

FEDERAL PROCESSING SERVICES MARKET  
1987-1992

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**Federal Information Systems and Services Program (FISSP)**

***Federal Processing Services Market, 1987-1992***

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## FEDERAL PROCESSING SERVICES MARKET, 1987-1992

### ABSTRACT

INPUT estimates that the federal government processing services market will increase from \$0.9 billion in 1987 to \$1.3 billion by 1992, an average annual growth rate of 7%.

This slower than expected 11% growth rate has been fueled by increased end-user computing employing local area networks (LANs), availability of greater capacity in-house through ADPE updating, shift from Master Agreement Schedule to Basic Agreement Contracts under GSA's TSP, and reduced demand for batch processing support.

This updated processing services report analyzes various operational aspects and strategies of the market and cites a number of successful vendors who offer processing services. This report, based on interviews with agencies and vendors, identifies and explains specific procurement trends and key market issues.

This report contains 216 pages, including 52 exhibits.



**FEDERAL PROCESSING SERVICES MARKET  
1987-1992**

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## I INTRODUCTION



## I INTRODUCTION

### A. PURPOSE

- INPUT prepared this report on processing services as part of the Federal Information Systems and Services Program (FISSP).
- FISSP clients expressed interest in the potential of this services market in view of the escalation of personal computer (PC)-based end-user computing and the rate increases in telecommunications caused by unprotected changes in the communications industry.
- Research for this report was based on the INPUT Procurement Analysis Report (PAR), previous INPUT research for other programs prior to 1987, General Services Administration (GSA) records, and discussions with FISSP vendor clients.
- This report reflects the changes that have both occurred and are still pending in the GSA-Teleprocessing Services Program (TSP) policy and procedures. It has been revised to identify these changes and their likely impact on processing services expenditures and revenue.



## B. SCOPE

- This report covers those commercial processing services identified in the OMB/GSA/NBS Five Year Plan for GFY 1987-1992, related federal agency long-range ADP plans or information technology plans, federal agency Information Technology Budgets, and GSA-TSP forecasts.
- Research for this report focused primarily on the Remote Computing Services (RCS) segment. A separate FISSP report addresses Processing Facilities Management (PFM). Since batch processing represents a very small portion of the federal processing market, this report does not treat it in any depth.
- Sections have been added to this report to identify and discuss the market for distributed data processing services and value-added networks.
- INPUT selected agencies for interviews based on their inclusion, in one or more of the listed documents, as users of commercially available processing services.
- GSA was interviewed as the management agency for TSP.
- The vendors selected for interview included all of the major federal vendors and a number of small vendors under contract to specific agencies.

## C. RESEARCH METHODOLOGY

- INPUT reviewed the Five Year Plan and GSA-TSP report to select agencies for detailed interviewing, to analyze budgets, and to look for contracting trends.



- INPUT also analyzed reports and data bases concerning GSA's administration of the government's ADP fund. Isolated summary figures were traced to identify all agencies and vendors with major or significant federal contracts for processing services.
- Two questionnaires were developed for interviewing vendors and government agency personnel. A copy of each questionnaire is included in Appendix F.
  - The questionnaires were developed from client discussions, previous INPUT research of commercial processing services, and discussions with government officials.
    - The vendor questionnaire was designed to identify the industry share of market, types of services available, and future directions.
    - The agency questionnaire was designed to identify key sources (vendors), intentions with respect to RCS applications, and expected growth in usage.
  - Both included similar questions about vendor performance characteristics, RCS benefits and problems, and interest in microcomputer-based distributed services.
  - The vendor interview sample covered all the major vendors to the federal government plus several smaller vendors. Twenty-one different companies were interviewed.
  - The federal agency representatives provided 54 interviews from 23 federal agencies. All representatives were experienced in various phases and applications of processing services in the federal environment.





#### D. REPORT ORGANIZATION

- The report has been organized into six major sections:
  - Executive Overview.
  - Market Analysis and Forecast.
  - Processing Services--Agency Perspectives.
  - Processing Services--Vendor Perspectives.
  - Conclusions and Recommendations.
  - Key Opportunities.
  
- Six appendices are provided to aid in report use:
  - Interview Profiles.
  - Definitions.
  - Glossary of Federal Acronyms.
  - Policies, Regulations, and Standards.
  - Related INPUT Reports.
  - Questionnaires.



## II EXECUTIVE OVERVIEW



## II EXECUTIVE OVERVIEW

- This Executive Overview is designed in a presentation format to help the busy reader quickly review key findings and recommendations. It also provides an executive presentation, complete with script, and visual aids to facilitate group communications.
- Key points of the entire report are summarized in Exhibits II-1 through II-7. The left-hand page facing each exhibit is a script explaining the contents of the exhibits.



## A. FEDERAL PROCESSING SERVICES FORECAST

- INPUT estimates that the federal government processing services market will increase from \$0.9 billion in FY 1987 to \$1.3 billion by FY 1992, at an average annual growth rate (AAGR) of 7%.
- The largest service mode is Remote Computing Services (RCS), estimated to grow from \$640 million to \$950 million at an AAGR of 7%, down from the 9% rate estimate of a year ago.
  - More than half of the yearly forecast is spent by the Health Care Finance Administration (HCFA) of the Department of Health and Human Services for contractor-operated insurance claims processing at the state level.
  - About 20% of the RCS forecast supports the General Services Administration (GSA) Teleprocessing Services Program (TSP), which provides RCS to all executive branch agencies by mandate and to other federal activities through the Master Agreement Schedule (MAS) and/or Basic Agreements (BA).
  - The remainder is spent on separately negotiated contracts for RCS to some agencies on an exception basis.
- The second most significant service mode is Processing Facilities Management (PFM), called Contractor-Owned, Contractor-Operated (COCO), in the federal sector, where essentially dedicated DP resources are provided to a specific agency. The increase from \$216 to \$317 million will result in an AAGR of 8%.
- Batch mode is used primarily for public service surveys by Education, Defense, and Commerce on a cyclical basis and is expected to decline at an AAGR of -4%.

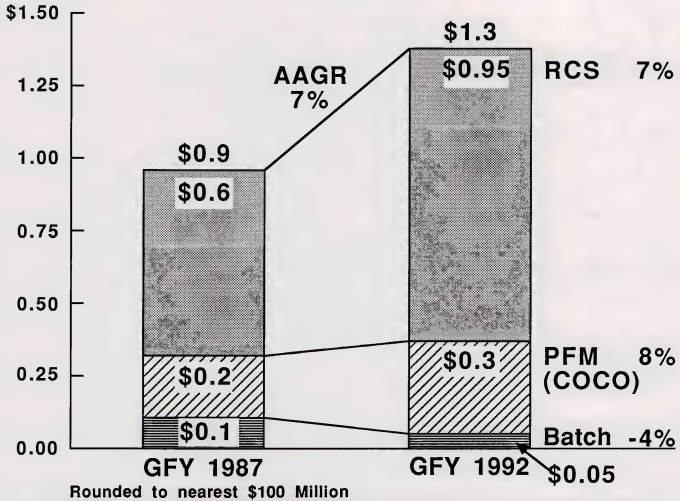




EXHIBIT II-1

INPUT®

FEDERAL PROCESSING SERVICES FORECAST,  
GFY 1987-1992



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## B. TRENDS IN FEDERAL PROCESSING SERVICES

- The RCS mode has encountered a two-year decline in demand, fueled principally by increasing federal end-user computing employing micro- and minicomputers. End users shifted to PCs to overcome increasing delays and procedural complexities in obtaining new or revised RCS applications. Availability of low-cost modems and local area networks (LANs) is contributing to the erosion of the RCS market.
- The RCS vendor base had been relatively stable since 1978, involving some 70 to 100 firms. In the past 18 months, however, a number of vendors have merged or have been acquired by large RCS or aerospace firms, changing the mix of the top 15 in MAS and BA and in TSP overall.
- Continued emphasis by GSA contracting on lowest overall bid awards in the Basic Agreement schedules is inviting offers of raw computing power disassociated from technical assistance to the user, programming support, training, and support not required by the terms of the agreement. User complaints about the absence of services provided in earlier MAS and BA contracts ignore the realities of government contracting practices.
- Batch processing has declined substantially in all markets in the past decade, including the federal government. There appears to be a continuing demand for card-based or data-tape information collection typical of surveys for certain federal agencies who either cannot justify in-house DP resources or prefer to keep the cyclic, noncontinuous demand for service out of their routinely scheduled data centers. New, low-cost, micro- and mini-based computer systems availability indicates likely transition of surveys to in-house systems in the next decade.



## TRENDS IN FEDERAL PROCESSING SERVICES

- **End-User Computing with LANs Eroding RCS**
- **Mergers Creation of Fewer, but Larger Vendors**
- **TSP-BA Stripping Important Services from Awards**
- **Batch Processing Moving In-House**

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Updated 7/87.



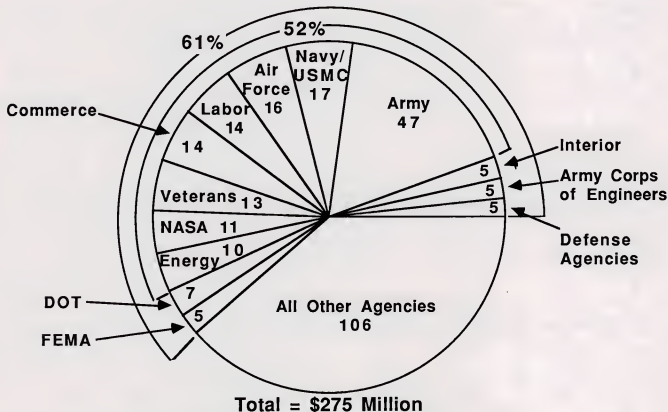
### C. AGENCY GFY 1987 DATA PROCESSING BUDGETS

- The RCS portion of the agency GFY 1986 Information Technology (IT) budgets was estimated at \$597 million. This amount covered both TSP and separately negotiated RCS contracts.
- Batch processing comprised only about one-tenth of this amount, or \$67 million.
- Among the agencies required to forecast IT expenditures, via OMB Circular A-11 Section 43, certain agencies appear to be the largest buyers/users of processing services:
  - The Army was the largest user at \$47 million, or 17% of the total, and nearly the same level as previous years.
  - Unlike 1984, when four agencies spent 53% of the RCS budget, eight agencies, including Army, accounted for 52% of the 1986 budget.
  - Missing from the major RCS users were Education and Treasury.
  - Five additional agencies, Corps of Engineers, Defense Agencies, FEMA, Interior, and Transportation, comprise those who spent \$5 million or more on RCS.
- All other federal agencies, including public corporations (TVA, USPS), Congress and its support agencies (GAO, GPO, CBO, Library of Congress), and the Executive Office of the President, account for \$106 million, or 38% of the FY 1986 budget.

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## AGENCY GFY 1986 DATA PROCESSING BUDGETS (\$ MILLIONS)



\*Excludes HCFA-MEDICAID Processing.

Updated 7/87.

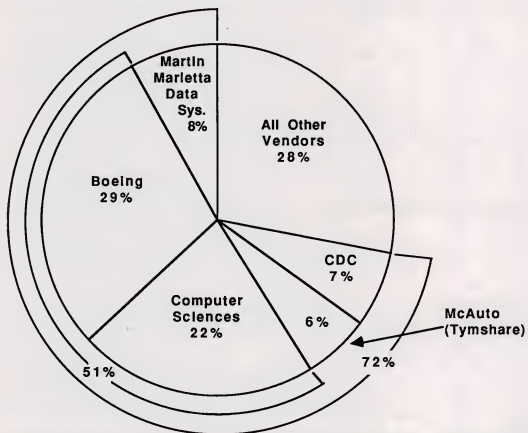


D. GSA-TSP VENDOR MARKET SHARE, GFY 1986

- GSA reported early in 1987 that the GFY 1986 TSP had declined to just \$140 million, reflecting declining MAS sales.
- The two largest vendors in GFY 1986 for combined Multiple Award Schedule (MAS) and Basic Agreement (BA) revenues were Boeing Computer Services (BCS) and Computer Sciences Corporation (CSC-INFONET).
  - BCS, as the leading contractor, garnered 29% of available revenues, while CSC's revenue totaled 22%.
  - BCS and CSC won 51% of the TSP funding in FY 1986.
  - Both continued their positions as the top two vendors in the program.
- The next three vendors have only recently moved into the Top Five Contractor category.
  - Martin Marrietta Data Systems was the third largest vendor with 8% of available funds.
  - Control Data Corporation, with its earlier acquisition of United Information Services, became number four with 7.5% of the TSP revenues.
  - McDonnell Douglas/Tymshare became number five, with 6% of the total TSP funds.
- Together the five companies were awarded 72% of the available TSP revenues in GFY 1986.



**GSA-TELEPROCESSING SERVICES PROGRAM  
VENDOR MARKET SHARE, GFY 1986**



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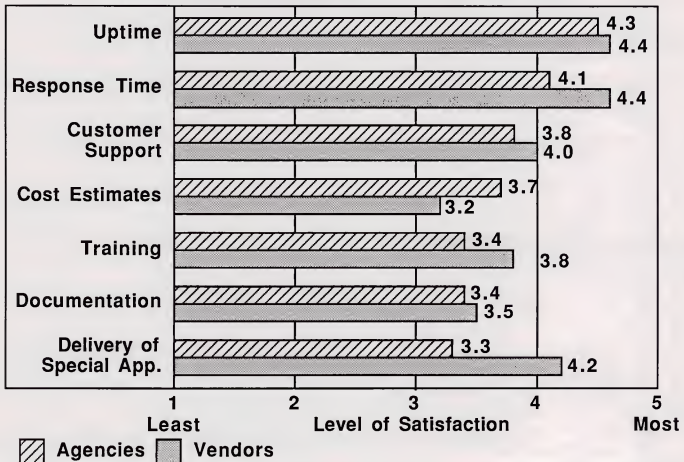
## E. LEVELS OF SATISFACTION WITH RCS VENDOR PERFORMANCE

- Both agencies and vendors rated agency levels of satisfaction with RCS vendor performance in what are perceived to be the seven most important categories.
  - Systems uptime, indicating availability for RCS client use, was rated the most satisfactory by both groups.
  - Response time was selected as the second most satisfactory performance characteristic.
  - Customer support, cost estimates, training, and documentation were next, in descending order. All four, however, were uniformly less satisfactory than the first two characteristics, suggesting the need for improvement.
  - Delivery (of special applications) was the least satisfactory. The vendors, however, do not perceive this to be a concern, as noted by their higher rating than that of the agencies for only this single characteristic.
- Vendors who plan to improve their TSP capture ration need to evaluate how their performance profile can be improved over this industry average.





### LEVELS OF SATISFACTION WITH RCS VENDOR PERFORMANCE





## F. FEDERAL PROCESSING SERVICES PROCESSES

- Five relatively recent activities in the federal RCS marketplace, shown in Exhibit II-6, are expected to influence substantially the mix of vendors in the next few years.
- After many discussions, proposals, and counterproposals, OMB finally levied the ADP security certification requirement on processing services vendor facilities for federal contracts. Compliance represents a hard requirement, with very few exceptions.
- GSA noted the steady and disappointing decline of the TSP-MAS over the past several years and has tried to reverse the trend. Vendors and agencies decried MAS as an administrative challenge that suggests termination if it is not substantially revised over the next few years.
- Distributed Data Processing capability with microcomputers and micro-mainframe links under the MAS is one of the most recent changes in services offered by vendors.
- Modification of the MAS to include VAN services was tentatively approved with pending acquisition procedures.
- Under the new OMB A-76 "Productivity Improvement Program," agencies are required to solicit bids from federal data centers as well as vendors for their cost comparisons, within the purview of the new REFORM 88 agency audits.
- The changes in competitive procedures and protest ground rules and the expansion of protest eligibility under the Competition in Contracting Act (CICA) are expected to continue to have a significant impact across the federal marketplace.



## **FEDERAL PROCESSING SERVICES PRESSURES**

- **Security Certification Requirement**
  - **TSP-MAS Decline and Shift to BA**
  - **TSP-MAS DDP/VAN Services**
  - **Federal Data Center Competition Under OMB A-76**
  - **Competition in Contracting Act - 1984**
-



## G. VENDOR RECOMMENDATIONS

- Agency respondents indicated a preference for continuing small applications and use of proprietary software for a range of problems over the next five years. Individual contracts may be small, but can be extended for two years or more.
- Being listed in the BA Schedule does not bring contracts to a vendor, but it only guarantees receipt of most, if not all, of the BA RFPs (Requests for Proposals). Significant effort to produce effective proposals with a high technical acceptance rate and fully developed pricing strategies are essential to growth (and perhaps survival) in the TSP-BA.
- Several of the more successful TSP vendors are using their experience in technical services and exposure to federal agency ADP requirements to diversify into the professional services market in consulting, design, programming, and analysis and systems integration projects.
- The PFM market is very mature and not readily penetrated by newcomers. The only perceived market openings would come from replacing a withdrawing vendor or acquisition of one of the current contractors and their contract.





## VENDOR RECOMMENDATIONS

- **Concentrate on Small Applications and Proprietary Software**
  - **Improve Proposals and Strategy in Response to BA RFPs**
  - **Use TSP Contracts to Diversify into Professional Services**
  - **Acquisition May Be Only Means to Penetrate PFM Market**
-



### III MARKET ANALYSIS AND FORECAST

THE UNIVERSITY OF CHICAGO PRESS

### III MARKET ANALYSIS AND FORECAST

#### A. THE GROWTH OF CONTRACT PROCESSING SERVICES

- Federal agency use of vendor-furnished processing services was relatively unregulated until passage of the original Brooks Bill in 1966.
  - Constrained from acquiring ADPE by outlays for the South Vietnam campaign, Defense became a major user of vendor processing support.
  - Civil agencies employed contract processing to meet overloads on data processing centers or to provide network services.
- GSA's administration of remote computing services began in 1972 with the award of the National Teleprocessing Services Contract (NTSC) to Computer Sciences Corporation (CSC). This competitive procurement provided, for the first time, a single source of processing services for all federal agencies, with a simplified but standard procurement process.
  - The contract grew from \$3.8 million in GFY 1973 to \$37.4 million in GFY 1977, an average annual growth rate of 77% that became attractive to an increasing number of vendors.
  - Unsuccessful bidders and some agencies objected to use of a single vendor with no basis of comparison of either price or functionality.



