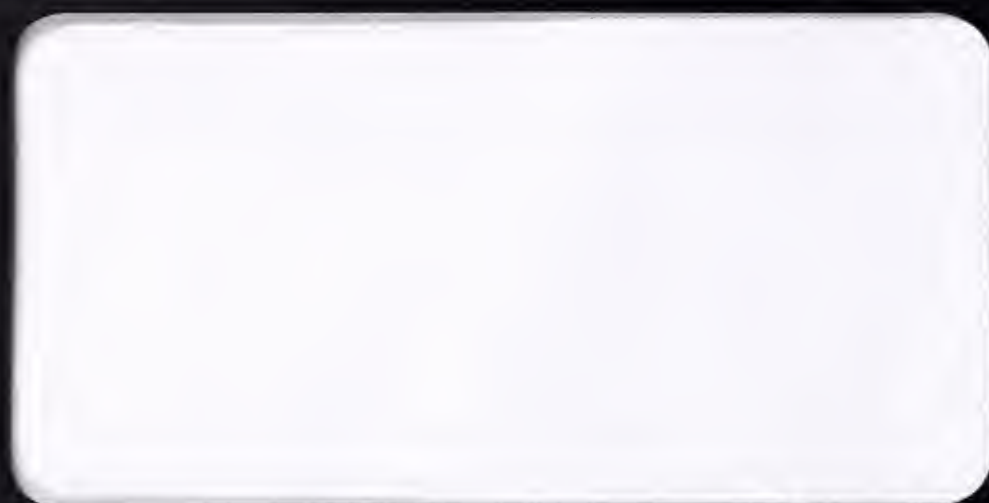


Identifying Sales Opportunities
for Workstations in
Selected Federal Agencies

INPUT

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Identifying Sales Opportunities
for Workstations in
Selected Federal Agencies

December 9, 1993

Final Report
Submitted to Hughes Data Systems

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***Identifying Sales Opportunities for Workstations
in Selected Federal Agencies***

INPUT exercises its best efforts in preparation of the information provided in this report and believes the information contained herein to be accurate. However, INPUT shall have no liability for any loss or expense that may result from incompleteness or inaccuracy of the information provided.

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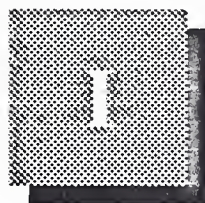
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Background and Objectives

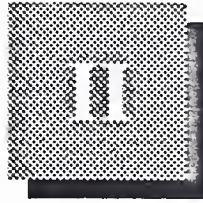
Hughes Data Systems (HDS) is the prime contractor on the Navy's tactical workstation contract (TAC-3). HDS is interested in bidding on the recompetition of this contract (TAC-4), scheduled for announcement in 1994.

In the meantime, HDS seeks to determine ruggedized and non-ruggedized workstation requirements in selected federal agencies, including Navy, Air Force, Coast Guard and civilian agencies dealing with law enforcement. By understanding the potential workstation market through an independent source of market intelligence, HDS expects to get a more accurate picture of demand and can thereby develop strategies for moving products from its awarded contracts.

To more accurately assess its potential in maximizing sales, HDS contracted INPUT to research the workstation demands of several federal agencies. Information that assists HDS in its pursuit of sales opportunities includes:

- Program requirements specific to workstations as defined in agency mission statements
- Existing problems federal agencies are experiencing in their programs which require ruggedized workstations
- Purchasing scope on existing workstation contracts; environmental and political issues that are expected to influence agency purchasing
- Existing long-term and short-term plans to install, upgrade or replace workstations and other single-user terminal systems

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Scope and Methodology

INPUT aimed this market study for HDS at existing and potential sales opportunities for ruggedized and non-ruggedized workstations and other single-user portable microcomputer platforms and special terminals that support programs of selected federal agencies. Primary attention focused on information pertinent to the Navy's anticipated TAC-4 contract. Platforms with special requirements were identified and characterized to the extent information was available.

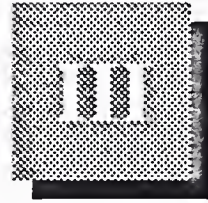
The study focused on the following agency operating environments:

- Military research and development centers
- Navy, Marine and Coast Guard ship- and shore-based facilities
- Law enforcement agencies that operate mobile and outpost facilities

While researching, INPUT performed the following activities:

- Analyzed opportunities identified in active contract programs
- Reviewed long-range information technology plans for workstation requirements
- Identified opportunities in various plans, budgets and reports of federal agencies
- Interviewed agency officials about requirements and buying plans
- Examined related information in oversight reports and other documentation

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Results of the Interviews

Interviews for this study were conducted solely over the telephone. Initial calls determined who was most able to report on issues being investigated. From a database of more than 1,000 potential study sites, 161 were selected as representative of environments requiring workstations. A list of agency sites and offices contacted appear in Appendix A of this report.

Exhibit III-1 shows the distribution of agency offices contacted and profiled in this study.

EXHIBIT III-1

Distribution of Agencies Interviewed

Agency	No. Contacted	No. Profiled	No. Interviewed
U.S. Air Force	98	85	23
U.S. Navy	40	34	34
U.S. Coast Guard	6	6	6
U.S. Customs Service	6	4	4
U.S. Marine Corps	3	2	2
Alcohol, Tobacco, & Firearms	3	2	2
Federal Bureau of Investigation	3	1	1
Drug Enforcement Agency	2	1	1
Total	161	135	73

Exhibit III-2 shows the distribution of sites with workstations installed, listed by agency. Sites with SUN (47) or DEC (44) workstations clearly outnumber all other sites with workstations manufactured by other companies. Some sites have workstations from more than one manufacturer.

