limited. Prolonged degradation of support would probably cause users to search for computer support from commercial sources or other Government agencies, or to acquire their own computers, thus substantially increasing the Government's over-all cost.

If ADP utilization trends continue and potential users in the San Antonio area begin to patronize the Center, the existing computer equipment will soon be saturated, eventually impairing service to individual users. Should this situation develop, the Center must be able to expand its capability to meet the total user demand. The current users have already expressed concern about the continued availability of service. To dispel uncertainties about the continuity of service and to maintain effective and economical support to sharing users, the Center must be able to guarantee future service to its users.

Air Force officials have indicated that they plan to obtain authorization from the General Services Administration to make equipment upgrades, using compatible computers, as workload increases dictate. If these upgrades are planned properly, there should be no degradation of user support.

CONCLUSIONS

The San Antonio Data Services Center has demonstrated the feasibility of consolidation and the regionalization concept by providing responsive computer support to a number of highly satisfied users. While the Center's operating costs compare favorably to commercial computer centers and similar Air Force installations in the area, many of the economies that could be expected from a regional data processing center have not been realized. The Air Force and other Federal ADP users have not taken advantage of opportunities to consolidate facilities,

share resources, and reduce computer hardware and personnel costs. We believe these opportunities have been missed because

- Air Force top management had not supported the original consolidation goals and had, up to now, taken few initiatives to increase sharing of the Center's computer resources and
- the Federal data processing community has not considered the Center an effective, long term alternative for meeting its growing processing requirements.

The Air Force now recognizes that additional efforts should have been made to increase the Center's efficiency and effectiveness and has initiated some positive steps to (1) reduce its operating costs, (2) eliminate factors precluding full cost recovery, (3) attract more customers, (4) enhance the computer capabilities, and (5) ensure that the Federal ADP community is aware of the services and resources available.

We believe these actions, if aggressively pursued, together with our recommendations can significantly improve the Center's operations and help ensure a successful regional data processing center in San Antonio.

RECOMMENDATIONS

To most effectively address the Government's ADP needs in the San Antonio area, we recommend that the Secretary of the Air Force

- prepare, in cooperation with GSA, a long range plan for meeting these needs,
- develop a formal management policy encouraging the effective use and sharing of the Center's computer resources across service and command lines,
- develop cost accounting procedures and user rates that provide for full cost recovery as described in our Federal Government Accounting Pamphlet Number 4 (1978),
- determine future equipment needs based on current and projected user requirements, and
- obtain authorization from GSA to augment existing capabilities to best meet future needs.