- Some agencies found ways to circumvent the single source of supply, including multiple source Basic Ordering Agreements (BOA).
- GSA's response to both agency and vendor complaints was the creation, in 1977, of the Teleprocessing Services Program (TSP), composed of two parts: the Basic Agreements (BA) and the Multiple Award Schedules (MAS).
  - Vendor acceptance for BA listing required agreement to specific terms and conditions which would be common to all RFPs issued.
    - Being on the BA list assured the vendor of receipt of a copy of each RFP issued.
    - Any vendor could be added to the BA list at any time by responding to an RFP issued under the BA.
  - Vendor acceptance for the MAS was a more difficult process. GSA attempted to force computer services into existing procurement procedures under the older Federal Procurement Regulations.
    - The terms and conditions, including penalties and liquidated damages, presented vendors with difficult choices.
    - Preparation of commercial documentation in GSA format proved to be an expensive exercise.

#### B. THE FEDERAL PROCESSING SERVICES MARKET

- Unlike the federal professional services market, federal agency demand for processing services in CY 1986 was a mere 3% of U.S.-wide expenditures.



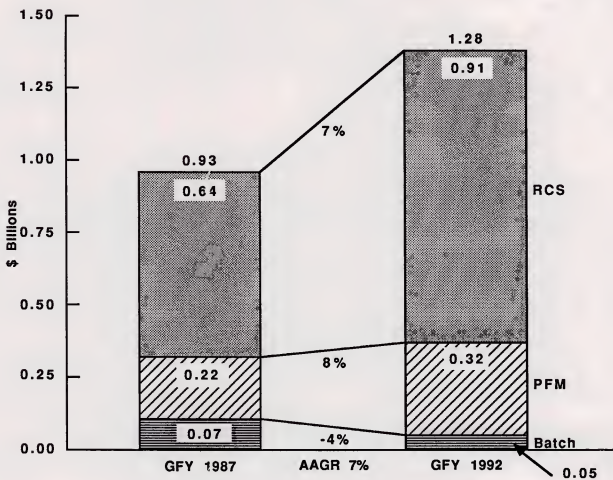


- Federal agencies have a heavy investment in those ADP resources.
  - The FY 1986 GSA ADPE inventory expected an installed base of 22,317 mainframes and minicomputers.
  - Although not officially confirmed, agencies are believed to have more than 250,000 microcomputers, including PCs and workstations.
- Agencies employ contractor-furnished ADP services when in-house time, resources, or staffing limit an agency's ability to meet mission requirements.
- The federal market for processing services is expected to reach \$921 million in GFY 1987 and to grow at an average annual rate of 7%, reaching \$1.28 billion by 1992, as shown in Exhibit III-1.
- RCS is the largest segment of the processing service market, and expected to grow from \$640 million in 1987 to \$905 million in 1992 at an AAGR of 7%.
  - Health Care Administration payments to contractors for processing Medicare claims continue to increase.
    - Spending for contractor services for FY 1986 was \$423 million.
    - The agency has been faced with an increase in the number of claims per year which offsets the improvements in productivity.
  - GSA Teleprocessing Services Program (TSP) is estimated to have spent about \$140 million in FY 1986, down from earlier forecasts because of MAS erosion. MAS accounts for only \$50 million in FY 1986.



EXHIBIT III-1

FEDERAL GOVERNMENT PROCESSING SERVICES  
MARKET FORECAST, GFY 1987-1992



Updated 7/87.



- The remainder represents contracts for RCS negotiated by agencies outside the TSP.
- The second largest segment of federal processing services is Processing Facilities Management (PFM), also called Contractor-Owned, Contractor-Operated (COCO), ADP facilities.
  - PFM is expected to experience an 8% AAGR, growing from \$216 million in FY 1987 to \$317 million by FY 1992.
  - The remaining funds come from the GSA ADP fund for several agencies, including DoD agencies, Navy, Army, GSA, and Commerce.
- The smallest segment is batch processing, estimated to decline by about \$20 million over the next six years, with a negative 4% growth projection.
  - Agencies performing periodic public surveys, such as Education, Commerce, and Defense, employ most of the batch processing activities.
    - Many of these applications are expected to transition to in-house ADP resources in the 1990s or to be converted to RCS applications.
- The growth rate of the federal RCS market has progressively declined over the past two years.
  - 1985 forecasts estimated the AAGR as 11%, based on prior demand.
  - 1986 forecasts decreased the AAGR to 9.6%.
    - The MAS portion of TSP declined for the second year in succession.



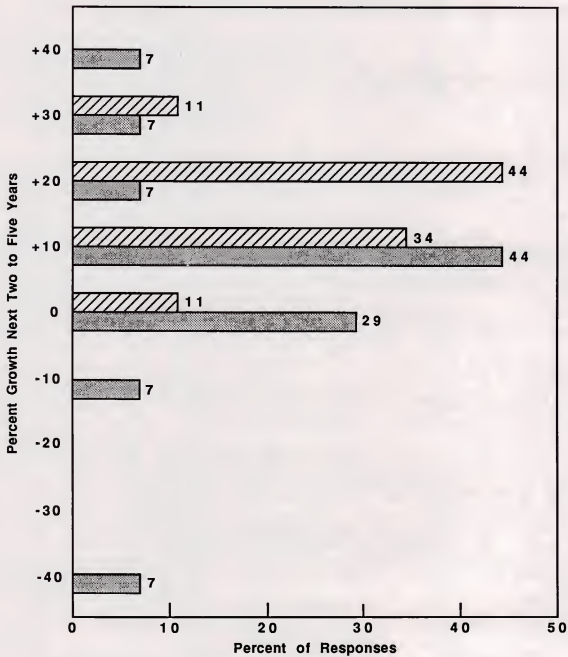
- Increasing end-user computing with PCs has reduced the number of small applications employing RCS.
- Early 1987 forecasts indicate a further decline of the AAGR to 7%.
  - The MAS declined further in 1986, arousing GSA concern about program viability.
  - End-user computing began use of low-cost LANs to create small networks, detracting from potential VAN demand.
- The vendors and agencies surveyed for this study were asked to estimate probable rate of RCS growth in the next two to five years. The distribution of their responses is compared in Exhibit III-2.
  - Although the median for the vendor estimate was 10.8%, 45% of the vendors estimated growth between +10% and -10%.
  - Seventy-three percent of the responding agencies estimated between the identical limits, for a median of 4.5%. This represents a considerable increase from the 1984 survey median of only 0.7%.
  - The composite median was 7.7%, less than INPUT's 9.6%.
  - GSA noted in communications with TSP vendors and clients that three factors appear to be driving the expenditure shift from MAS to BA:
    - Increasing interest in "raw computing power," fostered by emphasis on low cost;
    - Progressively poorer agency definition of processing requirements; and






EXHIBIT III-2

COMPARISON OF VENDOR AND AGENCY ESTIMATES  
OF RCS CHANGE FROM GFY 1987 TO 1992



 Vendors - Median 10.8%
  Agencies - Median 4.5%

Updated 7/87.



- MAS rules that appear too restrictive to the potential client agencies.
- Agencies were asked if they acquired batch and RCS services outside TSP, and why. Their reasons and the frequency of mention are listed in Exhibit III-3.
  - Use of other agency data centers was mentioned most frequently.
  - Proprietary data bases and special (short-term) applications are the two most frequent reasons for using non-TSP contracts.

### C. THE VENDORS

- By GFY 1986, the combined MAS and BA market shares of the top ten vendors had changed substantially, as shown in Exhibit III-4.
  - Boeing still led in both MAS and BA as a result of its aggressive recompetitions over the past few years.
  - CSC held on to second place, with a higher share of the market than previously obtained.
  - Martin Marrietta made the greatest strides in market share by improving from the lower half of the top ten vendors in 1984 to third place in 1986.
  - CDC's position dropped from third to fourth place with a decline in percentage share.
  - McAuto's share remained relatively steady since its acquisition of Tymshare in CY 1984.



EXHIBIT III-3

AGENCY REASONS FOR BUYING PROCESSING SERVICES  
OUTSIDE THE TSP PROGRAM

REASONS	NUMBER OF TIMES NAMED
Proprietary Data Bases	3
Special Applications	11
Exempt from Mandatory TSP Use	1
University Systems	2
Other Agencies	15
Unknown	5

SOURCE: INPUT Agency Surveys.  
Updated 7/87.



EXHIBIT III-4

GSA-TSP MARKET SHARE FOR  
TOP TEN VENDORS IN GFY 1986

RANK	COMPANY	PERCENT SHARE*
1	BCS	29.2
2	CSC	21.7
3	MMDS	8.3
4	CDC	7.5
5	McDonnell Douglas/Tymshare	5.5
6	EDS	5.3
7	DRI	3.2
8	COMNET	2.5
9	NVIP	2.3
10	GEISCO	1.1
	Total	86.6

\*Combined MAS and BA Revenues.

SOURCE: GSA GFY 1986 TSP Year-End Report.





- EDS's Optimum Systems Division gained percentage share from its FY 1984 standings, but dropped to sixth place in ranking.
- GSA developed the MAS to permit agencies to buy commercial products from the private sector at favorable prices. Elaborate procedures are in place to establish the commerciality of products before they are added to the MAS offering.
- Exhibit III-5 is a list of the vendors included on the GFY 1986/1987 Multiple Award Schedule.
  - More than half the vendors listed are virtually unknown in the commercial arena.
  - Of the 38 listed, only 17 billed more than \$500,000 from the MAS for FY 1986.
  - Sixty-six percent of the GFY 1986 revenues for the MAS went to the top five vendors.
    - Ninety percent of the revenues were earned by the top ten vendors.
  - INPUT questions how the TSP MAS vendors can justify the significant discounts being offered for such low annual volumes. The economies of scale are nonexistent in such a highly fragmented and competitive environment.
- Eight of the vendors surveyed provide RCS, batch, and FM modes of processing services to the federal agencies (see Exhibit V-1).
  - The top five vendors earn at least 30% of their revenues from RCS interactive services.



## EXHIBIT III-5

## VENDORS ON THE GFY 1986/1987 MULTIPLE AWARD SCHEDULE (MAS)

COMPANY NAME	ACRONYM	COMPANY NAME	ACRONYM
ADP Network Services, Inc.	ADP	ITT Dialcom, Inc.	Dialcom
American Management Systems, Inc.	AMS	Litton Computer Services	
Boeing Computer Services	BCS	Litton Systems (Mellonics Information Center)	Mellonics
Bowne Information Systems Inc.	BIS	McDonnell Douglas Automation Inc.	McAuto
Compuserve Data Systems Inc.		Martin Marletta Data Systems	MMDS
Computer Company, The Computer Data Systems, Inc.	CDSI	MCI Telecommunications	MCI
Computer Network Corporation	COMNET	Planning Research Corp.	PRC
Computer Sciences Corp.	CSC	Power Computer Company	
Comshare, Inc.		Proprietary Computer Systems, Inc.	PCS
Consumers Computer Services		Results, Inc.	
Control Data Corp.	CDC	System House, Inc.	SHI
D & B Computing Services, Inc.	D & B	Standard and Poor's Corp.	
Electronic Data Systems Federal Corp.	EDS	STSC, Inc.	STSC
General Electric Information Services	GEIS	TELIC Services Corp.	
GENIX Corporation		Uni-Coil Corporation	
GTE Telenet Communications Corp.		University of Maryland Computer Science Center	
IBIS Corp.		United Information Services Inc. (Now CDC)	UIS
International Business Machine Corp.	IBM	Western Union Telegraph Company	



- GEISCO and MMDS obtain 40% of their federal revenues from batch processing.
  - Half of the vendors are offering Distributed Data Processing services which account for 5-20% of their federal revenues from processing services.
  - Bowne, DRI, and Litton earn at least 50% of their revenues in the interactive RCS mode.
  - Nearly one-third of the vendors are now attributing a small percent of their processing services revenues to VAN services.
- o As noted elsewhere in this report (Chapter V - Vendor Perspectives), vendor reports of processing services revenues are generally about 33% greater than GSA federal agency expenditure reports.
- Some agency processing expenditures are not reported through oversight.
  - Some agencies use alternate funding sources not subject to reporting to GSA.

#### D. THE FEDERAL AGENCY CLIENTS

- Exhibit III-6 shows the agency expenditures for GFY 1986, the latest year for which complete expenditure figures are available.
  - Navy/Marine Corps was still the largest buyer under the GSA-administered ADP fund with nearly \$64 million. The Army continued in first place with the TSP MAS.



## EXHIBIT III-6

## AGENCY EXPENDITURES FOR PROCESSING SERVICES, GFY 1986

AGENCY	GSA "ADP FUND"					
	TOTAL*		OTHER*		TSP MASC	
	Rank	\$ Millions	Rank	\$ Millions	Rank	\$ Millions
Navy/USMC	1	63.80	1	58.70	4	5.10
Army	2	46.50	2	39.00	1	7.50
Air Force	3	34.00	3	32.10	9	1.90
DOI	4	13.10	4	7.80	2	5.30
DOT	5	12.50	5	7.30	3	5.20
Treasury	6	8.40	9	3.60	5	4.80
GSA	7	8.40	6	5.70	6	2.70
HHS	8	7.90	7	5.40	8	2.50
DOA	9	6.30	8	5.10	12	1.20
DOD	10	5.70	10	3.00	7	2.70
DOC	11	3.10	11	1.70	11	1.40
DOE	12	2.30	14	0.80	10	1.50
EPA	13	1.90	18	0.22	14	0.78
DOJ	14	1.20	13	0.94	18	0.26
VA	15	1.10	19	0.15	13	0.95
Labor	16	1.10	12	0.98	20	0.12
NASA	17	1.10	15	0.47	15	0.63
GAO	18	0.45	20	0.02	17	0.43
DOS	19	0.44	21	-	16	0.44
USPS	20	0.44	16	0.42	22	0.02
HUD	21	0.36	17	0.27	21	0.09
EDUC	22	0.16	22	-	19	0.16

SOURCE: GSA Records - Near System, FY 1986.

\*Includes Contract Services Program.





- Note that the Army was also one of the largest buyers under the ADP fund, which included some government-owned systems as well as the MASC.
- GSA was dependent upon the services vendors to report their revenues, by agency, under the BA. Funds flow from the agencies to the appropriate vendors without any GSA involvement. Frequently the vendor reports were delayed, and there is not a reliable check for the accuracy of the reports.
- HHS and GSA, although still exhibiting large agency expenditures for processing services, dropped in their ranking for the GSA ADP fund while still holding their positions on the MAS.
- The Department of Interior increased its share of processing service expenditures to rank in the top five agencies in overall expenditures.
- Vendor representatives were asked to name the agencies which were their principal clients and also their top three revenue producers.
  - Twenty agencies were mentioned as principal clients.
    - Nine agencies were cited repeatedly by the vendors.
    - Most of these agencies are at the top of the list of spenders.
- Vendors were also asked to name their top three client agencies.
  - The vendors' most frequent responses were the DoD, GSA, DOT, and HHS.
  - DoD was named by over half of the vendors.



- Army and Navy/USMC were also named quite frequently.
- A comparison of the OMB Circular A-11 Section 43 proposed Information Technology budgets for executive branch agencies for GFY 1985 through 1987 indicated some shuffling of agency priorities, as shown in Exhibit III-7.
  - The HHS budget includes the large HCFA allocation for state level, contractor-furnished Medicare/Medicaid programs.
  - The GSA budget includes both GSA in-house processing requirements and the ADP fund for use by other agencies.
  - Army and Navy retain their leading positions within the top five.
  - Education no longer has a substantial processing budget due to several of its programs being phased out.
  - The next four agencies--Treasury, Labor, Air Force, and NASA--did some shuffling during those three years in which their budgets are compared.
    - The Treasury dropped from fifth position in FY 1985 to eighth in FY 1986, and even lower to eleventh in FY 1987.
    - Labor and NASA rose one position each in FY 1986, and returned to their original positions in FY 1987, still among the top ten agencies.
    - The Air Force moved to fifth position from eighth in FY 1986, and then dropped to sixth in FY 1987.
  - Energy has made slight increases in FY 1986 and FY 1987 after having declined earlier when newer in-house ADP resources were brought on line.



## EXHIBIT III-7

**COMPARISON OF AGENCY PROCESSING BUDGETS  
(OMB A-11), GFY 1985-1987**

AGENCY	FY 1985		FY 1986		FY 1987	
	Rank	\$ Millions	Rank	\$ Millions	Rank	\$ Millions
HHS	1	411.0	1	359.0	1	367.9
GSA	2	116.0	2	98.0	2	115.1
Army	3	50.0	3	47.0	3	43.8
Education	4	33.2	19	0.1	19	0.1
Treasury	5	26.8	8	13.9	11	8.2
Navy/USMC	6	24.6	4	16.5	4	19.7
DOL	7	15.6	6	14.3	7	14.2
USAF	8	13.0	5	15.5	6	14.3
NASA	9	9.8	10	10.7	9	11.2
DOC	10	8.9	7	14.2	8	13.0
VA	11	7.1	9	13.0	5	16.5
DOI	12	6.7	14	5.1	15	5.1
DOA	13	6.1	18	2.1	18	2.0
DOE	14	5.0	11	9.7	10	8.3
DOT	15	4.9	12	6.5	12	5.7
FEMA	16	4.3	16	4.8	14	5.2
Defense Agencies	17	4.3	15	5.1	16	4.1
COE	18	4.2	13	5.2	13	5.5
DOJ	19	3.3	17	3.3	17	3.8

SOURCE: FY 1985 and FY 1987 OMB Circular A-11 Section 43-Information Technology Budgets.