EXHIBIT III-2

Distribution of Workstations by Number of Sites

Agency	H-P	SUN	DEC	ATT	UNI	SCG	IBM	UNK	OTH
Navy	7	9	8	0	0	3	2	17	4
Air Force	3	37	35	12	0	8	2	12	2
Marines	0	0	1	0	0	1	0	0	0
USCG	1	1	0	0	3	0	0	0	0
Customs	0	0	0	0	0	0	0	3	1
FBI	0	0	0	0	0	0	0	1	0
DEA	0	0	0	0	0	0	0	1	0
ATF	0	0	0	0	0	0	0	2	0
Total	11	47	44	12	3	12	4	36	7

Code: H-P: Hewlett-Packard; SUN: Sun Microsystems; DEC: Digital Equipment Corp.; ATT: AT&T; UNI: Unisys; SCG: Silicon Graphics; IBM: IBM; UNK: Unknown; OTH: Other

Exhibit III-3 shows the distribution of workstations by manufacturer listed for each agency surveyed. Sites represented in Exhibit III-2 account for installations aboard aircraft, ships and mobile units. One Navy site (SPAWAR) reported 3,000 Hewlett-Packard workstations (shown in Exhibit III-3) for ships at sea. One Coast Guard site reported more than 10,000 Unisys 3B2 workstations aboard Coast Guard vessels.

EXHIBIT III-3

Distribution of Workstations by Manufacturer

Agency	H-P	SUN	DEC	ATT	UNI	SCG	IBM	UNK	OTH	Total
Navy	3,204	107	160	0	0	5	36	170	16	3,682
Air Force	8	333	244	22	0	21	13	100	7	761
Marines	0	0	8	0	0	15	0	0	0	23
USCG	15	15	0	0	*	0	0	0	0	*
Customs	0	0	0	0	0	0	0	0	0	1,336
FBI	0	0	0	0	0	0	0	0	30	30
DEA	0	0	0	0	0	0	0	0	600	600
ATF	0	0	0	0	0	0	0	0	800	800
Total	3,327	455	412	22	*	41	49	270	1,453	*

* More than 10,000

Code: H-P: Hewlett-Packard; SUN: Sun Microsystems; DEC: Digital Equipment Corp.; ATT: AT&T; UNI: Unisys; SCG: Silicon Graphics; IBM: IBM; UNK: Unknown; OTH: Other

Exhibit III-4 shows the ratio of UNIX versus other workstation operating systems. Military services, not civilian agencies, show a marked preference for UNIX-based workstations. This may be because civilian agencies referred to high-powered microcomputers running DOS as workstations.

Exhibit III-5 shows the distribution of functional uses for workstations by agency. While multiple functions are identified for workstations, only 77 of the 135 agency sites profiled identify true workstation requirements.

From discussions with agency respondents, only engineering applications appear to have requirements for 3-dimensional graphics on the workstation monitor.

EXHIBIT III-4

Ratio of UNIX Workstations by Agency

Agency	Total	UNIX	Percent
Navy	3,682	3,485	95
Air Force	761	592	78
Marines	23	16	70
USCG	*	30	N/A
Customs	1,336	1	< .01
FBI	30	0	0
DEA	600	0	0
ATF	800	0	0

Code: USCG: U.S. Coast Guard; FBI: Federal Bureau of Investigation;
 DEA: Drug Enforcement Agency; ATF: Alcohol, Tobacco, & Firearms

* More than 10,000

EXHIBIT III-5

Distribution of Workstation Functions by Agency Sites

Agency	MFR	ENG	SCI	TAC	IMG	LAW	BUS	MOD	LOG	CAD	OTH
Navy	0	12	10	7	8	0	0	4	7	4	7
Air Force	0	1	0	0	0	0	0	0	1	0	1
Marines	1	2	0	0	0	0	0	1	1	1	0
USCG	0	1	1	1	1	1	2	1	1	0	1
Customs	0	0	0	0	0	2	0	0	0	0	0
FBI	0	0	0	0	1	0	0	0	0	0	0
DEA	0	0	0	0	0	1	0	0	0	0	0
ATF	0	0	0	0	0	2	0	0	0	0	0
Total	1	16	11	8	10	5	2	5	9	5	9

Code: MFR: manufacturing; ENG: engineering; SCI: scientific; TAC: tactical; IMG: imaging; LAW: legal; BUS: business; MOD: modeling; LOG: logistics; CAD: CAD/CAM/CAE; OTH: other

The requirement for ruggedized workstations appears to be very low among the sites portrayed in this study. Of the 73 sites involved, Exhibit III-6 shows only 22 requirements were identified for ruggedized equipment. One Coast Guard site reported an unusually high number of ruggedized shipboard workstations. These workstations were Unisys 3B2 processors. Another Coast Guard site reported requirements for ruggedized laptops in aircraft. The single Navy SPAWAR site interviewed reported a high number of shipboard ruggedized workstations. The Navy also reported a requirement for ruggedized portable processors, but these would not be deployed shipboard.

EXHIBIT III-6

Requirements for Ruggedized Equipment

Type	Sites Indicated	No. of Workstations
Shipboard	8	*
Aircraft	3	5
Vehicle	7	1,060
Manpack	4	1,336

* More than 10,000

In Exhibit III-7, of the 24 sites planning to purchase workstations in the future, 21 intend to purchase within the current fiscal year (1994). Only three indicated no plans to purchase before fiscal year 1995, but this probably underrepresents true need. Six sites indicated ongoing purchase requirements. Three of the six responding Coast Guard sites reported a headquarters moratorium on workstation purchases was in effect through the foreseeable future.

Of the 45 sites indicating workstation purchasing (both active and future), GSA schedule was identified most often (32 times) as the contract vehicle of choice (see Exhibit III-8). A moderately high count of 16 sites reported the combined use of a GSA schedule contract with another open market contract vehicle for workstation acquisitions.