## E. GOVERNMENT-OWNED COMPUTER CENTERS AS COMPETITORS

- GSA also collects and disperses funds via the ADP fund for certain government-owned computer centers, which are becoming increasingly important.
  - These centers constitute the fastest growing portion of the GSA-administered processing services segment. Exhibit III-8 illustrates that they comprised 12% of the ADP fund sale for GFY 1986.
  - They represent a continuing erosion of the federal marketplace available to commercial vendors.
  - According to the interviews conducted in the federal agencies by INPUT, all new requirements which can be run on government-owned machines must be run on government-owned machines.
  - Current applications that grow to sizable amounts are targeted by GSA and agency personnel to move in-house.
  - Under the 1984 modification of OMB Circular A-76, discussed later, the federal data centers are viable bidders on ADP upgrades.
- In addition to the expenditures identified by GSA as a part of the ADP fund administration, there are significant monies that pass directly between agencies for processing services provided on government-owned computers; these services are called "inter-agency transfers." As an example, NIH operates a rather large remote computing capability.
  - One of the agencies in the survey reported \$350,000 of monthly revenue with NIH, or \$4.2 million annually, and projected steady increases.





EXHIBIT III-8

ADP FUND SALES TO AGENCY REPORT, GFY 1986

	GFY 1986	
	REVENUES (\$ Millions)	PERCENT OF TOTAL
TSP MASC	47.5	22
Federal Data Processing Centers	26.8	12
Other (Includes Contract Service Program)	145.1	66
Total ADP Fund Expenditures	219.4	100

SOURCE: GSA Records - Near System, GFY 1986.



- Another agency does 100% of its monthly processing of \$13,333 with NIH--for \$160,000 annual revenue.
- Many other agencies reported use of NIH facilities, especially in statistics and data base applications, but specific dollar volumes were not provided.
- If NIH were on the TSP MAS with only the \$4.4 million annual revenues mentioned earlier, NIH would be the fourth largest vendor for GFY 1986--exceeded only by Control Data Corporation (\$8.8 million), Boeing Computer Services (\$8.2 million), and Computer Science Corporation (\$6.2 million).
- The Contract Services Association, previously The National Council of Technical Service Industries (NCTSI) in Washington, D.C., has been active in its attempts to focus attention on the competitive RCS operations developing within government agencies and universities. George A. Daoust, Jr., past Executive Director of NCTSI, pointed out repeatedly that the establishment of government-owned service centers frequently results because agencies have significantly overprocured computing equipment. "In effect," he has written, "an agency is rewarded for poor procurement decisions by being permitted to subsidize its mistakes with sharing arrangements." (Letter to the honorable Charles A. Bowsher, Comptroller General, GAO dated September 19, 1983.)
- To date, GAO, GSA, and the Brooks (House Government Operations) Committee have shown little concern for the competition generated by government-owned remote computing services.



## F. THE CHANGING ENVIRONMENT

- The federal processing services segment has been competitively pressured in recent years.
  - Vendors offering "raw power" have entered the marketplace with low-priced processing.
  - Low value-added offerings have been successful in winning price-sensitive competitions.
  - The government buyer has become increasingly dissatisfied with the technical support and quality of service provided by the low-priced vendors.
- Government requirements that can be satisfied by "raw power" vendors are also susceptible to transfer to in-house government processing centers.
  - The end-user computing micro and mini threat has become more pronounced as GSA stores simplified the purchase of small computers and the associated software.
    - Knowledgeable end users find the microcomputer solution an economical alternative to RCS.
    - Novice users find their expectations of success frustrated by lack of technical support.
    - Vendors and agencies agree that micros will eventually replace RCS for those requirements which do not require networking, extensive data base interaction, or massive computation.



- For the latter three requirements, micros are expected to serve as distributed processors connected to centralized mainframes.
- Some RCS vendors have taken advantage of government naivete in understanding requirements and providing inadequate benchmarks. Significant cost overruns usually result.
- The remote computing services industry has been generally discredited, thus giving agencies renewed impetus to find alternative means of data processing.
- GSA has observed agency and vendor disillusionment with the TSP, and is attempting to arrest the decline in the use of the MAS and to resolve the difficulties with the BA.
  - During the past few years, significant program changes were made to improve the economy and efficiency of the program.
    - MAS selectons for requirements of less than \$50,000 per year do not need to consider all MAS contractors.
    - MAS and BA benchmark requirements were reduced.
    - Clarifications of the ordering process have simplified some aspects of the initial ordering process.
    - The technical assistant services conditions have been changed. Systems design and programming services are allowed in limited amounts, up to a maximum of 10% of the total annual contract amount or \$100,000 per year, through the use of negotiated task orders.
    - Under the MAS, a vendor may offer a "net discount" in addition to those already included in the contract. The net discount is





calculated after all other discounts and applies only to the single requirement being considered. Net discounts apply to subscribing or select activities. (MASC Provision 1.4.c.)

- . Net discounts of as much as 76% off list prices, after all other discounts were applied, have been achieved under this provision already.
- . The session/transaction registers previously required with each MAS vendor's monthly bill are now required only when requested.
- . GSA DPA (Delegation of Procurement Authority) approval is no longer required for competitive procurements under \$2 million per year or for sole-source procurements under \$200,000 per year. (Agencies must still obtain approval on ADP sharing requirements.)
- . Under FIRMR Section 201-32.303-3, agencies are permitted to select cost- and risk-effective alternatives to benchmarks.
- . Waivers for the use of premium software are no longer required.
- GSA continues to offer modifications of the TSP in an effort to increase its use and effectiveness.
  - Final approval is clearly complete for the option to offer Distributed Data Processing (DDP) services under the MAS for FY 1988.
  - The amendment for offering Value-Added Network (VAN) services is still undergoing evaluation of technical and procedural modifications. Further action by the GSA is expected by the fourth quarter FY 1987.



- Some pressure continues to exist within GSA to terminate the MAS portion of TSP.
  
- The U.S. Postal Service is, of course, exempt from the TSP, as is the Executive Office of the President, but they use the TSP when it suits their purposes. The dollar volumes being generated by the House of Representatives, the Senate, and the White House for electronic mail, correspondence systems with associated data bases, and word processing systems are substantial.
  
- OMB issued new security guidelines to comply with the Privacy Act. The MAS contains a clause requiring vendors to comply. The guidelines require:
  - A security certification;
  - Security maintenance; and
  - A security risk analysis.
  
- These guidelines represent additional expense for MAS vendors and additional obstacles to the already elusive revenues and profits.
  
- OMB also revised the purpose of OMB Circular A-76.
  - The circular began as the policy of contracting for goals and services with the private sector.
  - Subsequent amendments added a cost comparison handbook and targeted reviews of commercial activities of all agencies.
  - Effective October 1984, A-76 became the basis of the "Productivity Improvement Program" under the REFORM 88 Initiatives.



- Twenty-six categories of job classification were targeted for review, including four ADP labor categories.
  - Annual category head count reviews were established so that 130,000 positions would be reviewed by FY 1987, including 50,000 ADP positions.
  - Agencies doing cost comparisons for major upgrades or replacements must also seek bids from federal data centers in other agencies in addition to those from vendors.
  - As a result, vendors offering comparable services may realize greater marketing opportunities.
- The inclusion of the Competition in Contracting Act of 1984 and the Small Business and Federal Procurement Act of 1984 in the FIRMR will also impact the processing services market.
  - The GSA Board of Contract Appeals, in addition to GAO, now has jurisdiction in protests.
  - Any change of procedures, regulations, policy, or form that would affect contractors must be published in advance in the Federal Register.
  - Sole-source awards are limited to just seven categories and must be noted in the CBD prior to award (except those affecting national security).
  - Protests may be originated by any potential vendor with an economic interest, not just by disappointed bidders.



**IV PROCESSING SERVICES --  
AGENCY PERSPECTIVES**





#### IV PROCESSING SERVICES—AGENCY PERSPECTIVES

##### A. FEDERAL AGENCY MARKET OVERVIEW

- Both the executive and legislative branches of the federal government utilize vendor-furnished processing sources.
  - Some part of all 12 cabinet-level departments contracts for data processing services.
  - A number of independent agencies and administrations also use outside processing.
  - At least three public corporations--ICC, TVA, and USPS--use contract data processing.
  - Both the GAO (Government Accounting Office) and GPO (Government Printing Office) in the legislative branch procure outside data processing assistance.
- Federal agencies contract for vendor-furnished data processing services for a variety of reasons, some recurring and some one-time-only.
  - Contract data processing supplements in-house ADP capability during periods of excess demand:



- Special periodic events, such as surveys, elections, opinion polls, audits, special studies.
  - Unpredictable public access demands for government information products.
  - Services to remote workstations, both U.S.-wide and worldwide, from central data bases in a few U.S. locations.
- Distributed data processing provides for mobile or nonfederal site users with irregular demand schedules:
  - DoD recruiting and training schedule data base access.
  - Audit, accounting, and account control programs.
  - Physical reporting systems (weather, crops, minerals, environment).
- Interim facilities replace damaged or nonfunctional federal ADP centers:
  - Temporary processing after catastrophic ADP center damage.
  - Evaluation, emulation, or benchmark facility for design and acceptance of new data systems.
  - Initial capability for a new agency mission, pending design, approval, and implementation of new facilities.
- On-demand facilities for agencies with sporadic data processing workloads that are not sufficient to justify full-time ADP resources.



## B. PROCESSING SERVICES BUDGETS

- Federal agencies acquire data processing services from vendors and other federal data centers on the basis of approved Information Technology budgets each fiscal year:
  - Each agency identifies anticipated expenditures in the OMB Circular A-11 Section 43 budget submission.
    - A comparison of the FY 1985 and 1986 budget requests of the top 15 agencies is shown in Exhibit IV-1.
      - HHS, GSA, and Army remain the leading three agencies.
      - Navy (including Marine Corps) has now replaced Education as the fourth largest client.
      - Treasury, Air Force, and NASA shares shifted, but still remain within the top ten in budget size.
      - The remaining agencies in the 1985 list were more widely scattered in 1986.
    - Most of the Health and Human Services budget is transferred by the HCFA (Health Care Finance Administration) to the states for repayment for Medicaid and Medicare contracts.
    - GSA's budget includes payments into the ADP fund. The agency spends less than \$10 million for outside data processing services to satisfy its own needs.



EXHIBIT IV-1

COMPARISON OF LEADING AGENCIES PROCESSING BUDGETS  
FOR GFY 1985 VERSUS 1986

AGENCY	FY 1985		FY 1986	
	Rank	\$ Millions	Rank	\$ Millions
HHS	1	411.0	1	359.0
GSA	2	116.0	2	98.0
Army	3	50.0	3	47.0
ED	4	33.2	-	0.1
Treasury	5	26.8	7	13.9
Navy/USMC	6	24.6	4	16.5
USAF	7	13.0	5	15.5
NASA	8	9.8	9	10.7
DOC	9	8.9	6	14.2
VA	10	7.1	8	13.0
DOI	11	6.7	12	5.1
DOA	12	6.1	14	2.1
DOE	13	5.0	10	9.7
DOT	14	4.9	11	6.5
DOJ	15	3.3	13	3.3

SOURCE: FY 1985, 1987 OBM A-11 Section 43A, B Reports.

Updated 7/87.





- Executive agencies also utilize the ADP fund to acquire outside data processing services and ADPE not funded in the current authorizations.
  - A comparison of OMB A-11 ADP services budget requests, GSA-ADP fund expenditures, and TSP (both MAS and BA) expenditures for FY 1986 is shown in Exhibit IV-2.
    - Public corporations such as the U.S. Postal Service, TVA, BPA, and others off-the-budget do not file OMB A-11 budget requests.
    - As noted above, HHS and GSA do not rank near the top in the ADP fund and/or TSP, despite their large data processing budgets.
- The ADP Services portion of the Information Technology budget of the agencies and the ADP fund are the sources of expenditures for all of the processing services segments.
  - RCS represents the largest expenditure component, of which TSP represents only 20-30%.
  - PFM expenditures are the next highest amount of expenditures, with most of the funding coming from agency ADP services budgets and a smaller portion coming from the GSA ADP fund.
  - Batch processing is frequently provided through either TSP Basic Agreements or separately negotiated competitive contracts.



## EXHIBIT IV-2

COMPARISON OF A-11 BUDGET, GSA-ADP FUNDS, AND  
TSP EXPENDITURES BY LEADING AGENCIES, FY 1986

AGENCY	OMB A-11		GSA-ADP FUNDS		TSP (MAS+BA)	
	Rank	\$ Millions	Rank	\$ Millions	Rank	\$ Millions
HHS (HCFA)	1	359.00	8	7.90	8	2.50
GSA	2	98.00	7	8.40	6	2.70
Army	3	47.00	2	46.50	1	7.50
Navy/USMC	4	16.50	1	63.90	4	5.10
Air Force	5	15.50	3	34.00	9	1.90
Labor	6	14.30	13	1.10	14	0.12
Commerce	7	14.20	10	3.10	11	1.40
Treasury	8	13.90	6	8.40	5	4.80
Veterans	9	13.00	12	1.10	12	0.90
NASA	10	10.70	14	1.10	13	0.60
Energy	11	9.70	11	2.30	10	1.50
DOD Agencies	12	8.80	9	5.70	7	2.70
Transportation	13	6.50	5	12.50	3	5.20
Army Corp. of Engineers	14	5.20	17	0.15	-	-
Interior	15	5.10	4	13.10	2	5.30
FEMA	16	4.80	16	0.15	15	0.11
Postal Service	-	-	15	0.44	16	0.02

SOURCE: FY 1987 OMB Circular A-11 Section 43 - Agency Information Technology Budgets/  
GSA Records: NEAR System - FY 1986.

Note: Rank within Exhibit.



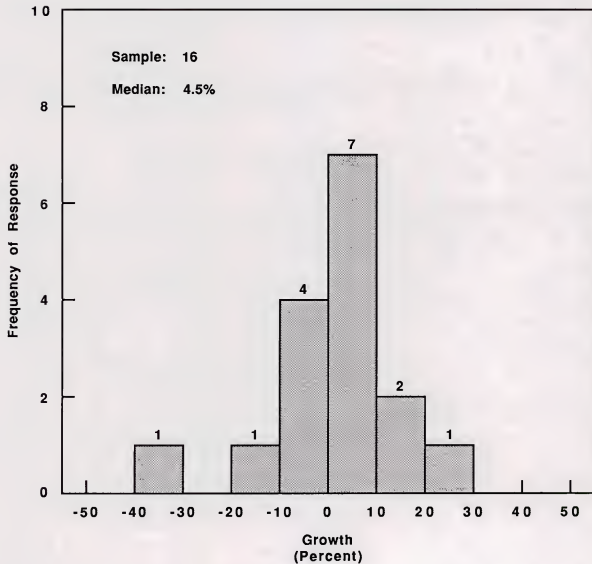
### C. PROJECTED GROWTH OF RCS EXPENDITURES

- Fifty-four representatives of 23 different agencies gave widely varying opinions of the growth of federal RCS revenues (see Appendix A for the agency profile of the survey).
  - Within the same agency there were significant variations, depending upon the procurement or the new requirements in mind.
  - To consolidate the revenue estimates, the actual revenues were computed for each survey, the growth revenues were added together, and a new consolidated growth rate was computed for each agency. Exhibit IV-3 shows the consolidated histogram of the expected growth.
  - The revenue growths anticipated by the agencies are considerably more conservative than those of the industry representatives—a medium growth of 10.8% for the industry representatives (Exhibit IV-4) versus 4.5% for the agencies. INPUT believes that agencies expect a greater in-house capability, thus reducing their dependence on service contractors.
  - Six agencies predicted negative growth—with one agency showing a decline of 30% or greater.
- Agency estimation of the distribution of processing services showed that most of the respondents were heavily weighted toward interactive.
  - Exhibit IV-4 shows that 22 respondents (47%) indicated that more than 75% of their total usage was interactive.
  - Another seven respondents (15%) indicated that more than 50% of their usage was interactive.



EXHIBIT IV-3

AGENCIES' EXPECTATIONS FOR FEDERAL RCS GROWTH  
GFY 1987-1992



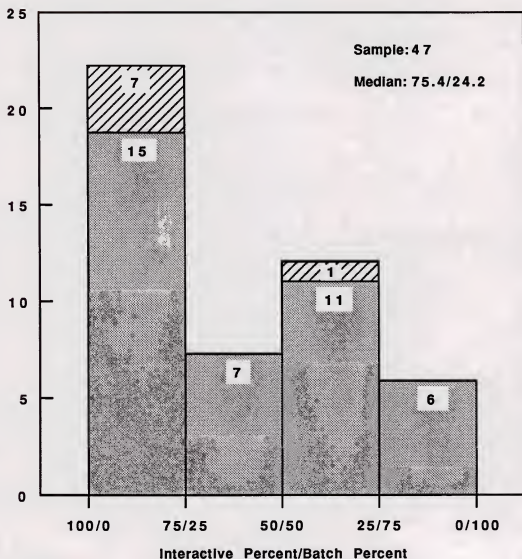
Updated 7/87.





EXHIBIT IV-4

PROCESSING SERVICES DISTRIBUTION  
INTERACTIVE VERSUS BATCH



Updated 7/87.



- Within the DoD, seven out of eight respondents, or 87.5% of those answering, indicated that more than 75% of their computer work was done in interactive mode.
- Both the agencies and the vendors were asked their opinions on which factors would have the most impact on the processing service market over the next two to five years (see Exhibit IV-5).
  - The agencies overwhelmingly chose agency requirements and buying trends as having the strongest influence. Vendors, however, ranked this factor much lower.
  - Federal budget and deficit reduction factors were given high ratings by the agency and vendor respondents.
  - A divergence of opinions exists between the agencies and vendors regarding the impact of technological advances. Agencies gave this factor the least importance while vendors identified technological advances as the second most important factor.

#### D. THE DISTRIBUTED PROCESSING APPROACH FOR APPLICATIONS

- Presently, 50% of agency personnel professed some knowledge of their agency having applications using the RCS/micro combination. The method of procurement for the DDP service was a three-way split between negotiated contracts, in-house facilities, and interagency agreements.
  - GSA has finished investigating the option of including micro-based DDP in the MAS. Still pending is the final approval for a DDP Software clause to be formally incorporated into the FY 1988 Multiple Award Schedule Contract.