EXHIBIT III-7

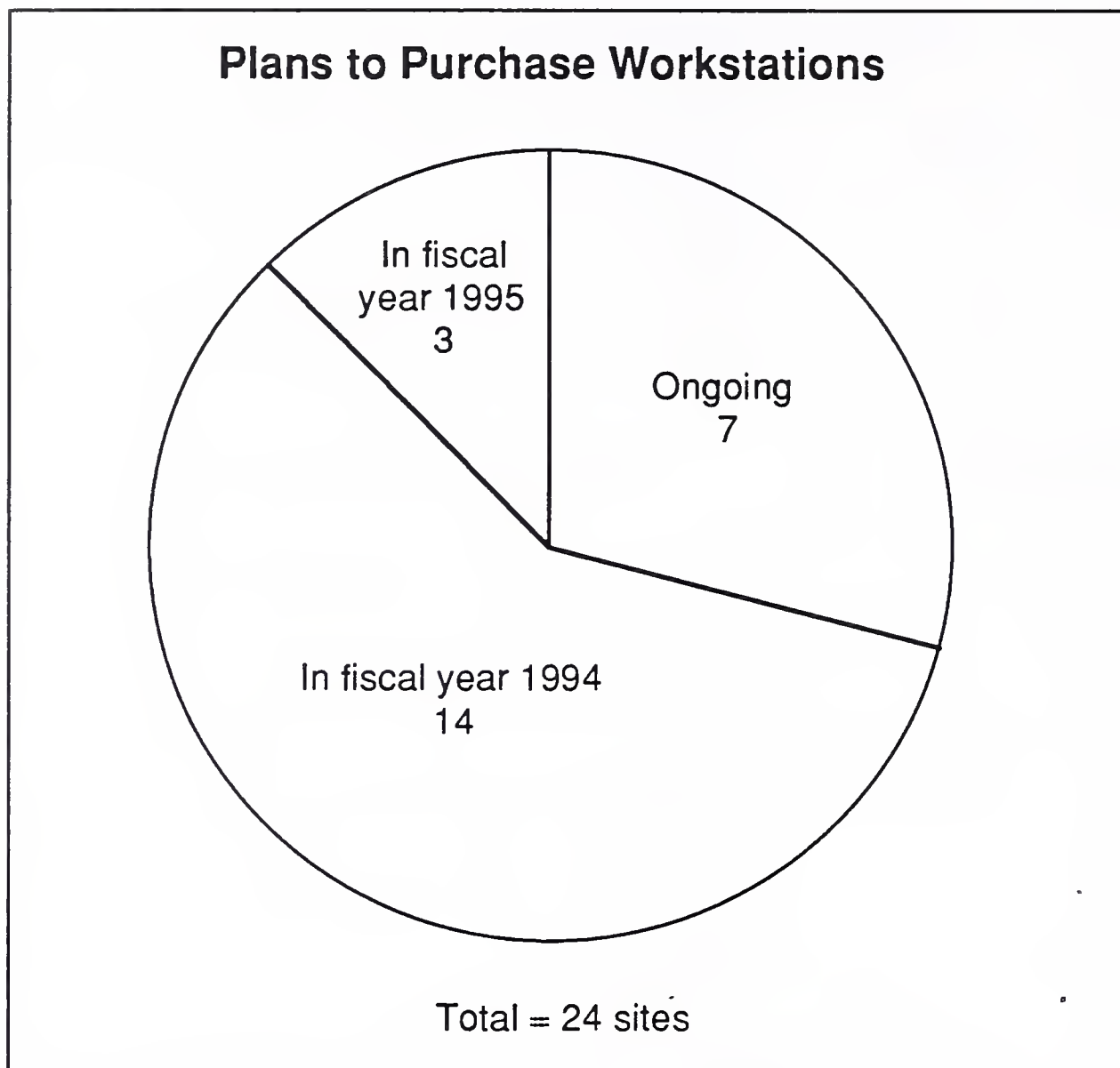


EXHIBIT III-8

Contract Vehicles for Workstations

Purchase Vehicle	No. of Mentions
GSA Schedule Contract Only	16
In-house IDIQ Contract	6
Other Agency IDIQ Contract	4
Other Open Market Contract	1
Other Noncompetitive Purchase Vehicle	2
GSA Schedule and IDIQ Contract	16

The existing IDIQ (Indefinite Delivery Indefinite Quantity) contracts mentioned as possible purchasing vehicles are listed in Exhibit III-9.

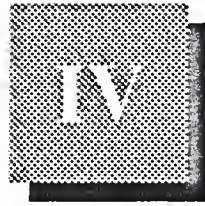
EXHIBIT III-9

Open-Market Contract Vehicles

Agency	Contract
USCG	NASA SEWP AFCAC Supermini FEDCAC 106 Unisys
USAF	AFCAC 303 AFCAC 305
USN	CAD II TAC 3 Super Mini
USMC	CAD II
DEA	SEARS
USCS	TMAC
ATF	DT4 TMAC

Only six of 73 agency officials interviewed indicated any problems ordering from a GSA schedule contract or from any open-market competed IDIQ contract. The few problems cited related to settling for something less than desired based on functional requirements compromised by convenience of an available purchasing vehicle.

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Programs, Contracts and Opportunities

A

Desktop Processor Market Forecast

The federal government continues to demand desktop processors. There are also indications that agencies will purchase more portable and laptop processors over the coming years, but accurate projections have not yet been made. Desktop processors are divided into two major categories: Comprehensive Instruction Set Computers (CISC) and Reduced Instruction Set Computers (RISC). The distinction between the two categories diminishes as DOS- and MAC-based processors attain higher speed and more data throughput capacity, and applications running under these respective operating systems become more sophisticated.

For study purposes, the distinction is retained. However, more and more agency officials, particularly in civilian agencies, mean high-performance DOS machines when they refer to the term "workstations."

Exhibit IV-1 shows a projection of agency budgets for desktop (DOS- or MAC-based processors) and workstation processors. An attempt was made in generating these figures to distinguish between the two interpretations of workstations; however, in much of the agency-provided data, the distinction is absent.

The compound annual growth rate (CAGR) of the contracted portion of the overall information technology market in the federal government is projected at 5.9%. The microcomputer market appears to be growing at a slower rate (CAGR of 3.04%). In fact, federal agencies will purchase microcomputers in higher numbers, but will spend less money for them. This phenomenon is explained by (1) unit prices for microprocessor components are dropping, and (2) this highly competitive market segment is forcing reduced profit margins for the finished products, again influencing lower market prices. The Department of Justice, with most of the civilian agency law enforcement budgets, shows a healthier CAGR of 5.81%.