EXHIBIT IV-5

MAJOR FEDERAL PROCESSING SERVICES MARKET IMPACTS

FACTORS	AGENCIES RANK*	VENDORS RANK*
Agency Requirements and Buying Trends	1	4
Budget and Deficit Reduction	2	1
Policy and Regulation	3	5
Expertise/Availability of Government Staff	4	3
Technological Advances	5	2

\*Based on Frequency of Mention.



- Agency respondents who had experience with the RCS/micro approach expressed satisfaction in their use of the distributed processing approach and had a wide range of applications to which DDP was directed.
  - Applications include data base access, financial, inventory management, and mission support.
  - Exhibit IV-6 illustrates the alternative distributed processing cycles that can be implemented within an agency.
    - Agency Information Services or an RCS vendor can serve as the "departmental systems."
    - End users can access either service.
    - In-house services are called "Distributed Data Processing (DDP).
    - Vendor services are called "Distributed Processing Services" (DPS).

#### E. PROCESSING FACILITIES MANAGEMENT (COCO)

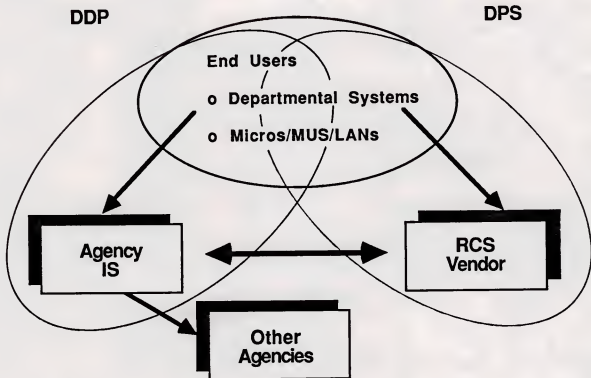
- Processing FM (PFM) provides for the management and performance of a user's data processing functions with equipment owned or leased by the PFM vendor, who operates, plans, controls, and maintains the resources. The federal government calls PFM "COCO"--contractor-owned, contractor-operated information resources.





EXHIBIT IV-6

EXTERNAL VERSUS INTERNAL DISTRIBUTED PROCESSING





- Most agencies have established PFM facilities for processing of administrative or report generating data bases. One-third of the agencies surveyed by INPUT were using PFM vendors for their agency's processing needs in a variety of applications.
- Federal government agencies use PFM to provide data processing services for a variety of reasons:
  - The agency cannot acquire additional staff.
  - The agency cannot get authorization for ADP equipment.
  - Data processing equipment has a limited lifetime.
  - The data processing requirement is unique and would not readily adapt to existing or usual processes or configurations.
- Some agencies will not use PFM services for internal reasons (such as security, sensitivity, location, or concern about control). A number of small civil agencies simply lack the data processing volume or budget to use PFM services.
- Agencies surveyed did not express intentions of using PFM in the future if they were not currently using these services.
- Forces that will significantly influence the direction and strength of the federal marketplace include (but are not limited to):
  - Staffing requirements of the large new and replacement ADP facilities already undergoing implementation are expected to exceed trained government personnel availability.



- DoD and NASA are transferring facility support contracting to "mission-based contracts."
- In-house federal data centers have become eligible vendors of facilities management services under the revised OMB A-76.

#### F. VALUE-ADDED NETWORKS

- Agencies are looking to RCS vendors with wide area value-added network (VAN) services for leased services that satisfy their wide area special network requirements.
- Forty-four percent of the agencies studied are currently using a VAN service, with another 15% expressing an interest in leasing a VAN when the service can be obtained from the TSP.
  - The modification to the TSP to add VAN services is still pending with GSA.
  - Agencies have commented to the GSA during the evaluation process that they are interested in the VANS, but many are still undecided as to whether they will use the VAN exclusively or as a supplement to other voice and data networks.
- Currently, nearly half of the agencies interviewed by INPUT were of the opinion that they saw no immediate need for VAN services.
- However, one-third of the total agencies contacted stated they would consider leasing a VAN through the TSP in the future.



- Present and proposed applications for the VANs include administration, mission support, and data management.
- Agencies expressed an awareness of the economical benefits, but did not offer commentary on the importance of such features as reliability, ease of use, and telecommunications.

#### G. APPLICATIONS AND ALTERNATIVES TO RCS

- The current RCS applications named by the agency representatives are listed in Exhibit IV-7.
  - Data bases of agency data are most frequently mentioned in both defense and civilian agencies.
  - Inventory control and tracking was the second most frequent application solely within the civilian agencies.
    - The military departments operate in-house logistics systems for the majority of their tracking needs.
    - DoD inventory systems have been the target of several congressional investigations for over a year.
  - Both agencies and vendors identified financial applications as the third most popular application.
  - Administrative and human resources applications slowed about the same frequency of mention, with DoD stronger on the latter.
    - In-house DoD personnel systems are overloaded and outdated.





## EXHIBIT IV-7

## CURRENT AGENCY RCS APPLICATIONS

APPLICATIONS	NUMBER OF TIMES MENTIONED		
	CIVILIAN	DOD	TOTAL
Data Base - Agency Data	23	7	30
Inventory/Tracking	12	-	12
Financial	9	2	11
Administrative	8	1	9
Personnel/Payroll/Recruiting	5	4	9
Econometrics/Economic Models	8	1	9
Budget Information	5	-	5
Simulation/Logistics	2	3	5
Data Base Proprietary	3	-	3
Planning Models/Production Standards	2	1	3
Project Management	1	2	3
Statistical	2	-	2
Engineering Processing	2	-	2
Scientific	2	-	2
Text Processing	1	1	2

Updated.



- Recruiting applications with a widespread network of terminals represent an ideal RJE application for RCS networks.
  - The list provides a veritable marketing menu for vendors to determine which products to present in the federal environment.
- The RCS applications lost to alternate processing, the number of applications lost to each alternative, and the apparent reasons for the loss are noted in Exhibit IV-8.
  - The most quoted reasons for loss are cost and control:
    - Cost, as a basis for transfer of applications, appears to be an agency budget concern in most of the transfers, especially in light of agency budget constraints due to Gramm-Rudman.
    - Control, or the lack thereof, by agency personnel while the application was processed by vendors is a frequent complaint of GSA auditors.
  - The mandate of the agency to use in-house facilities principally concerns MIS reports and certain administrative applications that appeared to contain "sensitive" agency information.
  - Both vendors and agencies agree that administrative and data base applications are lost more frequently from RCS to in-house ADP facilities.
    - The level of sensitivity of agency operating data appears to be a strong factor in conversion to in-house performance.
    - Transfers of small applications to microcomputers are reactions to the long turnaround time needed to get RCS applications



EXHIBIT IV-8

RCS APPLICATIONS LOST FROM INDUSTRY TO  
ALTERNATIVE PROCESSING

LOST TO	IN-HOUSE	MINIS	MICROS
Number Lost	10	4	8
Application Areas	MIS Reporting Administrative  Statistical  Data Base	New Applications Administrative  Operations Research  Data Entry  Small Applications	New Applications Procurement System  Consumer Price Index  Data Entry  Small Applications  Program Development Spread Sheet
Reasons	Cost, Control  Mandate to Use In-house  Negative Reaction from GSA	Cost Control	Cost, Control



approved and developed, especially when agency managers do not have a "final" product in mind.

- Overall, the programs "lost" to the RCS vendors appear to have a greater impact on in-house ADP resource justification (for continuation or upgrade) than those retained in the contractual mode.
- Exhibit IV-9 displays the future applications for which agencies plan to use RCS. Data bases are in first place, especially those with network requirements which appear to be most effective in the RCS environment.
  - For other applications areas, there is little agreement among respondents.
    - "New applications" did not commit to any specific use, but rather additional applications that develop with technological advancements and user expertise.
    - "Specialized software" available only by license from RCS vendors was suggested elsewhere as being more significant than is indicated in the exhibit.

#### HL WAYS TO IMPROVE THE TSP

- Constructive suggestions by the agencies for improvement of TSP, both MAS and BA, were few in number, as indicated in Exhibit IV-10.
  - Vendors made more constructive suggestions (see Exhibits V-17 and V-18).





EXHIBIT IV-9

AGENCY VIEWS OF  
FUTURE APPLICATIONS FOR RCS

APPLICATIONS	NUMBER OF TIMES MENTIONED
Data Base with Network	12
Public Access Data Bases	10
New Applications	3
Specialized Software	2
Modeling	2
IDMS	1
Administrative	1
Architectural Design	1
Resource Utilization	1
Military Reclassification	1

Updated 7/87.



## EXHIBIT IV-10

## AGENCY VIEWS OF WAYS TO IMPROVE THE TSP

SUGGESTIONS	NUMBER OF TIMES MENTIONED		
	TSP	MAS	BA
Simplify the Process	9	5	4
Eliminate It	1	2	2
Simplify the Billing	2	2	1
Lower the Costs	-	2	-
Give Better Instruction on How to Use It	-	2	-
Simplify the Algorithms	1	-	1
Get GSA Out of It	1	-	1
Make Agencies Totally Responsible	-	1	-

Updated 7/87.



- Vendors have responded more frequently to GSA invitations to comment on TSP.
- GSA appears to the vendors to be sincere in attempts to commercialize the contracting process.
- A number of agencies are convinced that the TSP process is too bureaucratic and not sufficiently commercialized.
  - Billing algorithms are seen as too complex; agencies lean toward purchase of raw computing power.
  - GSA's handling of the billing process is also seen as central government interference with agency business.
  - Some agencies also felt that there was a lack of communication among participants throughout the process.

#### I. BUYING RCS THROUGH NEGOTIATED CONTRACTS

- The majority of the agencies (70%) also secure processing services through negotiated contracts with vendors in addition to procuring RCS services from the TSP.
  - In most cases, the vendor selected was also on the MASC schedule, but the agency chose to take the open procurement route for the RCS needed.
  - An additional 12% of the agencies utilized interagency agreements to obtain remote computer services. The agencies cited NIH and the Library of Congress as the suppliers for the services.



- All of the DoD agencies were using negotiated contracts.
- Agency personnel professed little knowledge of RCS contracts through other prime contractors.
- The availability of RCS subcontracts are better indicated in the vendor responses in Exhibit V-19.

J. BENEFITS AND PROBLEMS OF RCS

- Agencies listed the benefits of RCS in a different sequence than did the industry representatives, but with much the same emphasis for getting quality work done quickly. Exhibit IV-II lists the benefits in priority order as mentioned by the agencies.
  - Quick implementation was the most frequent benefit, noted by 46% of the respondents.
    - ADP equipment leasing and staffing with in-house resources has, by necessity, built-in time delay factors.
    - "Quick" in the TSP is currently six months for a new agreement, but an internal increase in capacity could require two years.
  - Flexibility to expand or contract the services to meet changes in data processing needs was the second most mentioned benefit, noted by 29% of the agencies.
    - Needs vary in response to congressional oversight, administration analysis, and seasonal requirements.





EXHIBIT IV-11

AGENCY PERCEPTIONS OF THE BENEFITS OF RCS

BENEFITS	NUMBER OF TIMES MENTIONED
Quick Implementation	24
Flexibility to Expand or Contract	15
Specialized Software	9
Vendor Responsible	6
Cheaper	6
No Maintenance	6
Responsiveness	6
Technical Competency of Staff	6
Large Volumes of Data	5
State-of-the-Art Technology	5
Up-Time/Response Time	4
Access	4



- Federal data centers cannot be manned on the basis of variable manpower requirements except by some part-time employees, limited by full time equivalent (FTE) ceilings.
  - Seventeen percent of the agencies listed availability of specialized software from RCS vendors as the third most identified advantage.
  - Several of the other benefits noted by agencies identified technological and functional reasons for use of RCS.
- Exhibit IV-12 contains a list of shortcomings that agencies mentioned. The list shows a general disillusionment with pricing and performance. Thus, these agency spokesmen perceive that they are paying more dollars for declining performance.
  - Forty-four percent of the surveyed agencies identified unexpected costs as the most significant RCS shortcoming, a substantial margin above the second most noted problem.
    - Vendors also acknowledged that cost and budget control and problems with pricing algorithms were serious RCS contracting problems.
    - Agency budget requests were a year or more old by the time a contract is signed.
    - Some agencies have no concept of how much their service requirements will cost.
  - A slow and complex billing process matched the vendor perspective as the second most significant shortcoming.

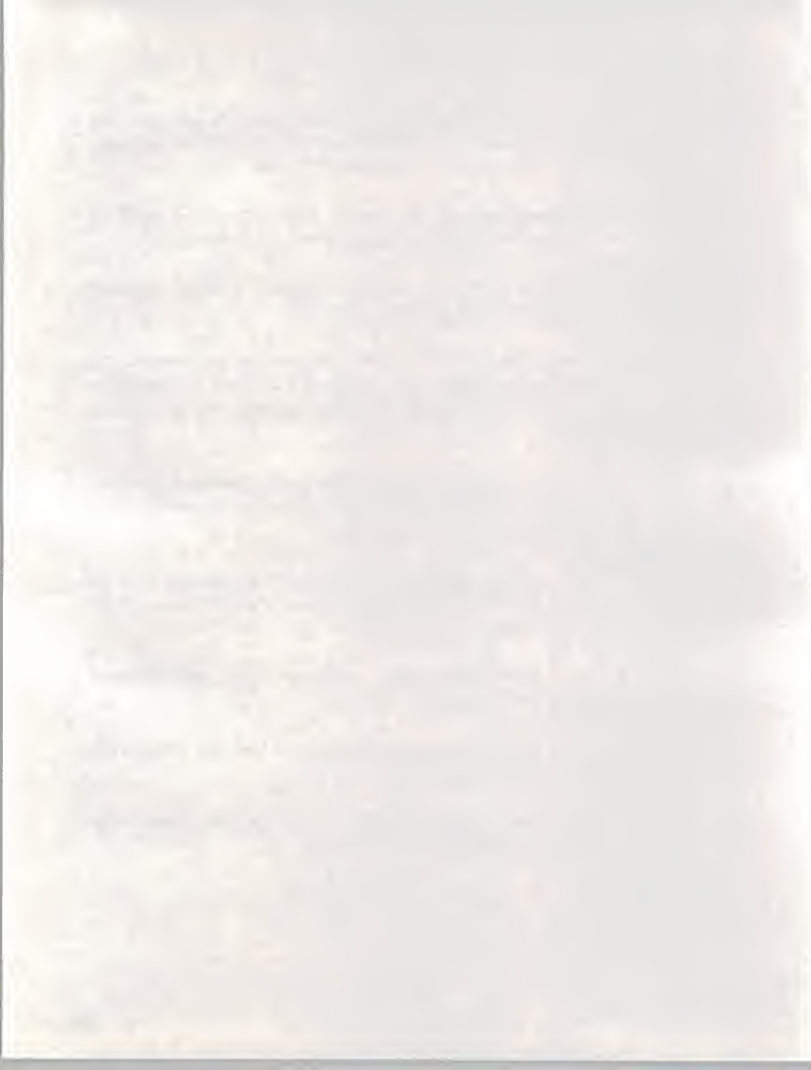


EXHIBIT IV-12

AGENCY VIEWS OF SHORTCOMINGS OF RCS

SHORTCOMINGS	NUMBER OF TIMES MENTIONED
Unexpected Cost	23
Billing Slow and Complex	9
Evaluation Difficult	5
Distance between Computer and User	5
Priority Difficult	4
Performance Weak	3
Service/Customer Support Weak	3
Conversion Difficult	3
Cheap Vendors - Can Not Deliver	1



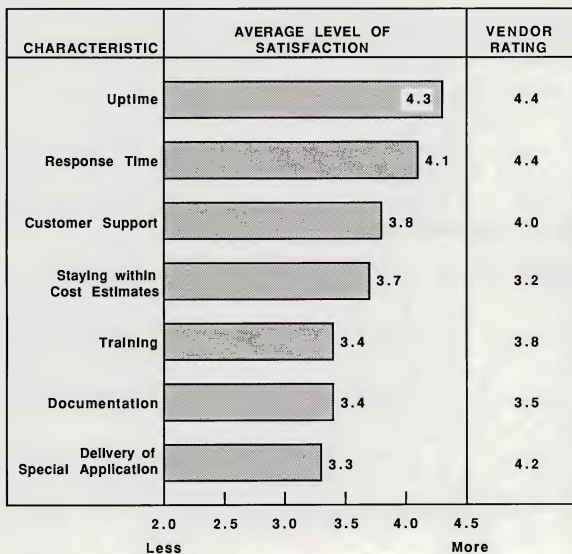
- The TSP and its predecessor created the complex billing and payment procedure.
  - GSA is considering accelerated payment schemes to satisfy both vendor and agency complaints.
- Evaluation difficulties, the third problem, is closely allied to vendor complaints regarding complex procurement regulations.
  - Annual reviews of the proposed MAS and BA procedures with agencies and vendors limit any progress in simplifying a bureaucratic process.
- The remainder of the shortcomings do not correlate well with the vendor list, but combined they represent a litany of less-than-significant problems.
- Exhibit IV-13 shows the agency level of satisfaction with RCS. The average levels of satisfaction are all over 3.0, reflecting an improvement in ratings from the 1984 survey.
  - Two of the seven categories indicate a relatively high level (4.0 or more) of satisfaction with RCS vendor performance.
  - The most significant characteristic noted was uptime, which was ranked highest in satisfaction by the agencies as well as the vendors.
  - Response time was voted the second most significant RCS vendor characteristic by both agencies and vendors.
  - Customized support was the third most significant characteristic perceived by the agencies. The trend toward lowest price awards could jeopardize this factor.





EXHIBIT IV-13

AGENCY LEVELS OF SATISFACTION WITH RCS VENDORS





- Delivery of special applications was rated lowest in satisfaction by the agency. Industry respondents registered a higher level of perceived agency satisfaction for this vendor characteristic.



V PROCESSING SERVICES --  
VENDOR PERSPECTIVES



## V PROCESSING SERVICES—VENDOR PERSPECTIVES

### A. VENDOR OVERVIEW

- Although the number of vendors participating in the federal processing services market has remained relatively stable since the early 1980s, the industry is now undergoing a period of minor fluctuation. Recent changes will influence the market shares of the major vendors.
  - Acquisition of services firms by ADP equipment, aerospace, and large industrial corporations is influenced by both general business conditions and new interest in federal information system opportunities.
  - Some processing services vendors are expanding this federal business base into professional services, software products, and integrated systems.
  - Several of the federal RCS vendors also provide facilities management (PFM) and batch processing services to federal clients.
  - The larger RCS vendors with wide-area value-added networks (VAN) increase their revenues through leases to agencies with wide area network (WAN) requirements.



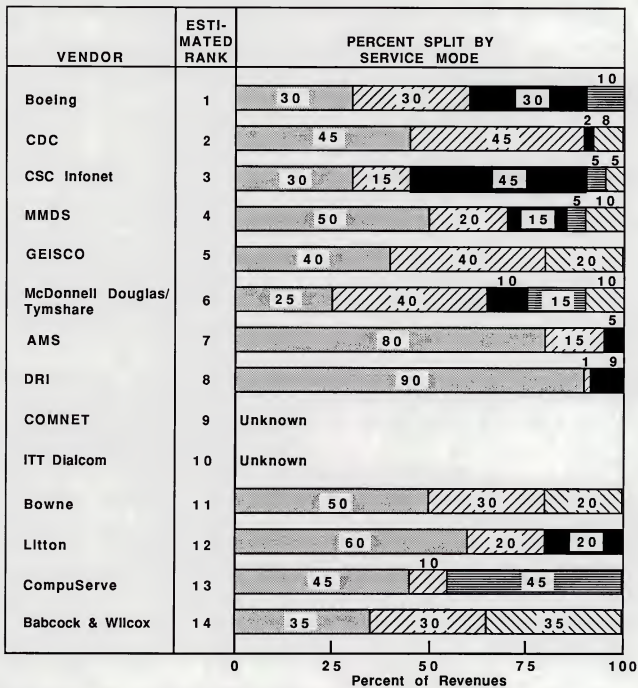


- If the OMB translation of Circular A-76 is enforced, all processing services vendors will be competing with entrenched in-house federal data centers.
  - The circular has been retitled "Productivity Improvement Program" as a new element of the administration's REFORM 88 program.
  - Agencies with increasing or new information processing requirements must solicit other agency data centers, as well as industry, for quotes for the cost comparison process.
  - Vendors believe that the resulting cost competition will accelerate migration of more conventional processing services to the province of raw processing power at least possible cost to the federal government.
- The majority of the vendors responding to the survey identified RCS as their primary revenue generator in the federal market, as indicated in Exhibit V-1.
- The second largest revenue segment for nearly a quarter of the vendors was the batch processing service mode.
  - Seven of the vendors surveyed reported that batch mode accounted for 30-50% of their federal revenues.
  - The batch service mode is, however, declining as a share of total revenue and is projected to remain level for the remainder of the decade.
  - Most of the vendors believe that in-house PCs and minicomputer centers will absorb batch-oriented surveys and audits conducted biannually or triannually by the Defense and Education departments.
- The third largest market segment is processing facilities management (PFM), which is also called COCO (Contractor-Owned, Contractor-Operated) ADP services.



EXHIBIT V-1

SOURCE OF FEDERAL REVENUE FOR  
PROCESSING SERVICES VENDORS, 1986  
(Ranked by Vendors Estimates of Federal Volume)



 RCS  
(Interactive)

 Batch

 PFM

 VAN

 DDP

Updated 7/87.

GPS3

- 79 -



- A number of larger RCS vendors have moved into PFM as an alternate market.
- Some large PFM vendors function in classified areas not open to INPUT inquiry.
- PFM vendors are discussed in greater detail in INPUT's Federal Facilities Management Report (1985).
- Distributed data processing is slightly ahead of value-added networks in percentages of revenues. Both of these services modes are identified by the vendors as most likely to increase over the next two to five years.
- Many of the largest processing services vendors surveyed are active in both the federal and commercial sectors.
  - On the commercial processing services sector, the industry has experienced 10-15% overall growth since CY 1985.
  - The fundamental reason for growth in this segment is the change of emphasis in user demand and vendor services from computing cycles to network connectivity.

## B. REMOTE COMPUTING SERVICES

- RCS is the largest service mode of the federal processing services market.
  - HHS transfers a major share of its federal RCS funds to the states to support commercial providers of ADP services for insurance, welfare, and compensation claims processing.



- A minor share supports the GSA Teleprocessing Services Program (TSP) for many of the federal agencies.
- Exhibit V-2 shows that 62% of the vendors surveyed obtained more than 50% of their total revenues from RCS in CY 1986.
  - Only 15% indicated less than a quarter of their revenues derived from RCS, and these did not expect to increase RCS revenues substantially.
  - Those vendors who generated more than 75% of their total revenues in 1986 through RCS already are or plan to diversify into professional services activities.
- Exhibit V-3, however, indicates that 30% of the vendors surveyed received less than 20% of their RCS revenues from federal contracts.
  - Only 9% reported that 80% or more of their RCS revenues came from federal sources.
  - It is interesting to note that 91% of the vendors claim that less than 60% of 1986 RCS revenues were federally based.
- Vendors surveyed showed little consistency in their expectation of federal RCS market growth in the next two to five years, as seen in Exhibit V-4.
  - Eleven percent expect RCS obligations to decline, in response to increasing federal data center competition or transfer of programs in-house.
  - Eleven percent projected growth of 20% to 30%, which may be realistic to each individually if current revenues are low.





EXHIBIT V-2

PERCENT OF TOTAL REVENUE  
DERIVED FROM RCS ACTIVITIES, CY 1986

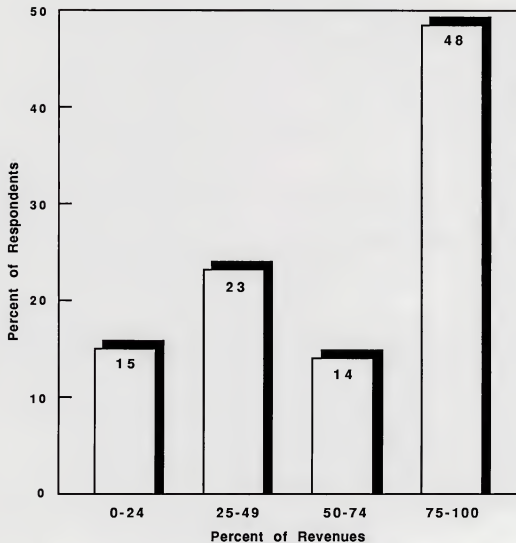




EXHIBIT V-3

PERCENT OF VENDOR RCS REVENUE  
DERIVED FROM FEDERAL GOVERNMENT, CY 1986

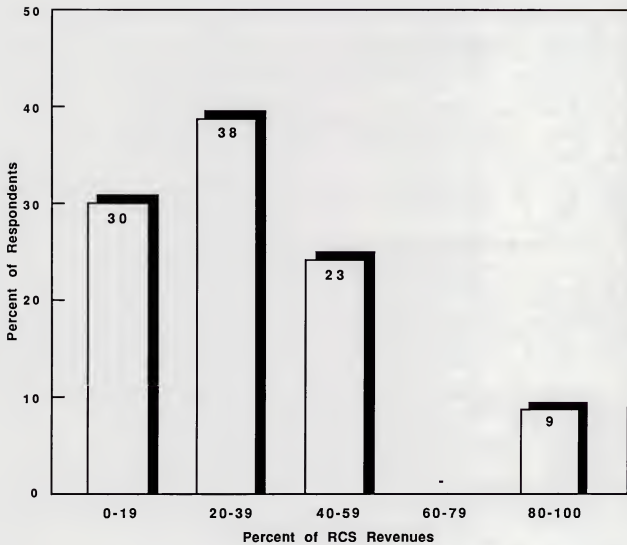
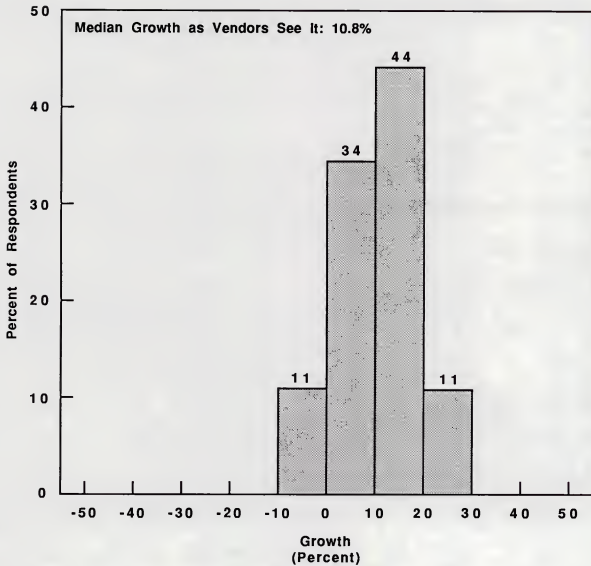




EXHIBIT V-4

VENDOR EXPECTATIONS OF FEDERAL RCS MARKET GROWTH,  
GFY 1987-1992



Updated 7/87.



- The medium forecast was 10.8%, giving some consideration to the impact of end-user computing (PCs) and DDP.

### C. TELEPROCESSING SERVICES PROGRAMS

- The most competitive and visible federal RCS market is the GSA-managed TSP.
  - Since GFY 1978, a few relatively large RCS vendors have dominated the TSP.
  - A continuation of mergers, acquisitions, and changes in bidding, resource charging algorithms, and agency requirements have begun to change the vendor rankings.
  - The GFY 1986 overall TSP market shares are listed in Exhibit V-5.
  - BCS had the highest share of the BA and second highest of the MAS markets, respectively, from some programs subsequently lost in recompetitions.
  - CSC was rated second highest in BA and third in MAS, with the prospect of improved revenues with the award of the General Services Administration's Personnel Information Resources System.
  - CDC improved its MAS position with its acquisition of UIS and has achieved the highest market share for FY 1986 on the MAS and fifth place for the BA.
- Recent acquisitions and significant upsets in recompetition are changing the complexion of the federal TSP marketshare. Exhibit V-6 shows market share





EXHIBIT V-5

GSA-TSP MARKET SHARE FOR COMBINED  
MAS AND BA REVENUE, GFY 1986

RANK	COMPANY	PERCENT SHARE
1	BCS	29.2
2	CSC	21.7
3	MMDS	8.3
4	CDC	7.5
5	McDonnell Douglas/Tymshare	5.5
6	EDS	5.3
7	DRI	3.2
8	COMNET	2.5
9	NVIP	2.3
10	GEISCO	1.1

SOURCE: Draft GSA GFY 1986 TSP Report.



## EXHIBIT V-6

**MARKET SHARE REPORT - TSP/MASC  
RELATIVE RANKING OF 18 COMPANIES**

COMPANIES	GFY 86		GFY 84	
	Percent	Rank	Percent	Rank
CDC	19.2	1	23.5	1
BCS	18.0	2	19.2	2
CSC	13.4	3	6.8	5
DRI	7.9	4	6.1	7
MMDS	7.6	5	1.3	13
NVIP	5.7	6	5.3	8
COMNET	4.3	7	0.3	23
McDonnell Douglas/Tymshare	3.3	8	6.4	6
GEISCO	2.9	9	7.8	3
IBM	2.0	10	1.8	11
CSP	1.3	11	-	-
EDS	1.3	12	7.2	4
Litton	1.3	13	-	-
Proprietary CS	1.1	14	-	-
UNI-COLL	0.9	15	1.2	14
D & B	0.8	16	2.6	10
NDC	0.7	17	0.7	18
AMS	0.6	18	1.6	12
Others	7.7	-	4.1	-

SOURCE: GSA TSP Program Office.

Updated 7/87.



of the Multiple Award Schedule Contracts (MASC) awarded in FY 1986 recast to reflect these changes along with the FY 1984 MASC award market share for comparison.

- CDC's acquisition of United Information Services (UIS) accounts for its hold on the number one position on the MAS, with 19.2% market share in GFY 1986.
- Boeing is a close second, with 18% of the MASC market.
- Computer Science has doubled its percentage to 13.4% and now reaches third place in FY 1986, rising from fifth place in FY 1984.
- Large gains since 1984 have brought Martin Marietta up to fifth place from being thirteenth.
- Comnet also made substantial gains to climb to seventh place with 4.3% of the market from being in 23rd place in FY 1984.
- Changes in bidding strategies for recompetitions and the final year of previous programs contributed to the market share and relative rank of TSP/Basic Agreement vendors in GFY 1986, as indicated in Exhibit V-7.
  - As noted earlier, BCS's market share in the BA part of the TSP contributed to its first place in the overall TSP.
  - CSC's second position in BA contributed to its similar rank in the overall TSP.
  - Lower reported BA revenues affected CDC's fifth position in BA revenue and its reaching only fourth position in the overall TSP.



EXHIBIT V-7

GSA-TSP BASIC AGREEMENT MARKET SHARE AND RANKING,  
GFY 1986

RANK	COMPANY	PERCENT SHARE
1	BCS	35.5
2	CSC	26.3
3	MMDS	8.7
4	EDS	7.6
5	CDC	5.5
6	UCCEL	2.4
7	CompuServe	2.3
8	Litton	2.1
9	COMNET	1.4
10	DRI	0.5
11	NVIP	0.4
12	Babcock and Wilcox	0.1

SOURCE: Draft GSA GFY 1986 TSP Report.

Updated 7/87.





- Martin Marietta's gains in the BA market share contributed to its strong third rank and 8.3% share of the overall TSP market.
- McDonnell Douglas/Tymshare has held its BA rank up from its earlier seventeenth rank to fifth place for combined BA and MAS revenues.
- EDS's market share in MAS dropped to twelfth ranking, being fourth in the BA and ranking sixth in overall TSP market share.

#### D. UTILITY OF RCS TO FEDERAL AGENCIES

- Vendors and agencies were asked to identify both the advantages and disadvantages of vendor-furnished RCS to satisfy federal government information processing requirements.
  - Vendors identified eleven advantages to the government in using contractor RCS (listed in Exhibit V-8).
    - Half of the vendors surveyed identified quality technical support as the most significant advantage; only 11% of the agencies agreed.
    - Forty percent of the vendors listed quality of services as the second most significant advantage. This category is roughly comparable to that of responsible vendor, which was rated fourth by 11% of the agencies in their interview.
    - One-third of the vendors believe that productivity and competitive cost are equally important advantages for the agencies, 11% of the agencies and contractors felt RCS was cheaper, and only 10% agreed with the productivity rating



EXHIBIT V-8

INDUSTRY VIEW OF THE ADVANTAGES OF  
RCS TO FEDERAL GOVERNMENT

BENEFITS	NUMBER OF TIMES MENTIONED
Quality Technical Support	10
Quality of Service	8
Productivity	6
Competitive Cost	6
No Hassle	4
Easier to Justify (Small Dollars)	4
Cost Benefit, Despite Apparent Expense	3
Computing Power Flexibility	3
Get It Done - It Works	3
Good Training Ground	2
Capabilities Not Available Internally	1

Total Number of Vendors Sampled: 19



(listed as large volumes of data and responsive on the agency evaluation).

- . Fourth in significance from the vendors' perspectives are no hassle and easier to justify (smaller costs); almost half (46%) of the agencies rated quick implementation as the most important advantage and did not mention justification as an issue.
- Fourteen disadvantages or shortcomings of vendor-furnished RCS were suggested by the vendors, but with less agreement on the more significant issues, as illustrated in Exhibit V-9.
  - . Forty-two percent of the responses identified (agency) difficulty in properly controlling costs and budget as the leading defect of contracting out RCS; 44% of the agencies agreed that unexpected costs was the most significant disadvantage.
  - . Vendor pricing algorithms and (agency) problems with the resultant billings and procurement regulations were listed as equally difficult RCS contract problems facing the agencies by 21% of the vendors; 17% of the agencies identified slow and complex billing as the second most notable disadvantage.
  - . Sixteen percent of the vendors also believe that being locked to a single vendor and dependence on telecommunications were disadvantages to the agencies, while only 10% of the agencies identified communications as a problem and none were concerned with being locked into a single vendor, except when the vendor underbid and could not deliver.
- Vendors were also asked (as were the agencies) how they believe the agencies would rate their satisfaction in seven significant RCS vendor performance areas, as illustrated in Exhibit V-10.



EXHIBIT V-9

INDUSTRY VIEW OF THE DISADVANTAGES OF  
RCS TO FEDERAL GOVERNMENT

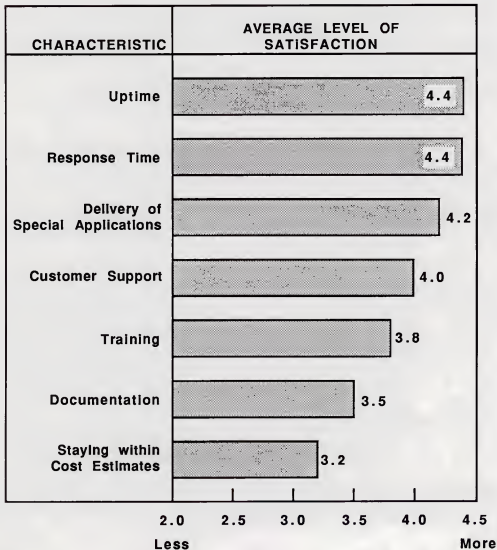
SHORTCOMINGS	NUMBER OF TIMES MENTIONED
Difficult to Control Costs and Budget Properly	8
Pricing Algorithms and Problems	4
Procurement Regulations	4
Locked to a Single Vendor	3
Dependence on Telecommunications	3
Do Not Get What They Really Want	2
Lack of Control of Resources and Product	2
Lacks Status Associated With Hardware Buy	2
Cheaper to Buy Hardware	2
Time Lag - Bureaucracy	1
Security of Data	1
No Attempt to Measure Value	1
Cost Too High	1
Business Profits	1





EXHIBIT V-10

INDUSTRY VIEW OF AGENCY LEVELS OF SATISFACTION  
WITH RCS VENDORS





- Vendors think that "uptime"--the availability of RCS to the user over the most continuous time frame--is the major area of agency satisfaction and gave it a highly satisfactory rating.
- Response time also received the same high rating of satisfaction. The agencies concurred with the vendor opinion.
- The vendors believe that delivery of special applications is the third key area of agency satisfaction. The agencies disagreed, giving this performance area the lowest overall rating.
- Customer support was selected as the fourth highest area of agency satisfaction with RCS vendor performance; the agencies felt that support was the third highest area of satisfaction.