The workstation market appears to be more robust, with a government-wide CAGR 10.21%. The higher rates for law enforcement agencies (Justice) is probably due to their casting of high-performance DOS- and MAC-based machines as workstations.

EXHIBIT IV-1

Desktop Processor Market Forecast

	FY1994	FY1995	FY1996	FY1997	FY1998	CAGR (%)
<i>Microcomputers</i>						
Total Government	1,612	1,657	1,559	1,767	1,821	3.04
Air Force	191	195	183	211	213	1.06
Navy	185	190	178	206	207	1.61
USMC	79	80	75	90	87	3.15
Justice	131	134	126	147	146	5.81
<i>Workstations</i>						
Total Government	490	540	631	807	831	10.21
Air Force	58	64	74	97	97	8.10
Navy	56	62	72	94	95	8.68
USMC	24	26	30	41	40	10.33
Justice	40	44	51	67	67	13.18

All figures in \$ million.

Source: OMB, INPUT

B

Programs, Contracts and Opportunities

The remaining part of this chapter discusses programs and contract opportunities for workstation acquisition.

1. *Patrick Air Force Base's Eastern Range* built missile tracking systems based on different hardware, operating systems, languages and algorithms. External data, such as radar, optics and a flight test support system are fed into the Central Computer Complex at Cape Canaveral Air Force Station. A joint venture of Computer Sciences Corp. and Raytheon (CSR) supported the 45th Space Wing missile and space vehicle tracking activities at Eastern Range for the last five years. They recently won a \$566 million contract to continue their work. CSR built the Tertiary Range Safety System (TRSS), which runs on Sun workstations. Other USAF installations may buy workstations off the contract.

2. *The Department of Defense* DMRD 918 dealing with streamlining data processing is moving forward, although some of the systems consolidation is on hold. DMRD 918 is an extension of DMRD 924, which sought to create 15 large megacenter operations to manage data processing for the Defense Department. DMRD 918 is changing character. There is a hold on some of the systems consolidation originally called for, but the section dealing with streamlining data processing installations is still moving ahead. Defense Department officials believe the megacenter idea is becoming passé as agencies move more into distributed, client-server processing.

3. *Hewlett-Packard* emerged as a key supplier of computer workstations and servers to the federal market, demonstrated by recent U.S. and Canadian government contract wins totaling more than half a billion dollars. The company and its channel partners supply desktop and server computers to a range of government agencies, including NASA, the U.S. Army, Air Force, Coast Guard, Navy, National Institutes of Health and National Weather Service. H-P's most recent federal contract win is from NASA's Goddard Space Flight Center's Scientific and Engineering Workstation Procurement (SEWP). SEWP is an indefinite delivery, indefinite quantity contracting vehicle for providing UNIX system-based workstations and support equipment to NASA centers and other federal agencies. The workstations will perform computer-aided engineering and mechanical computer-aided design applications, as well as structural and thermal engineering tasks. H-P's systems are ideal for these applications which require the combination of high speed, double precision floating point performance and fast, high resolution, 3-D graphics.

4. *PRC* will distribute more than \$40 million worth of H-P Series 700 workstations as the prime contractor for the Advanced Weather Interactive Processing System (AWIPS) of the National Oceanic and Atmospheric Administration. The H-P workstations will upgrade and replace computer and communications systems that enable the NWS to automate the nation's weather warnings and forecasts. H-P could provide as many as 2,000 workstations and more than 1,000 X stations during the next five years. Congress believes the program is not properly managed, so may reduce total spending by cutting allocated funds.

5. *Hewlett-Packard* announced early in FY 1993 that PRC plans to purchase several hundred million dollars worth of multiuser systems, file servers, peripherals, networks and network-management software as a result of PRC's selection as prime contractor for the \$1.4 billion Super Minicomputer (AFCAC 300) contract. H-P systems will be used to upgrade existing minicomputers and mainframes in the armed forces. They will also be used by civilian agencies that can purchase computers under the Super Minicomputer Award. PRC will also deliver Everex workstations to Navy (Jacksonville), Army (Ft. Monmouth), USAF (Hanscom), DLA (Cameron Station) and USCG (D.C.).

6. *Hughes Data Systems*, a unit of Hughes Aircraft Co., plans to purchase \$100 million worth of workstations and servers, as many as 4,300 systems, to be ruggedized for the U.S. Navy. The workstations will be installed aboard combat ships, submarines and in land-based facilities for office automation and other tactical applications within the Navy's TAC 3 program, which is the foundation for the Navy's Copernicus Architecture. The architecture is a command, control, communications and intelligence environment based on commercial products and industry standards.

7. *Digital Equipment Corporation (DEC)* won a piece of a Pentagon contract with a potential value of as much as \$30 million to supply Alpha AXP workstations and servers over the next four years. The initial contract, valued at slightly more than \$4 million for DEC hardware alone, calls for installation of 350 high performance DEC 3000 Model 400 AXP workstations to support Air Force command and control activities. DEC may sell as many as 2,500 more Alpha computers to the Air Force during the life of the four-year contract. The contract was actually awarded to Computer Sciences Corporation, which uses DEC computers running CSC custom software to support the Command and Control Information Processing System of the Air Force's Air Mobility Command for real time mission monitoring and scheduling.

8. *The Air Force Rome Laboratory* delivers the Advanced Planning System (APS) air battle planning system to the Air Operations Center (AOC). APS has been run by the Rome Laboratory on Sun Sparcstation 2 and 4 machines, as well as on DEC 3100 workstations and 5500 servers. APS (Ada) will replace various ATO generation systems used throughout the Air Force. Rome typically explores technologies that later are turned over to the Electronic Systems Center at Hanscom Air Force Base, MA, for systems under development. Currently, the laboratory delivers its product directly to the Air Combat Command.

9. *The Air Force's Advanced Artificial Intelligence Technology Testbed (AAITT)*, now in its final year of development, will help mission planners integrate knowledge-based systems with conventional databases and simulations. The test bed is developed by Rome Laboratory, N.Y. Written in C and Lisp, the AAITT tools run on a distributed network of Sun Microsystems Sun-4 workstations under SunOS and workstations from Symbolics Inc.