#### E. APPLICATIONS AND ALTERNATIVES TO RCS

- Vendors identified 16 application areas as their largest revenue producers. Exhibit V-II lists the application areas.
  - Data base applications for agency data was identified by both vendors and agencies as the most-used RCS application.
    - Fifty-three percent of the vendors identified this RCS application as producing the largest federal revenues.
    - Fifty-six percent of the agencies agreed as to the frequency of use, with defense slightly ahead of civil agencies.
  - Financial applications and raw computing power were identified by vendors as the next largest revenue producers.



EXHIBIT V-11

APPLICATIONS PRODUCING LARGEST VENDOR FEDERAL REVENUE

APPLICATION AREAS	NUMBER OF TIMES MENTIONED
Agency Data Base	9
Raw Computing	7
Financial	7
Custom Applications	5
Tracking	4
Statistical	2
Proprietary Data Bases	2
Electronic Mail	2
Personnel/Payroll/Recruiting	2
Project Administration	2
Networking	1
Engineering	1
Graphics	1
CAD/CAM	1
Structural Methodology	1
Electronic Publishing	1



- Twenty-one percent of both vendors and agencies listed financial applications as the second most frequently used.
  - The agencies did not comment on "raw computing" as an application area.
  - For 21% of the vendors, the provision of a computing utility that did not focus on any specific application was equal in revenue generation to financial systems.
- A number of vendors believe that TSP cost competitions that seek to lower the contractor's bid progressively will result in the provision of raw computing power with no application of technical service responsibility on the part of the vendor.
- Inventory tracking was another application with nearly the same percentage of respondent identification.
  - Twenty-four percent of the vendors identified this area as the fifth largest revenue producer.
  - Twenty-three percent of the agencies listed inventory/tracking as the second most-employed application.
- Vendors also projected application areas which would be or have already been lost to alternative means of processing. Exhibit V-12 is a synopsis of their comments.
  - There is an unexpected overlap between the application areas in Exhibits V-11 and V-12, indicating that a major portion of RCS business is vulnerable to possible loss as capabilities of micros and minis continue to increase, and as internal hardware costs continue to decline.





## EXHIBIT V-12

## PROJECTED INDUSTRY LOSSES TO ALTERNATIVE PROCESSING

APPLICATION AREA	NUMBER OF TIMES MENTIONED		
	PAST	IN NEXT YEAR	IN 2-5 YEARS
Financial Spreadsheets	6	4	2
Raw Computing	4	3	1
Report Writing/Text Editing	3	2	1
Graphics	3	3	-
Small Data Bases	3	2	-
Statistical	2	-	-
Small Tracking Systems	2	-	-
Applications Development	1	-	-
Word Processing	1	1	2
Engineering	1	3	1
Data Base Management Systems	1	1	4
Electronic Mail	-	-	1
Everything Except Large Data Bases and Networking	-	5	9

Updated.



- Financial applications, particularly spreadsheets, appear to be the most vulnerable since these can be processed by micro-computers, as noted by the agencies in Exhibit IV-8.
  - Large agency data bases now in RCS mode do not appear to either vendors or agencies as being vulnerable to in-house transition in the next several years.
  - Statistical and proprietary data bases are more vulnerable because they involve more sensitive information with a greater likelihood of frequent management interest and are amenable to processing on mini- and microcomputer resources.
- Cost and control once again headed the list of reasons why RCS applications are lost to alternative means of processing (see Exhibit V-13).
  - Better internal agency management of ADP resources, including RCS, and the increasing availability of raw technology, principally PCs and hard disks, were the third most noted reasons for the loss to alternative (in-house) resources.
  - Internal pressure, from GSA, agency executives, and civil service unions were listed equally as fourth reasons for the transition.
- Vendors have already experienced the loss of applications to alternative means of processing. Exhibit V-14 shows the vendor experience—how many applications were lost to which alternatives, and why. Once again, cost and control are the dominant reasons for the change.
- Exhibit V-14 for vendors is directly comparable to Exhibit IV-8 for the agencies.



EXHIBIT V-13

INDUSTRY VIEW OF WHY RCS APPLICATIONS ARE LOST  
TO ALTERNATIVE PROCESSING SOURCES

REASONS FOR LOSSES	NUMBER OF TIMES MENTIONED
Cost	15
Internal Control	7
Better Management of ADP	4
New Technology (Micros)	4
Pressure from GSA or Agency	2
Single Location Jobs	2
Government Job Protection	2
Convenience	1
Lack of Value Added	1
Capacity	1



EXHIBIT V-14

RCS APPLICATIONS LOST BY INDUSTRY  
ALTERNATIVE PROCESSING SOURCES

LOST TO:	IN-HOUSE	MINIS	MICROS	OTHER AGENCIES
Number Lost	8	7	7	4
Application Areas	Program Development Personnel Tracking Quality Control  Data Bases  Data Bases General Purpose Processing	Program Development Personnel Tracking Tracking Systems Word Processing Financial Spreadsheet Small Data Bases General Purpose Processing	 Statistics  Quality Control Word Processing Small Business Applications Financial Applications Budgeting	 Statistics   Data Bases Data Bases General Purpose Processing
Reasons	Cost Software Available Capacity Available	Cost Control Capacity Available	Cost Control	Cost Internal Directives





- Both agree that administrative and data base applications have been lost to in-house mainframe resources. Vendors note that "in-house" can mean within the agency and/or to another federal data center.
- There are somewhat greater differences in applications transition to in-house minicomputers:
  - "Small" applications could include small data bases, spreadsheets, and general purpose processing (vendor equivalent of "raw processing power").
  - Vendors identified personnel and inventory tracking, program development (management), and word processing as likely to transition in-house.
  - Agencies listed operations research, data entry, and administration applications as also likely for transition in-house.
- Choice of applications to be moved to microcomputers as a prospective change involves a greater divergence of opinion, with financial spreadsheets the only application that is identified by both vendors and agencies.
- But some application areas do not move to alternate forms of processing. In Exhibit V-15, vendors indicated their understanding of why some applications, even those well within the areas inclined to move off RCS, do not move.
- Four of the proposed reasons cited appear to agree with GSA and agency opinions on reasons for retaining the TSP.
- Service and support is important to many agencies that have critical shortages of qualified ADP staff and widely varying application demands.



EXHIBIT V-15

INDUSTRY VIEW OF WHY RCS APPLICATIONS DO NOT MOVE TO  
ALTERNATIVE PROCESSING SOURCES

REASONS APPLICATIONS NOT LOST	NUMBER OF TIMES MENTIONED
Service and Support	15
Telecommunications Capabilities and Cost Effectiveness	9
Capacity on Demand	8
Proprietary Software or Data Bases	6
Large Data Base	3
Cost Effectiveness	3
Cost of Conversion	2
Inertia	2
Time-Critical Application	1
Back-Up Availability	1
Security of Data	1
Personnel Ceiling	1



- Telecommunications capabilities, largely VANs, provide improved and less error-prone data transmission than available through FTS, and are frequently more cost-effective than customized dedicated networks.
  - Agencies in key consumer, citizen service, and congressional support assignments can only meet short-term, high-volume requests for data processing support through on-call RCS vendors.
  - GSA and NBS have noted frequently the advantages of vendor-supported software and data bases, which must be maintained to remain competitive.
- This list provides a menu for those vendors who wish to add value to their RCS business. Nine of the twelve reasons named are solid arguments for the federal government to return access to commercial RCS offerings.

#### F. PROBLEMS AND HOW TO SOLVE THEM

- Vendors are familiar with the long and tedious process of selling RCS to the federal government. Exhibit V-16 is a list of the difficulties they have experienced, most of which will probably continue to exist.
- Clearly, selling to the government requires infinite patience, specific knowledge, a corporate commitment, and perseverance.
  - The (unnecessarily) long buying cycle and federal (personnel) incompetence were identified as the most significant problems by 40% of the vendor respondents.
  - Long government buying cycles have been studied, investigated, castigated, and revised for more than two decades, while TSP is only nine years old.



## EXHIBIT V-16

**MOST SIGNIFICANT INDUSTRY PROBLEMS IN SELLING  
TO THE FEDERAL GOVERNMENT**

PROBLEMS	NUMBER OF TIMES MENTIONED
Long Buying Cycle	9
Federal Incompetence	9
Knowledge of Procurement	6
Benchmark and Proposal Expertise	4
Cost Image	3
Slow Payment	2
In-House Bureaucracy	2
Unscrupulous Competition	2
A-76/Brooks Act	2
Protests	1
Price As Only Differential	1
Learning about Requirement Too Late	1
In-House "Better"	1
Budgeting - Long Process	1
No Profit	1

Updated 4/87.





- Prior MAS and BA acquisitions took, on the average, about nine months.
- GSA advised that future BAs were expected to be negotiated in six to seven months.
- Federal incompetence may be a vendor perception not supported by facts.
  - Contract offices are bound by a combination of rules, regulations, policies, and precedents of unbelievable complexity and detail.
  - Data users are frequently not data specialists, and there are substantial reasons for their not becoming experts.
  - GSA admits that IG auditors, GAO auditors, and agency administrators know very little about data processing.
- Knowledge, or the lack thereof, of procurements in the program was mentioned by 30% of the respondents.
  - Unless a vendor keeps tabs on all TSP users, he is likely to be caught off guard on both new and re-competed opportunities.
  - Vendors with local sales or representative technical personnel at the sites of major TSP users are more likely to become aware of pending procurements.
- Nearly 20% of the respondents noted as the fourth most significant problem the need for benchmark and/or proposal expertise, which they either do not have or for which there was no need for.



- The remainder of the problems do not appear widespread, and might be more indicative of vendor failure to prepare to address the federal market than of a real problem to vendors in TSP in general.
- How to improve the MAS and the BA? This question divided the vendors into two separate camps--those who favor the BA and those who favor the MAS.
  - Exhibit V-17 details the vendors' suggestions for improving the MAS.
- Seventy-five percent of those responding to the MAS question in the 1984 interviews suggested inclusion of hardware, such as microcomputers, as did 25% of those vendors again interviewed in 1987.
  - GSA has asked the same question of industry in response to internal disputes on making hardware available on the schedule.
  - Figures were provided by industry that supported the contention that the service was feasible, was already in commercial practice, and was used by the agencies to a limited degree.
  - GSA's Office of Federal Information Resources Management (OFIRM) opposed the service as an illegal procurement practice but agreed to permit retention of the existing agreements.
- Thirty-six percent suggested abandonment of MAS as a contracting vehicle.
  - GSA commented on earlier erosion of MAS volume which has now flattened, as noted elsewhere in this report.
  - OFIRM has proposed termination of MAS rather than authorize the addition of micro-mainframe links and microcomputers on the schedule.



EXHIBIT V-17

INDUSTRY RECOMMENDATIONS ON HOW TO  
IMPROVE THE (TSP) MAS

CHANGES NEEDED	NUMBER OF TIMES MENTIONED
Add Hardware (i.e., Micros)	8
Abandon It - "10-Year-Old Relic"	5
Reduce Technical Content/Paperwork	4
Add Flexibility to Increase Allowable Services	2
Educate Agencies - "How, When, and Why"	1
Relay Certification of Commercial Prices	1
Omit Labor from "Net Discounts"	1
"We Never Got a Contract"	1

Updated 4/87.



- Twenty-eight percent recommended reduction of technical content and paperwork.
- Respondents were also eager to suggest increasing flexibility of the MAS to allow for easier addition of vendor services.
- Commercial price certification, net discounts that include nonrelated commercial work scope, and restrictions on technical assistance were negotiated as reductions to the GFY 1986 MAS.
- Exhibit V-18 details the vendor suggestions for improving the BA.
  - Five of the six suggestions for change on the BA represent constructive criticism where improvement is possible.
  - The volume of BA revenues is growing at a reasonable rate each year, and there is promise that the BA will continue as a contracting method.
  - FAR and FIRMR rule changes on ADP acceptance procedures permit agencies to select economically justifiable alternatives to benchmarking.

#### G. SELLING TO OTHER CONTRACTORS

- Fourteen of the eighteen vendors interviewed in both previous studies have sold remote computer services as a subcontractor to a prime contractor on a federal project. The vendor responses detailing the types of contractors with which they have worked are shown in Exhibit V-19.
  - Selling through a prime contractor can yield significant revenues without the necessity of the lengthy competitive process or the risk of prime contract performance.





EXHIBIT V-18

INDUSTRY RECOMMENDATIONS ON HOW TO  
IMPROVE THE BA

CHANGES NEEDED	NUMBER OF TIMES MENTIONED
Pricing Improvements	6
Benchmark Improvements	3
Takes Too Long - Shorten the Cycle	3
"Kill It"	2
Allow Distributed Data Processing	1
Allow Facilities Management Approach (COCO)	1

Updated 4/87.



EXHIBIT V-19

INDUSTRY EXPERIENCE AS SUBCONTRACTOR TO  
PRIME CONTRACTORS ON FEDERAL PROJECTS

TYPES OF PRIME CONTRACTORS	NUMBER OF TIMES MENTIONED
Consulting Firms	14
"Small Business" Firms	13
8A /Minority Firms	12
Professional Services Firms	11
Research and Development Firms	8
Big 8 Accounting Firms	6
Non-Profit Firms (i.e., MITRE Corp.)	4

Updated 4/87.



- Small business and professional services firms appear to need RCS suppliers to provide on-call resources in place of high-risk, speculative ADPE investments in the early stages of an opportunity.

#### H. PROCESSING FACILITIES MANAGEMENT (COCO)

- Slightly over half (53%) of the vendors in the survey were providing processing facilities management (PFM) services for the federal government. Agencies also refer to this service as "COCO"--Contractor-Owned, Contractor-Operated--Information resources.
- Most agencies surveyed have already established PFM facilities with vendors; however, the smaller agencies lack the volume of projects or budget to have such a facility and other agencies are barred due to security or data control reasons.
- Vendors were queried as to what benefits PFM offer to the agencies. Exhibit V-20 list the responses most frequently cited.
- Vendors identified PFM as a close second place to VANS as the processing service mode they expect to see increase over the next two to five years.
  - The increase stems in part from the agency's inability to acquire additional staff with certain areas of expertise.
  - Also, agencies cannot always get authorization for their own equipment when faced with budget reduction measures.
- As more vendors look to the PFM market to expand their federal revenues, recompetes will become more competitive.



EXHIBIT V-20

PERCEPTION OF BENEFITS OF PFM TO AGENCIES

FACTOR	RANK*
Reduce Costs	1
Acquire Expertise	2
Increase Accountability	3
Increase Reliability	4

\*Rank based on frequency of mention by respondents.





## I. DISTRIBUTED PROCESSING CAPABILITIES

- Eighty percent of the vendors interviewed indicated that they are currently interfacing personal computers with mainframes in their RCS businesses.
  - Eight of the vendors believed that RCS revenues would significantly increase if microcomputers could be supplied under the TSP.
  - Ten vendors believe that micros are already available at very reasonable prices to the federal agencies.
  - Four of the eighteen vendors did not offer their distributed processing capabilities to the federal government for various reasons:
    - Offering is too new; it needs to be tested before selling to the government.
    - There is no reason to offer the capability unless there is a stated requirement.
    - One vendor offered the capability, but has been repeatedly turned down.
  - However, most vendors are anxious to offer distributed processing services whenever this option is made available under the TSP.
- Vendors were queried on their opinion of the government's reaction to date regarding DDP.
  - The most frequently cited commentary has been on the "slowness" of the government to adapt the service offering.



- Vendors cited a somewhat cautious attitude or reluctance by the agencies to support development efforts.
- About 20% of the vendors cited a favorable acceptance of DDP by the government agencies and their expression of an encouraging attitude.
- A Distributed Data Processing Software clause is expected to be incorporated into the FY 1988 Multiple Award Schedule Contract pending adoption of Amendment No. 5 to the MASC.
  - Under this clause, vendors provide an on-line interface which links local Government terminal/computer systems with a vendor's TSP MASC host mainframe processing through the use of compatible software. It may include support and applications software, utility programs, and data/files.
  - DDP applications are already in effect in several agencies and additional ones are under negotiation either under the TSP or separate negotiated contracts.
- Vendors are supplying DDP equipment, or software, in the hopes of establishing a federal market for micro-based DDP, much like that which has been in practice in the commercial sector.
  - Vendors realize that many remote computer choice applications are gravitating toward micros. DDP can present vendors with a service offering that would give them a means of recapturing some lost applications.
  - Exhibit V-21 lists the reasons why vendors should offer DDP services.
  - The TSP revenues have shown a decline in revenues over the past three years. The decline is due to agencies getting "better discount prices,"



**EXHIBIT V-21**

**WHY VENDORS SHOULD OFFER DDP SERVICES**

- **Fills Gap between Full RCS Services and Wholly Internal Solutions**
- **Alternative Delivery Mode**
  - **Expands Service Options, Product Mix**
- **Participation In DDP/Decentralization Trends**



upgrade of the government inventory and equipment, and an increase of the in-house timeshare capabilities.

- Administrators of the TSP are looking at the addition of DDP services to the program as a source of much needed revenues. Final approval of this modification is pending for the FY 1988 MASC.