10. Under an indefinite-delivery, indefinite-quantity contract, *GTE* expects to supply about 1,800 IBM RISC System/6000 workstations using IBM's modified AIX operating system to meet requirement for multilevel access security. The 2,000 JCS employees will use the JSAN system for conventional office applications and some custom applications. Connected across a Fiber Distributed Data Interface network, the workstations will run word processing and spreadsheet applications using Asterisk, a UNIX software package, and the Informix database management system.

11. *The U.S. Navy* is redefining rugged computer standards so commercial off-the-shelf (COTS) equipment is not necessarily ruled out. Mil-Standard 2036 covers systems for ships, space, land/mobile, land/stationary and avionics. One motive for the new Mil-Spec is to write rules for handling commercial and rugged COTS equipment before the logistics become unmanageable. One concern was that commercial equipment may be installed aboard ships with no qualifications. The new specification allows commercial-based platforms that offer open architecture, lower prices and ruggedization, and is a joint project between the Naval Sea Systems Command and the Space and Naval Warfare Systems Command. This is the first time a Mil-Spec has been made available to the public to allow everyone to have access to the same standards.

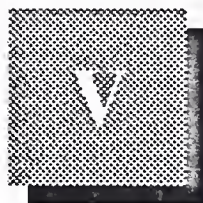
12. *PRC* is delivering 47 SUN workstation systems under the JEDMICS contract to Navy (30 sites), Marine (5 sites), Army (7 sites) and USAF (5 sites).

13. *AF University Wargaming Center* uses Sun Workstations/UNIX.

14. *USCG Shipboard Command and Control System (SCCS)* is planned as a reliable method of evaluating and disseminating information from a wide array of sources. Its tactical platform is compatible with the Navy, and it incorporates the Navy's desktop software. The Coast Guard will probably buy workstations from the Navy's TAC-3 contract.

15. *The Electro-Optical Processing and Transmission System* will rapidly transmit digitized images/photographs between Coast Guard units and commands. Image workstations for 16 shore installations are planned. Each USCG district will later attain operational integration for air, land or sea use.

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Analysis and Summary

A

Analysis

This section discusses analysis of information collected during the study.

Interview Response Rate. Response rates for the individual agency sites varied widely both in levels of participation and in completeness of responses. In general, Air Force sites were more willing to participate than Navy sites. Their information also tended to be more complete than participating Navy sites. While military services personnel contacted typically responded to questions themselves, civilian agency counterparts were more inclined to pass responsibility to another official when questions could not be answered completely.

GSA Schedule Contracts. For the most part, interviews for this study were conducted at operating sites. Typically, equipment is purchased in small quantities at these sites. Larger buys occur centrally and equipment is then distributed to sites. Much of the equipment identified in this study was obtained in small quantities. Upgrades and replacements are also anticipated in small quantities. The preferred contract vehicle was the GSA schedule contracts held by manufacturers or distributors. Some bought from existing IDIQ contracts, but not necessarily because functional capabilities were limited to equipment in these contracts. Agencies typically purchase from the easiest and most convenient vehicle.

Operations in the Field. Civilian law enforcement agencies reported more work activities in the field than did military services. Military services reported more activities on board mobile units, such as airplanes and ships. While ruggedized equipment in the field and on mobile units is needed, the higher cost of this special equipment bars more frequent purchasing. Law enforcement groups stated a preference to purchase less expensive microcomputer portables that may break occasionally over paying the higher cost for ruggedized equipment. The special equipment is also more difficult to use because of increased weight and inconvenient manipulation.

Buying Period and Moratorium. Buying at sites, which differs from buying centrally, tends to be opportunistic. Some ongoing requirements impose a continuous buying period, but most large, open market buying appears to be scheduled around contract availability.

Definition of Workstation. The market for high performance desktop processors is more difficult to separate between traditional RISC-based processors and CISC-based microcomputers running DOS or MAC operating systems. The functionality of the microcomputer increases with only marginal increases in price. The more powerful RISC-based processors cost considerably more. Both are referred to as workstations, depending on how critical the respondent is to real differences in applications running on each class of processor. The distinction is made clearly among military service agencies. Among civilian law enforcement agencies, however, there is more of a tendency to say workstation when a CISC-based processor is really required.

Ratio of UNIX Platforms. Consistent with the difference in treatment of the definition of a workstation by civilian agencies and military services, UNIX appears more often on military workstations than on civilian law enforcement agency processors. In this study, virtually none of the civilian processors represented ran UNIX operating software. The high performance capability of the UNIX environment is not a requirement for law enforcement programs.

Contract Dissatisfaction Rate. It appears from responses of virtually all officials who participated in this study that existing contracts were not a problem for purchasing workstations. Of the six who stated problems, the contract vehicle itself was not the source. These officials would have preferred acquiring a processor other than those available on the existing contract. GSA schedule contracts were less troubling than open-market contracts because choices of workstation manufacturers were greater through the multiple award program contracts. This indicates that any workstation contract vehicle in place would be acceptable to agency buyers. In the absence of an appropriate open-market or IDIQ contract, an agency would be satisfied to purchase from a Schedule contract.

Scope of Existing Programs. In reviewing contract vehicles used by officials interviewed in this study, it is apparent that agencies have no reluctance to buy from any contract available. Many contracts awarded offer potential sales beyond those of the awarding agency entity. The thinking in this broadened contract scope is that agency users need fewer contracts to supply equipment if the contracts are open for other agency purchasing. The government already spends too much time and effort competing for equipment contracts, so the fewer it negotiates the better off they are. It is normal for civilian agencies to purchase from military contracts. Successful bidders should consider this cross-agency buying when developing marketing and sales strategies for their contracts.

Evolving Technical Requirements. One of the drawbacks to multiyear desktop technology contracts is the negotiated products' life span. The longer a contract is in place, the more likely available equipment will become obsolete before the contractor can enjoy the full sales value. Subsequent contracts awarded to another vendor may offer higher performance products at lower cost because of the rapid development of new, enhanced, less costly technologies. As rapidly as the technology evolves, users find new requirements. One possible solution to the inherent risk of short-term product obsolescence is to modify the contract, although there is a risk that agencies may not act in a timely manner. Another tactic is to bid future products on the contract to replace the original ones as technologies evolve. Under either option, a vendor is more likely to be positioned for more sales.

B

Summary

This chapter provides a summary of some issues resulting from this study. While analyses in Chapter A discuss some interpretations of the data collected, this section goes beyond the data.

Agencies may have only limited awareness and use of existing workstation contracts other than GSA schedule contracts. Only one site out of 71 interviewed identified the Navy TAC 3 contract as a workstation purchasing vehicle. The 133 sites profiled in this study did not even locate a significant number of UNIX-based workstations. One of two explanations can be offered. Either the overall need for this class of computing platform is low among the class of agencies selected, or only a few agency sites purchase large amounts of workstations, and these sites were not included in the study.

The trade press carries articles that place workstation distribution among federal agencies in the tens of thousands. These numbers are far greater than those identified by officials interviewed. Of the many available contract vehicles in place from which workstations can be purchased, very few were even identified. Demand was clearly not high. Other sites must do all the buying. While the functional scope of sites contacted was narrow, it was broad enough to locate big numbers if they were as widely distributed.

The significance of the actual results was that more agencies tended to purchase workstations in small numbers. For this level, GSA schedule contracts were appropriate. Other contracts were available, but GSA schedule contracts are more widely known and understood. Therefore, they don't need much marketing to get in the hands of potential buyers. Marginally higher prices on a schedule contract are easily offset by

savings in administrative time necessary to compete for a better contract or to locate and purchase off another open-market contract. The GSA schedule contract decision may also result from unawareness of existing contract alternatives.

Two points are clear. First, most distributed sites buy small amounts of products, consistent with both requirements and a limited allocated budget. Centralized purchasing with distribution of products to regional sites is frequent for many items, but not apparent from this study for workstations. Second, agency sites appear indifferent to the contract type, and tend to prefer the simplicity and convenience of a GSA schedule contract. Contractors seeking to maximize sales on IDIQ contracts should (1) be prepared to market these sites to advertise their purchasing vehicle, and (2) anticipate that such purchasing at the site level will normally be low-volume.

There are differences in agency definitions of workstation. More than the term "high performance" is needed to categorize workstation requirements. With added processing power in the DOS environment, and less expensive commercial software that performs margin high-technology applications, there is some confusion in the marketplace over what constitutes a workstation. When an agency states a requirement for workstations, a DOS machine may be intended. Bidding a UNIX box when an accelerated IBM-compatible desktop processor is sufficient is not going to succeed. A vendor needs to establish the appropriate workstation environment. This study indicates that the law enforcement environment in civilian agencies may not be an appropriate place for a true workstation. Civilian law enforcement agencies may say workstation, but they don't mean RISC-based UNIX box. A military service is more likely to mean an RISC machine when it states a workstation requirement.

Agencies may be willing to sacrifice functionality for lower cost. Part of this study addressed the ruggedized market. The requirement for ruggedized equipment was broad. However, the actual purchasing and intent to purchase ruggedized workstations was disproportionately low. Agency respondents stated a preference for less expensive, non-ruggedized machines that may break under harsh conditions.

Ruggedized workstations present an undesirable functional compromise. These boxes tend to be considerably heavier and harder to handle than conventional workstations. They also tend to be more difficult to operate. The inconvenience leads to the decision to avoid the ruggedized alternative when possible. Only mounted processors in mobile units are acceptable, but the inconvenience in operating them influences against their use. With only 19 of 71 sites stating a requirement for ruggedized workstations, the potential for sales is relatively low, even if the contract can be marketed.

A successful vendor must market the contract. This means advertise it. There is no question that successful contracts require marketing. Even GSA schedule contracts require some marketing. The contractor should identify the positive differentiation between products on the contract and those of competing contracts. This differentiation can be based on lower cost, higher performance, availability or higher quality as reported by satisfied customers. High quality applications also contribute to positive differentiation. Price/performance is an important issue among agency buyers and users.

Just because GSA or some other agency claims a percentage of the available products on a contract, the interest doesn't guarantee sales. In fact, it could otherwise limit the total contract value by preventing the awarding agency from purchasing up to the allowable limit. Often, when products are purchased in large amounts for distribution to remote sites, not enough is delivered, and some sites must follow up with purchases of their own. If the same product is available from a more convenient contract, the site purchasing office may choose this contract instead. This alternative buying could also result if product availability under the primary contract is limited by production backlog. Sales lost here are not recoverable.

Agencies appear to expect their workstations to be upgraded over time. Some of the respondents stated their functional requirements for workstations were not yet clear. A need for the workstation was established, but growing program requirements precipitated needed enhancements to those workstations. In order to accommodate changing functional requirements—usually this means more capability rather than less—a workstation should be upgradable. The upgrade should be part of the contract or contract modification at a minimum. Some upgrade functional requirements mentioned during this study included:

- Support to wireless communication
- System upgrades to accommodate higher performance application packages such as multidimensional image analysis
- Interface for higher capacity and resolution monitors

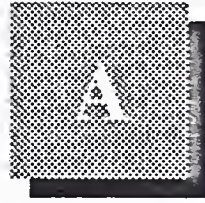
Agencies prefer sole source to full and open competition when buying workstations. Agencies still prefer some products over others, even when the functionality is similar. In small purchasing, buyers can choose a desired vendor product because reporting requirements do not apply. GSA schedule contracts may be sole source vehicles, or they may be purchased off other contracts that distribute the desired product. The sole source decision enables users to keep equipment from the same vendor, either as an operating convenience or because operations were standardized around an existing vendor product. Even if the workstation is not the best product on the market for a particular requirement, a compromise can

be made to keep all equipment in an operating environment the same. Competition is a long, drawn-out process for everyone involved. Agencies, particularly sites, will avoid the competitive process wherever possible.