#### J. VALUE-ADDED NETWORKS

- Of the vendors that INPUT contacted, 64% either supply or plan to supply value-added networks (VAN) services to the federal government. VANS are shared public data services which rely on the commercial vendor's network.
- Vendors foresee both advantages and disadvantages to their business arising from GSA's plans to include VAN services on the TSP.
  - Advantages--offering multiple services through a single contract, bolstering RCS revenues, increased the volume of federal business.
  - Disadvantages--reduced margin for RCS and increased competition.
- Vendors believe that inclusion of VANS on the TSP offers federal agencies several benefits.
  - Economies of scale.
  - Faster availability of new technology.
  - Ease of operation.
  - Simplified procurement.





- The only disadvantage centered on the difficulty of evaluating vendor technical offerings and costs within the current TSP framework.
- GSA has not yet finalized its plans to include VANs on the TSP. The proposal is still in a "draft" stage pending action by late FY 1987. Presently, GSA is evaluating contracts for the fourth version of technical and procedural modifications.
- During the evaluation process, agencies have expressed some potential interest to GSA regarding their future use. Many agencies, however, are still undecided as to whether they will use the VAN exclusively or as a supplement to other voice and data networks.
  - Nearly half of the agencies interviewed by INPUT were currently of the opinion that they saw no immediate need for the VAN services.
  - However, one-third of the agencies contacted stated that they would consider leasing a VAN from the TSP in the future.
- One of the major factors likely to drive the growth of VANs markets will be growing agency awareness of the potential cost benefits that could be made available through the use of value added network services.
- Vendors must also pay increasing attention to presenting their services after developing a greater understanding of the user agency needs. Overall performance of the network, reliability, and security will all be important user considerations.



## VI CONCLUSIONS AND RECOMMENDATIONS



## VI CONCLUSIONS AND RECOMMENDATIONS

### A. CONCLUSIONS

- The federal processing services market has matured, as demonstrated by several indicators:
  - A steadily declining growth rate is projected for both the market overall and its segments.
  - Agency levels of participation in ISP have declined across the board, except for Army, indicating increasing reliance on in-house services.
  - Seventy-two percent of available GFY 1986 revenues were won by only five vendors, with two, BCS and CSC, winning 51% between them.
  - Except for the leading contractors, vendor population and market shares have declined over the past few years.
  - GSA will continue as program manager of the TSP portion of RCS, looking for means of employing commercial practices.
- Several recent changes in the marketplace are expected to affect its future direction and size:



## VI CONCLUSIONS AND RECOMMENDATIONS

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  - GSA will continue as program manager of the TSP portion of RCS, looking for means of employing commercial practices.
- Several recent changes in the marketplace are expected to affect its future direction and size:





- Agencies identified at least 24 data bases with commercial value, as listed in Exhibit VI-1.
  - The list of data bases is not all-inclusive.
  - Some bases are already available from vendors.
  - Substantial software and documentation investment could be required.
  - The current administration is emphasizing commercialization of services.
  
- GSA is nearing final approval for the addition of DDP to the MAS to:
  - Permit micro-to-mainframe links.
  - Fill the gap between full RCS services and wholly internal solutions.
  - Recognize the DDP applications currently under contract via BA or independent services.
  
- GSA also is still considering the modification to the TSP to allow for the lease of value added services.
  - VANs offer agencies economies of scale and ease of operation.
  - Several agencies have expressed interest in VANs either exclusively or as a supplement to other voice and data networks.
  
- Agencies noted that future RCS opportunities include applications that are not desirable in-house, such as:



## EXHIBIT VI-1

## AGENCY DATA BASES OF COMMERCIAL VALUE

AGENCY	DATA BASE
DOA	Crop and Livestock Estimates
DOC	Economic Data for Nation
DOC	Meteorological Data
DOC	Fishery Statistics
HHS	Statistics
DOL	Labor Statistics
DOL	Employment Retirement Income Security Act Application
DOT	Transit Properties
DOT	Accident Data
DOT	Boating Safety Manuals
DOT	Boating Data
DOT	Railroad Networks
FCC	Communication Frequency Assignments
FHLBB	Semiannual Data
GAO	Reports
GAO	Statistical Data Base
DOEd	Statistics
GSA	Data Base of Procurements
GSA	Schedule Information
GSA	Construction Data
VA	Veteran Population Statistics
NASA	Cosmic Data
Navy	Mailing Lists



- Special data bases (noted above).
- Proprietary software with desirable features.
- Special projects requiring quick reaction or available network facilities.
  
- Opportunities in processing facilities management will still rise in cases where the agency is unable to acquire adequate staff and equipment.
  
- Budget deficit measures of the administration and Congress could delay a number of ADP capital improvement/replacement projects, forcing use of vendor facilities under PFM or RCS contracts.
  
- Some vendors are using processing services as an entry vehicle to federal professional services, especially systems integration.

## B. RECOMMENDATIONS

- Agencies and vendors concurred in the identification of several opportunity areas for the 1990s:
  - Small applications in specialized topical services.
  - Network-based large data base systems.
  - Services with proprietary software that is more user-friendly or faster than in-house software.



- Quick reaction capability and the capacity to meet agency emergencies, caused by:
  - . Data center failure.
  - . Special congressional or executive data demand.
  - . National or regional disasters.
- Vendors should consider and investigate prospects for assuming responsibility for one or more of the data bases with commercial value listed (see Exhibit VI-1).
- Vendors should understand that becoming qualified and listed as a potential supplier under the TSP-BA is no guarantee of contracts. Vendors must do the following to win awards.
  - Acquire subject expertise in the targeted agency's functional areas.
  - Prepare articulate and concise proposals that answer all RFP questions.
  - Develop technically acceptable proposals that do not drive the price up.
  - Develop aggressive proposal pricing strategies.
- Larger vendors may wish to consider acquisition of other vendors to enhance market share.
- If not already being offered to commercial customers, vendors should develop a micro-based DDP capability that can be sold to federal agencies.





- Vendors need to look for emulation and RCS service opportunities with prime contractors and systems integration vendors.
- Vendors should also look for opportunities to convert batch mode applications to RCS or to in-house agency ADP facilities.
- Vendors can also consider acquisition of an in-place PFM contractor as an effective means of penetrating that market.
- Vendors need to stay informed on changes in procurement regulations and practices through trade associations, federal publications, technical seminars, or information services.
- Vendors can use the TSP as a springboard into the professional services market for available technical services capability.
  - Support programming and analysis efforts.
  - Become a IV&V (independent verification and validation) contractor.
  - Provide education and training services on large systems.
  - Perform ADP security investigations and audits.
  - Provide VAN services.



## VII KEY OPPORTUNITIES



## VII KEY OPPORTUNITIES

- This section describes specific opportunities in the federal processing services market. Following the initial discussion of program funding and identification, a list of typical major programs is provided for key agencies.
- Some programs are listed because they include ongoing remote computer services to be met by the vendors or represent related agency processing support contracts.
- The list of opportunities is for the period of FY 1987 to FY 1992. Other new programs have not yet been identified or initially approved by the responsible agency. Subsequent issues of this report and the INPUT Procurement Analysis Reports will include new programs and detailed program information for the FY 1988 - FY 1992 timeframe.

### A. PRESENT AND FUTURE PROGRAMS

- Funding for federal processing services appears in several budget categories of federal government agencies.
  - Requirements for processing services for ADP may be separately identified but included in the funding for overall information systems program procurements.



- Funding for processing services is reported as commercial services or as interagency payments when such services are provided by another agency.
- Significant processing services programs that are larger than \$100,000 per year are listed in at least one of the following government documents.
  - OMB/GSA Five-Year Plan, which is developed under the Paperwork Reduction Act for agency budget requests submitted in compliance with OMB Circular A-11, Section 43A/B.
  - Agency long-range information resource plans developed to meet the reporting requirements of the Paperwork Reduction Act of 1980.
  - Agency annual operating budget requests submitted to both congressional authorization and appropriations committees based on the OMB A-11 information.
  - Commerce Business Daily for specific processing services opportunities, for qualification as a bidder, and to obtain a copy of an RFP or RFQ.
  - GSA Teleprocessing Services Program opportunity list.





**B. PROCESSING SERVICES OPPORTUNITIES BY AGENCY**

<b>Dept./Agency</b>	<b>Program</b>	<b>FY87-FY92 Funding (000)</b>	<b>Schedule</b>
<b><u>Interior</u></b>			
DOI/Nat'l. Committee on Library & Information Science	Teleprocessing Services Contract	4,451	FY87
DOI/US Geo. Survey	USGS Comm. Network	3,240 (20% of Total)	2QFY88
DOI/US Geo. Survey	Computation Systems Replacement (on-line DPN)	7,000	1988
DOI/Nat'l. Park Service	Teleprocessing Services Contract	3,450	FY87
DOI/Bureau of Indian Affairs	Martin Marietta Data Systems TSP Program	16,250	2QFY89
<b><u>Energy</u></b>			
DOE/Weapons Activities	Admin. Distr. Network (ADNET)	2,715	1987



Dept./Agency	Program	FY87-FY92	Schedule
		Funding (000)	
<u>Army</u>			
Army/Aberdeen Proving Ground Test Data Support	Teleprocessing Services Contract	160	FY88
Army/Aberdeen Proving Ground Test Data Support	Teleprocessing Services Contract	345	FY89
Army/Corps of Engineers, Baltimore	Teleprocessing Services Contract	19,500	FY87
Army/Corps of Engineers, Vicksburg, MS	USA Engineering Waterways Experimental Station	181	FY88
Army/HQ	Teleprocessing Services Contract	10,500	FY88
Army/Ft. Leavenworth, KS	CAMMS	205	FY88
Army/MILPERCEN	Keystone	149,700	FY89
Corp. of Engineers	Teleprocessing Services Contract (TSP)	29,206	FY90



Dept./Agency	Program	FY87-FY92	Schedule
		Funding (000)	
<u>EPA</u>	Timeshare Services to Support the Motor Vehicles Emissions Lab at Ann Arbor, MI	2,390	2QFY92
<u>NASA</u>			
NASA/Ames Center	Informatics Operation	1,728	UNK
NASA/Ames Center	ATAC Support Contract NAS2-10904	2,171	UNK
<u>NRC</u>			
NRC/ITS	ADPE Time	11,695	1987
<u>Defense</u>			
OSD/Defense Med. Systems Support Center	Defense Enrollment Eligibility Reporting System	21,567	1987
<u>Commerce</u>			
DOC/National Archives and Records Admin.	Teleprocessing Services Contract	3,409	FY87



Dept./Agency	Program	FY87-FY92	Schedule
		Funding (000)	
DOC/Library (Subcontract)	Library Support	8	Unknown
DOC/NOAA	NOAA Admin. Data Processing	3,375	1QFY90
<b>Health &amp; Human Services</b>			
HHS/NIH/NCI	Contract for Computer Support for International Cancer Information Center	5,600	FY88
HHS/NIH/NIEHS	ADP Support Services	12,700	FY87
HHS/NIH	Teleprocessing Services Contract	1,800	FY87
HHS/NIH	Teleprocessing Services Contract	1,600	FY87
HHS/OASH	ADP Support Services for the National Medical Expenditures Survey (NEMS)	4,600	FY87
HHS/PHS	Teleprocessing Services Contract	617	FY88





Dept./Agency	Program	FY87-FY92 Funding (000)	Schedule
HHS/PHS	Teleprocessing Services Contract	208	FY88
HHS/PHS	Teleprocessing Services Contract	466	FY88
HHS/PHS	Teleprocessing Services Contract	219	FY88
HHS/PHS	Teleprocessing Services Contract	948	FY88
HHS/SSA	Teleprocessing Services Contract	307	FY88
HHS/HCFA	Teleprocessing Services Contract	815	FY87
HHS/HCFA	Teleprocessing Services Contract	359	FY88
Nat'l. Center for Health Statistics	Nat'l. Med. Expenditure Survey Data Processing	4,520	4QFY87
Centers for Disease Control	NIOSH/Cincinnati Facility Data Processing Services Contract	3,000	FY88



Dept./Agency	Program	FY87-FY92	Schedule
		Funding (000)	
Centers for Disease Control	CDC Keypunching Svcs. Contract	1,065	1QFY91
Social Security	Teleprocessing Services for Program Oper. & Management Information	11,210	FY90
Social Security	Timesharing Facilities	3,547	Various
Social Security	Distributed Data Processing Task Force	5,000	3QFY87

**Dept. Education**

Office of Post Secondary Educ.	Pell Proc.	64,000	2QFY89
Office of Post Secondary Educ.	GSL/NDSL Processing & Collection	50,045	3QFY92

**Dept. of Labor**

DOL	Teleprocessing Services Contract	978	FY88
DOL	Teleprocessing Services Contract	31,000	FY87



Dept./Agency	Program	FY87-FY92	Schedule
		Funding (000)	
Employment Standard Admin.	Office of Federal Contract Compliance Programs (OFCCP)	900	FY91
	-Compliance Review Info. Sys. (CRIS)		
	-Complaint Admin. Sys. (CAS)		
Employment Standard Admin.	Black Lung Support System (FM)	61,592	FY89
OSHA	Time Sharing Services	10,000	1QFY89
Bureau Labor Statistics	Remote Batch & Teleprocessing Services Contract	33,976	FY88
Bureau Labor Statistics	ADP Telecommunications & Data Entry Services	7,167	FY88
<b><u>Air Force</u></b>			
USAF/ASD Wright Patterson AFB (Classified project)	Teleprocessing Services Contract	1,100	FY87



Dept./Agency	Program	FY87-FY92	Schedule
		Funding (000)	
USAF/ASD Wright Patterson AFB (Classified project)	Teleprocessing Services Contract	146	FY88
USAF/AF Systems Command Support Services Andrew AFB	Teleprocessing Services Contract	22,000	FY87
<b><u>Navy</u></b>			
Navy/ADPSO Washington Navy Yard	ADPE Time	5,300	FY90
Navy/ADPSO Washington Navy Yard	Teleprocessing Services Contract	17,000	FY88
Navy/Civ. Engineering Lab, Naval Regional Contracting Center Long Beach, CA	Teleprocessing Services Contract	946	FY87
Navy/Naval Air Dev. Center, Philadelphia Navy Yard	Teleprocessing Services Contract	1,300	FY88
Navy/Naval Coastal Systems Center Panama City, FL	Teleprocessing Services Contract	484	FY87





Dept./Agency	Program	FY87-FY92	Schedule
		Funding (000)	
Navy/Naval Recruiting Command, Washington Navy Yard	PRIDE	13,100	FY88

Defense Logistics Agency

DLA/HQ Cameron Station	Teleprocessing Services Contract	489	FY87
DLA/HQ Cameron Station	Commodity Ordering System	8,500	FY87

DCAA

DCAA	Teleprocessing Services Contract	8,500	FY88
DCAA	Teleprocessing Services Contract	1	FY87

USDA

USDA/SRS	Teleprocessing Services Contract	19,000	FY88
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<b>Dept./Agency</b>	<b>Program</b>	<b>FY87-FY92 Funding (000)</b>	<b>Schedule</b>
<b><u>Dept. of Housing &amp; Urban Development</u></b>			
HUD	Teleprocessing Services Contract	16,500	FY87
<b><u>Dept. of Justice</u></b>			
DOJ/HQ	Teleprocessing Services Contract	2,400	FY87
DOJ/HQ/Antitrust (Subcontract)	Teleprocessing Services Contract	252	Unknown
<b><u>Dept. of Transportation</u></b>			
DOT/HQ	Teleprocessing Services Contract	932	FY88
DOT/National Highway Traffic Safety Admin.	Teleprocessing Services Contract	2,994	FY87
DOT/National Highway Traffic Safety Admin.	Teleprocessing Services Contract	7,000	FY87
<b><u>Treasury Dept.</u></b>			
Tres/IRS	Teleprocessing Services Contract	9,500	FY88



Dept./Agency	Program	FY87-FY92 Funding (000)	Schedule
<u>General Services Admin.</u>			
GSA/HQ	Teleprocessing Services Contract	31,500	FY88
GSA/HQ	Teleprocessing Services Contract	1,560	FY89
<u>Postal Service</u>			
Postal Service	Teleprocessing Services Contract	8,500	FY89



**APPENDIX A - INTERVIEW PROFILES**





## APPENDIX A: INTERVIEW PROFILES

### A. FEDERAL AGENCIES

#### 1. RESPONDENT PROFILE

<u>Agency</u>	<u>Policy</u>	<u>Buyers</u>	<u>Users</u>	<u>Total</u>
Civil	12	15	15	42
Defense	<u>2</u>	<u>5</u>	<u>5</u>	<u>12</u>
Total	14	20	20	54

- All interviews were conducted by telephone except those with GSA officials, who were interviewed in person.

#### 2. RESPONDENT DEPARTMENTS AND AGENCIES

- Department of Agriculture.
  - Agriculture Research Service.
  - Forest Service.
  - Office of Information Resource Management\*.



- Soil Research Service.
- Statistical Reporting Division\*.
- Department of Commerce.
  - Office of Information Resource Management.
  - Bureau of Economic Affairs.
  - National Oceanic and Atmospheric Administration.
- Education Department.
  - Student Aid.
- Department of Health and Human Services.
  - Health Care Finance Administration.
  - Social Security Administration.
- Department of Labor.
  - Bureau of Labor Statistics.
  - Employment Standards.
  - Office of Assistant Secretary--Administration.

\*Included in 1987 survey.



- Department of Transportation.
  - Office of the Secretary.
  - Federal Aviation Administration.
  - Federal Railway Administration.
  - Urban Mass Transit Authority.
  - U.S. Coast Guard.
- Treasury Department.
  - Bureau of Engineering and Printing.
- Federal Communications Commission.
- Federal Home Loan Bank Board.
- General Accounting Office.
- General Services Administration.
  - Public Building Service.
  - Federal Procurement Data System.
  - Office of Finance.
- Interstate Commerce Commission.



- National Aeronautics and Space Administration.
  - Headquarters.
  - Goddard Flight Space Center.
  
- U.S. Postal Service.
  - Headquarters.
  
- Veterans Administration.
  - Headquarters.
  