No one mentioned a lack of standards as an inhibitor to purchasing effective workstations. The targeted agencies implicitly formed around two operating system standards—DOS and UNIX—for their respective workstation platforms. No specific standards were stated as a requirement. Standard application packages might be anticipated, but this was outside the scope of the study.

Potential for sales into the Coast Guard is building. Respondents from the Coast Guard consistently referred to a moratorium on purchasing workstations, therefore, they attempted to award a workstation contract of their own. Although there was virtually no ordering off the Navy's TAC 3 contract (we could find none), there is likely to be more success under the TAC 4 follow-on.

The Navy experienced limited buying off TAC 3. Several Navy officials reported that only Space and Naval Warfare Systems Command units were buying off the TAC 3 workstation contract. The command headquarters was reluctant to release any information on purchasing or future orders due to their TAC 4 solicitation.



Participating Agency Sites

CODE AGENCY/SITE NAME

LOCATION

U.S. Navy Sites Interviewed

028	Navy Persuppdet	El Centro, CA
030	Navy MISO	Long Beach, CA
031	Navy Pacific Missile Test Center	Point Mugu, CA
003	Naval Air Warfare Center, Weapons Div.	Point Mugu, CA
001	Navy Fleet & Industrial Supply Center	San Diego, CA
027	Naval Personnel R&D Center	San Diego, CA
032	Navy Persuppdet	San Diego, CA
140	Navy	San Diego, CA
029	Naval Communications Station	Stockton, CA
033	Navy Submarine Support Facility	Groton, CT
009	Naval Research Lab	Washington, D.C.
010	Naval Facility Engineering Command	Washington, D.C.
011	Naval Research for Advanced Concepts	Washington, D.C.
025	General Electric - Engineering	Cape Canaveral, FL
005	Naval Air Rework Facility	Jacksonville, FL
006	Naval Aviation Depot	Jacksonville, FL
002	Naval Air Station	Key West, FL
004	Naval Air Station	Milton, FL
007	Naval Research Lab	Okahumpka, FL
026	Naval Research Lab	Okahumpka, FL
021	Naval Education Management Support	Orlando, FL
024	Navy Training Systems Center	Orlando, FL
008	Navy Training Systems Center	Pensacola, FL
015	Naval Undersea Engineering Station	Lualualei, HI
152	Naval Undersea Engineering Station	Lualualei, HI
016	U.S. Naval Communications Station	Oahu, HI
023	U.S. Naval Hospital	Great Lakes, IL
022	U.S. Naval Reserve	New Orleans, LA
018	David Taylor Research Center	Annapolis, MD
019	Naval Air Station	Brunswick, ME
020	Naval Communications Unit	East MacHias, ME
017	Center for Naval Analysis	Arlington, VA
014	U.S. Navy	Norfolk, VA

CODE AGENCY/SITE NAMELOCATION**U.S. Navy Sites Interviewed**

153	Navy COMDAC Support Facilities	Norfolk, VA
155	Naval Space and Warfare Command	Arlington, VA

U.S. Navy Sites Not Profiled

121	Naval Research Lab	Washington, D.C.
129	NCTS - Washington	Washington, D.C.
131	NCTS - Jacksonville	Jacksonville, FL
132	U.S. Navy - Patuxent River	Patuxent River, MD
130	NCTS - Newport	Newport, RI
128	NAVSEA	Arlington, VA

U.S. Marine Corp Sites Profiled

133	USMC - Quantico	Quantico, VA
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U.S. Marine Corps Sites Interviewed

012	U.S. Marine Corps	Cherry Point, NC
013	USMC Product Support Directorate	Cherry Point, NC

U.S. Air Force Sites Interviewed

036	AF Standard Systems Center	Gunter AFB, AL
037	Human Resources Lab	Williams AFB, AZ
040	Phillips Lab	Edwards AFB, CA
068	U.S. Air National Guard	Jacksonville, FL
064	USAF	Tyndall AFB, FL
075	Military Airlift Command	Hickam AFB, HI
076	USAF	Hickam AFB, HI
077	USAF 1957 Communications Group	Hickam AFB, HI
078	USAF	Hickam AFB, HI
082	AF Commercial Airlift	Scott AFB, IL
141	AF	Hanscom AFB, MA
084	U.S. Strategic Command	Offutt AFB, NE
085	Strategic Air Command	Offutt AFB, NE
089	AF Phillips Lab	Kirtland AFB, NM
090	Strategic Air Command	Plattsburg, NY
092	AF Foreign Science & Technical Center	Wright Patterson AFB, OH
093	Solid State Devices	Wright Patterson AFB, OH
100	Aeronautical Systems Division	Wright Patterson AFB, OH
101	Avionics Lab	Wright Patterson AFB, OH
102	USAF	Wright Patterson AFB, OH
107	USAF	Wright Patterson AFB, OH
122	AF Institute of Technology	Wright Patterson AFB, OH
113	AF Laser Lab	Brooks AFB, TX

CODE AGENCY/SITE NAMELOCATION*U.S. Air Force Sites Profiled*

034	USAF	Maxwell AFB, AL
035	Air Force A F C 2 P M O	Montgomery, AL
039	Strategic Air Command	Eaker AFB, AR
038	AF Aerospace Regeneration Center	Davis Monthan AFB, AZ
045	AF Systems Command	Edwards AFB, CA
054	AF Flight Test Center	Edwards AFB, CA
049	AF A T I C	Edwards AFB, CA
041	AF Space Division	El Segundo, CA
047	AF Geophysics Lab	Holloman AFB, NM
046	AF S C S	Los Angeles, CA
042	AF 2080 S S D S C S O U	Los Angeles, CA
048	USAF	McClellan AFB, CA
043	AF Inspection Safety Center	Norton AFB, CA
050	USAF Audit Agency	Norton AFB, CA
051	USAF B M O S C	Norton AFB, CA
044	AF Space Command	Vandenberg AFB, CA
052	USAF	McClellan AFB, CA
053	USAF	McClellan AFB, CA
055	USAF Academy	Colorado Springs, CO
056	USAF Academy	Colorado Springs, CO
057	USAF 7th Communications Group	Washington, D.C.
058	AF Studies & Analysis Agency	Washington, D.C.
060	USAF Electrical Optics	Eglin AFB, FL
061	USAF Advanced Guidance Research	Eglin AFB, FL
062	USAF Vitro Primes Hanger	Eglin AFB, FL
059	AF Eastern Test Range	Patrick AFB, FL
063	USAF	Tyndall AFB, FL
065	USAF	Eglin AFB, FL
066	USAF Special Operations	MacDill AFB, FL
067	USAF	Hurlburt Field, FL
069	USAF	Robins AFB, GA
070	USAF	Robins AFB, GA
071	USAF	Robins AFB, GA
072	USAF	Robins AFB, GA
073	USAF Information Services	Robins AFB, GA
074	Tactical Air Command	Moody AFB, GA
079	AF Constant Watch	Hickam AFB, HI
080	USAF	Mountain Home, ID
081	USAF E T A C	Scott AFB, IL
083	USAF	Hanscom AFB, MA
086	USAF	Holloman AFB, NM
087	AF Phillips Lab	Kirtland AFB, NM
088	AF Test Evaluation Center	Kirtland AFB, NM
091	USAF I R D S	Griffiss AFB, NY
108	AF Systems Engineering & Management	Fairborn, OH

CODE AGENCY/SITE NAMELOCATION***U.S. Air Force Sites Profiled***

094	AF Institute of Technology	Wright Patterson AFB, OH
095	AF Institute of Technology	Wright Patterson AFB, OH
096	AF Crew Systems Effective Branch	Wright Patterson AFB, OH
097	AF Crew Station Integration	Wright Patterson AFB, OH
098	AF Visual Display Systems Branch	Wright Patterson AFB, OH
099	AF Flight Dynamics	Wright Patterson AFB, OH
103	USAF	Wright Patterson AFB, OH
104	AF Foreign Technology	Wright Patterson AFB, OH
105	USAF	Wright Patterson AFB, OH
106	USAF	Wright Patterson AFB, OH
109	AF Institute of Technology	Wright Patterson AFB, OH
110	USAF	Tinker AFB, OK
111	USAF A E D C	Arnold AFB, TN
112	AF Armstrong Laboratory	Brooks AFB, TX
114	AF Armstrong Lab	Brooks AFB, TX
115	Ogden Air Logistics Center	Hill AFB, TX
116	Air National Guard	Burlington, VT
117	Tactical Air Command	Langley, VA
118	AF Operations Division	Langley AFB, VA

U.S. Air Force Sites Not Profiled

119	7th Communications Group	Washington, D.C.
120	Andrews AFB	Suitland, MD
123	Dover AFB	Dover AFB, DE
124	Eglin AFB	Eglin AFB, FL
125	Hanscom AFB	Hanscom AFB, MA
126	Kelly AFB	San Antonio, TX
127	Lackland AFB	Lackland AFB, FL
134	USAF Randolph AFB	Randolph AFB, TX
135	USAF Scott AFB	Scott AFB, IL
136	USAF Tyndall AFB	Tyndall AFB, FL

U.S. Coast Guard Sites Interviewed

139	USCG Marine Safety Information Management	Washington, D.C.
137	USCG Aircraft Repair & Supply	Elizabeth City, NC
138	USCG Governor's Island	New York, NY
150	USCG Research & Development Center	Groton, CT
151	USCG Headquarters	Washington, D.C.
154	USCG Headquarters	Washington, D.C.

Alcohol, Tobacco, & Firearms Sites Interviewed

142	ATF Law Enforcement	Washington, D.C.
143	ATF Compliance	Washington, D.C.

CODE AGENCY/SITE NAMELOCATION**U.S. Customs Service Sites Interviewed**

144	USCS	Washington, D.C.
145	USCS Law Enforcement	Washington, D.C.
146	USCS Radio Group	Washington, D.C.
147	USCS Inspection and Control	Washington, D.C.

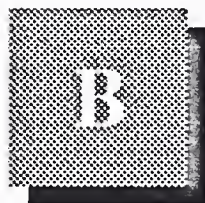
Federal Bureau of Investigation Site Interviewed

148	FBI Emergency Preparedness	Washington, D.C.
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Drug Enforcement Agency Site Interviewed

149	DEA Information Systems	Washington, D.C.
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Interview Script

INPUT is conducting research into agency use of high-performance workstation and other single-user processors. The information collected will be used to help vendors understand requirements and to develop the best price/performance products for agency use. Your assistance would assure an accurate picture of requirements and potential contracting opportunities.

Your response will be anonymous, as information will be treated in the aggregate. If you would like a copy of the executive summary from this research, INPUT will be pleased to make a copy available for your agency's use.

The interview will take no more than 15 minutes.

1. Are you the correct person to talk to regarding the identification of requirements for workstations? If not, can you give me the name and telephone number of the proper contact?

2. Does your agency/group currently use workstations or other high-performance processors? How many would you estimate are installed? What is the mix of UNIX and non-UNIX?

3. What is the functional category for these workstations? Yes/No

Manufacturing	_____
Engineering	_____
Scientific	_____
Tactical (What specific programs?)	_____
Image processing (e.g., GIS, photo analysis)	_____
Text processing	_____
Medical diagnostics	_____
Law enforcement	_____
Modeling	_____
Logistics (e.g., NALCOMIS, SNAP)	_____
Other _____	_____

4. What, if any, requirements exist for ruggedized equipment?

- Shipboard _____
- Aircraft _____
- Vehicle _____
- Manpack _____

5. What proportion/numbers of processors (rugged and non-rugged) are portable?

6. Does your agency/group plan to purchase more workstations? In what time frame?

7. What is the normal buying channel for your purchases?

- GSA schedule contract
- Your agency's IDIQ contract
- Other agency's IDIQ contract
- Other contract (please identify the contract)
- Other purchasing vehicle (please identify the vehicle)

8. Are there any active contracts administered by your agency/group from which other agencies can buy workstations?

- What is the contract name/number/contractor?
- What problems have been experienced in purchasing from inter agency contracts?

9. What manufacturers of workstations are currently used in your agency/group?

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- **Outsourcing options**
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