- Department of Defense.
  - Office of Assistant Secretary for I&L.
  - Defense Logistics Agency.
  - Defense Supply Service.
  - Department of Army.
  - Department of Air Force.
  - Army Corps of Engineers.
  - Department of Navy.
    - ADPSO.
    - NAVDAC.





NMPC.

B. VENDORS

1. RESPONDENT PROFILE: REMOTE COMPUTING SERVICES

<u>Contract</u>	<u>Executive</u>	<u>Marketing</u>	<u>Technical</u>	<u>Total</u>
Telephone	5	14	1	20
Mail	<u>2</u>	<u>2</u>	<u>0</u>	<u>4</u>
Total	7	16	1	24

2. RESPONDENT PROFILE: PROCESSING FACILITIES MANAGEMENT

<u>Contract</u>	<u>Executive</u>	<u>Marketing</u>	<u>Technical</u>	<u>Total</u>
Telephone	5	5	3	13



## APPENDIX B - DEFINITIONS

## CONCLUSIONS AND FUTURE RESEARCH

The present study has shown that the use of a single, unidirectional, and unimodal vibration protocol is not sufficient to elicit a significant decrease in the muscle activity of the neck and shoulder muscles.

Therefore, the use of a more complex and multidirectional vibration protocol is recommended to elicit a significant decrease in the muscle activity of the neck and shoulder muscles.

Future research should investigate the effects of a more complex and multidirectional vibration protocol on the muscle activity of the neck and shoulder muscles.

It is also recommended that future research should investigate the effects of a more complex and multidirectional vibration protocol on the muscle activity of the neck and shoulder muscles.

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## ACKNOWLEDGMENTS

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## APPENDIX B: DEFINITIONS

- The definitions in this appendix include hardware, software, services, and telecommunications categories to accommodate the range of information systems and services programs described in this report.
- Alternate service mode terminology employed by the federal government in its procurement process is defined along with INPUT's regular terms of reference, as shown in Exhibit B-1.
- The federal government's unique nontechnical terminology that is associated with applications, documentation, budgets, authorization, and the procurement/acquisition process is included in Appendix C, Glossary.

### A. SERVICE MODES

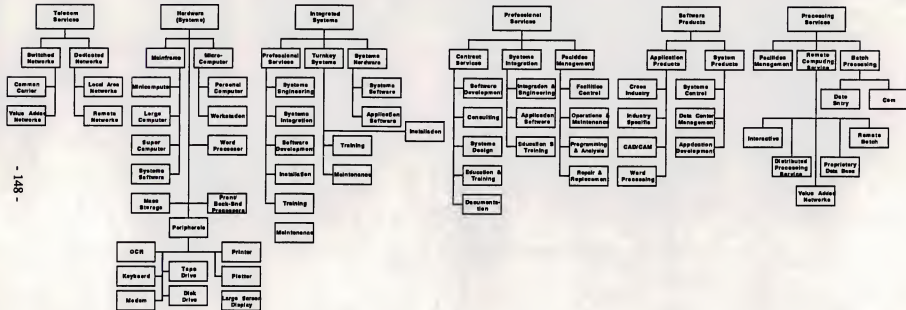
#### I. PROCESSING SERVICES

- Processing services include remote computing services, batch services, and processing facilities management.
- REMOTE COMPUTING SERVICES (RCS) - Provision of data processing to a user by means of terminals at the user's site(s). Terminals are connected by a data communications network to the vendor's central computer. The most



EXHIBIT B-1

FEDERAL INFORMATION SYSTEMS AND SERVICES PROGRAM  
SYSTEMS AND SERVICES







frequent contract vehicle for RCS in the federal government is GSA's Teleprocessing Services Program (TSP). RCS includes submodes.

- INTERACTIVE (timesharing) - Characterized by the interaction of the user with the system, primarily for problem-solving timesharing but also for data entry and transaction processing; the user is on-line to the program/files.
- REMOTE BATCH - Where the user hands over control of a job to the vendor's computer which schedules job execution according to priorities and resource requirements.
- PROPRIETARY DATA BASE - Characterized by the retrieval and processing of information from a vendor-maintained data base. The data base may be owned by the vendor or by a third party, or licensed by a federal agency.
- VALUE ADDED NETWORK SERVICES - Special purpose and/or high quality network specifically designed to carry digital information, with features not usually provided by the voice-grade, switched public network.
- DISTRIBUTED PROCESSING SERVICES - Alternately called "Distributed Data Processing" (DDP) that can provide:
  - . Access through the network to the RCS vendor's larger computers.
  - . Local management and storage of a data base subset that will service local terminal users via the connection of a data base processor to the network.



- Availability of significant software that may be "down loaded" as part of the service.
- BATCH PROCESSING - These include data processing performed at vendors' sites for user programs and/or data that are physically transported (as opposed to transported electronically by telecommunications media) to and/or from those sites. Data entry and data output services, such as keypunching and computer output microfilm processing, are also included. Batch services include expenditures by users who take their data to a vendor site that has a terminal connected to a remote computer for the actual processing.
- PROCESSING FACILITIES MANAGEMENT (PFM) - Also referred to as "Resource Management," "Systems Management," or "COCO" (Contractor-Owned, Contractor-Operated). The management of all or part of a user's data processing functions under a long-term contract of not less than one year. This would include remote computing and batch services. To qualify as PFM, the contractor must directly plan, control, operate, and own or lease the facility provided to the user, either on-site, through communications lines, or in a mixed mode.

## 2. PROFESSIONAL SERVICES

- Professional services provide labor-intensive consulting, design, education and training, programming and analysis, management, and systems integration as defined within these general categories.
  - CONTRACT SERVICES - Provision of professional and technical services of various skill levels, to accomplish specific tasks not specifically or necessarily associated with a delivered product, other than paper or ADP media records. Contracts generally require vendor management of staff and/or resources.



- CONSULTING - Information systems and/or services management consulting, program assistance (technical and/or management), feasibility analyses, and cost-effectiveness trade-off studies.
- EDUCATION AND TRAINING - Products and/or services related to information systems and services for the user, including computer-aided instruction (CAI), computer-based education (CBE), and vendor instruction of user personnel in management operations, programming, and maintenance of systems.
- SYSTEMS DESIGN - Preparation of systems/subsystems architecture, specifications, and performance criteria from functional information processing statements or performance of an operations requirements study. May include ADP, telecommunications, site layout, training, and maintenance facilities.
- SOFTWARE DEVELOPMENT - Also known as programming and analysis services, includes applications and systems software design, contract or custom programming, code conversion, independent verification and validation (IV&V), and benchmarking. These services may also include follow-on software development and maintenance.
- DOCUMENTATION SERVICES - Vendor preparation, modification or replacement of system operating manuals, software coding records, training manuals, software library records, and equipment modification records.
- PROFESSIONAL SERVICES FACILITIES MANAGEMENT (PSFM) - Also referred to as GOCO (Government-Owned, Contractor-Operated) services. The computing equipment is owned or leased by the client (government), not by the vendor. The vendor provides the staff to operate, maintain, repair, schedule, and manage the client's facility over a term of three to five years. Submodes include:



- FACILITIES CONTROL - Vendor management, including scheduling of resources and personnel, to meet specified operations objectives or produce specified information products, with no direct client supervision.
- OPERATION AND MAINTENANCE (O&M) - Vendor operation and maintenance of government-owned ADP/telecommunications equipment in a government-owned/leased facility (on-site) without vendor management of the facility.
- PROGRAMMING AND ANALYSIS (SUPPORT) - Vendor-furnished professional and technical staff support, which may be provided on or off the client's site, to analyze information processing requirements, plan resource applications, or develop/modify/maintain custom software over a period of time not less than one year. Contracts tend to be task-oriented to control the work flow.
- HARDWARE AND/OR SOFTWARE MAINTENANCE - Vendor-furnished services provided after installation and acceptance by the government, where the vendor may not be the original supplier (third-party maintenance or TPM) and may use either on-site or on-call personnel to perform services.
- REPAIR AND REPLACEMENT - Vendor furnish services and acquires information system components to repair or replace worn or defective equipment and to add equipment needed to meet new or unusual requirements.
- SYSTEMS INTEGRATION - Services associated with design and integration, software development, and installation and government acceptance of ADP/telecommunications systems. Services may also include related engineering activities such as Systems Engineering and Integration (SE&I) or Systems Engineering and Technical Assistance (SETA).





- ENGINEERING AND INTEGRATION - Vendor furnished technical services provided separately from acquisition of hardware and software, to expand the initial design into specifications, interface descriptions, installation and operating instructions of the complete system.
- APPLICATIONS SOFTWARE - Custom software development to satisfy non-commercially available information processing requirements of an integrated system.
- EDUCATION AND TRAINING - Vendor development of training aids, manuals, and curricula for indoctrinating client management, operation and maintenance, and information product user personnel on the newly integrated information system.

### 3. TURNKEY SYSTEMS

- Turnkey systems, also known as integrated systems, include systems and applications software packaged with hardware as a single entity. Most CAD/CAM systems and many small business systems are integrated systems. This mode does not include specialized hardware systems such as word processors, cash registers, and process control systems.

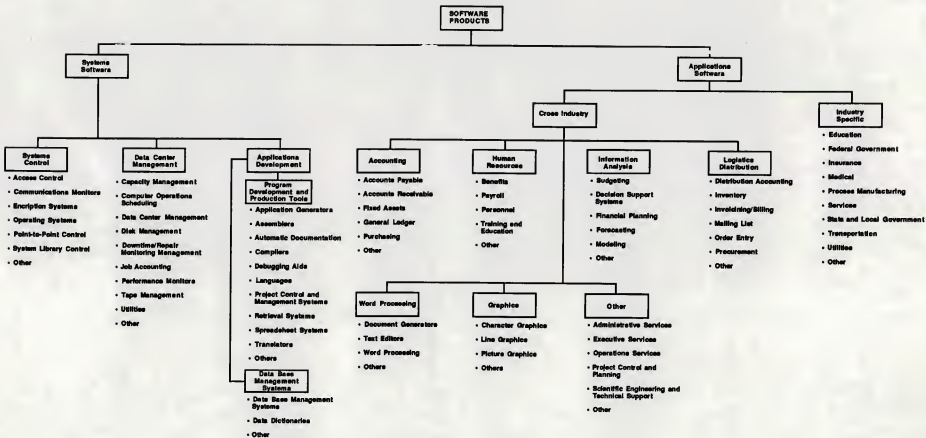
### 4. SOFTWARE PRODUCTS

- Software products include user purchases of applications and systems packages for in-house computer systems. Included are lease and purchase expenditures as well as expenditures for work performed by the vendor to implement and maintain the package at the user's sites. Expenditures for work performed by organizations other than the package vendor are counted in the category of professional services. There are several subcategories of software products, as indicated below and shown in detail in Exhibit B-2.



## EXHIBIT B-2

## SOFTWARE PRODUCTS





- APPLICATION PRODUCTS - Software that performs processing that services user functions. The products can be:
  - CROSS-INDUSTRY PRODUCTS - Used in multiple industry applications as well as in federal government sectors. Examples are payroll, inventory control, and financial planning.
  - INDUSTRY-SPECIALIZED PRODUCTS - Used in a specific federal government sector, such as planning, resource utilization, aircraft flight planning, military personnel training, and others. May also include some products designed to work in an industry other than the federal government but applicable to specific government-performed commercial/industrial services, such as hospital information, vehicular fleet scheduling, electrical power generation and distribution, CAD/CAM, and others.
  
- SYSTEMS PRODUCTS - Software that enables the computer/communications system to perform basic functions. These products include:
  - SYSTEM CONTROL PRODUCTS - Function during applications program execution to manage the computer system resources. Examples include operating systems, communication monitors, emulators, and spoolers.
  - DATA CENTER MANAGEMENT PRODUCTS - Used by operations personnel to manage the computer systems resources and personnel more effectively. Examples include performance measurement, job accounting, computer operations scheduling, and utilities.
  - APPLICATIONS DEVELOPMENT PRODUCTS - Used to prepare applications for execution by assisting in designing, programming, testing, and related functions. Examples include languages, sorts, productivity aids, compilers, data dictionaries, data base management systems, report writers, project control systems, and retrieval systems.



5. HARDWARE AND HARDWARE SYSTEMS

- Hardware includes all ADP and telecommunications equipment that can be separately acquired by the government with or without installation by the vendor and not acquired as part of an integrated system. For the purpose of this report, hardware is grouped in three major categories: peripherals, terminals, and hardware systems (processors).
- PERIPHERALS - Includes all input, output, communications, and storage devices other than main memory that can be connected locally to the main processor and generally cannot be included in other categories such as terminals.
  - INPUT DEVICES - Includes keyboards, numeric pads, card readers, light pens and track balls, tape readers, position and motion sensors, and analog-to-digital converters.
  - OUTPUT DEVICES - Includes printers, CRTs, projection television screens, micrographics processors, digital graphics, and plotters.
  - COMMUNICATION DEVICES - Modems, encryption equipment, special interfaces, and error control.
  - STORAGE DEVICES - Includes magnetic tape (reel, cartridge, and cassette), floppy and hard disks, drums, solid state (integrated circuits), and bubble and optical memories.
- TERMINALS - Federal government systems use three types of terminals as described below.
  - USER-PROGRAMMABLE - Also called intelligent terminals, including:
    - Single-station or standalone.





- Multi-station shared processor.
  - Teleprinter.
  - Remote batch.
- NON-PROGRAMMABLE - Also called "dumb" terminals, including:
  - Single-station.
  - Multi-station shared processor.
  - Teleprinter.
- LIMITED FUNCTION - Originally developed for specific needs, such as point-of-sale (POS), inventory data collection, controlled access, and other such applications.
- HARDWARE SYSTEMS - Includes all processors from microcomputers to supercomputers. Hardware systems may require type- or model-unique operating software to be functional, but this category excludes applications software and peripheral devices, other than main memory and processors or CPUs not provided as part of an integrated (turnkey) system.
- MICROCOMPUTER - Combines all of the CPU, memory, and peripheral functions of an 8-, 16-, or 32-bit computer on a chip in the form of:
  - Integrated circuit package.
  - Plug-in board with more memory and peripheral circuits.
  - Console including keyboard and interfacing connectors.



- Personal computer with at least one external storage device directly addressable by the CPU.
  - An embedded computer which may take a number of shapes or configurations.
- MINICOMPUTER - Usually a 12-, 16-, or 32-bit computer which may be provided with limited applications software and support and may represent a portion of a complete large system.
  - Personal business computer.
  - Small laboratory computer.
  - Nodal computer in a distributed data network, remote data collection network, or connected to remote microcomputers.
- MIDICOMPUTER - Typically a 32- or 64-bit computer with extensive applications software and a number of peripherals in standalone or multiple-CPU configurations for business (administrative, personnel, and logistics) applications; also called a general purpose computer.
- LARGE COMPUTER - Presently centered around storage controllers but likely to become bus-oriented and to consist of multiple processors or parallel processors. Intended for structured mathematical and signal processing and typically used with general purpose, von-Neumann-type processors for system control.
- SUPERCOMPUTER - High-powered processors with numerical processing throughput that is significantly greater than the fastest general purpose computers, with capacities in the 10-50 million floating point operations per second (MFLOPS) range. Newer supercomputers, with burst modes approaching 300 MFLOPS, main storage size up to 10



million words, and on-line storage in the one-to-three gigabyte class, are labeled Class IV to Class VII in agency long-range plans. Supercomputers fit in one of two categories.

- REAL TIME - Generally used for signal processing in military applications.
- NON-REAL TIME - For scientific use in one of three configurations:
  - Parallel processors.
  - Pipeline processor.
  - Vector processor.
- SUPERCOMPUTER - Term applied to micro, mini, and large mainframe computers with performance substantially higher than attainable by Von Neuman architectures.
- EMBEDDED COMPUTER - Dedicated computer system designed and implemented as an integral part of a weapon, weapon system, or platform; critical to a military or intelligence mission such as command and control, cryptological activities, or intelligence activities. Characterized by military specifications (MIL SPEC) appearance and operation, limited but reprogrammable applications software, and permanent or semi-permanent interfaces. May vary in capacity from microcomputers to parallel processor computer systems.

## 6. TELECOMMUNICATIONS

- NETWORKS - Electronic interconnection between sites or locations which may incorporate links between central computer sites and remote locations



and switching and/or regional data processing nodes. Network services typically are provided on a leased basis by a vendor to move data, voice, video, or textual information between locations. Networks can be categorized in several different ways.

- COMMON CARRIER NETWORK - A public access network, such as provided by AT&T, consisting of conventional voice-grade circuits and regular switching facilities accessed through dial-up calling with leased or user-owned modems for transfer rates between 150 and 1,200 baud.
  
- VALUE-ADDED NETWORK (VAN) - Provided by vendors through common carrier or special-purpose transmission facilities with special features not available in the voice-grade switched public network. These include:
  - DEDICATED NETWORK - Also known as a private network, established and operated for one user or user organization using dedicated circuits to establish permanent connections between two or more stations.
  
  - PACKET SWITCHING - Real time network routing, transmitting, and receiving data in the form of addressed packets, each of which may be part of a message or include several messages without exclusive use of a network circuit by the transmitting and receiving stations.
  
  - MESSAGE SWITCHING - Non-real time process for routing messages through a network where a user message is received, stored, and forwarded from switch to switch through the network without an end-to-end circuit between sending and receiving stations; used primarily for data.





- LOCAL AREA NETWORK (LAN) - Limited-access network between computing resources in a relatively small (but not necessarily contiguous) area, such as a building, complex of buildings, or buildings distributed within a metropolitan area. Uses one of two signalling methods.
  - BASEBAND - Signaling using digital waveforms on a single frequency band, usually at voice frequencies, and bandwidth, limited to a single sender at any given moment. When used for local area networks, typically implemented with TDM to permit multiple access.
  - BROADBAND - Transmission facilities that use frequencies greater than normal voice-grade, supported in local area networks with RF modems and AC signaling. Also known as wideband. Employs multiplexing techniques that increase carrier frequency between terminals to provide:
    - Multiple channels through FDM or TDM.
    - High-speed data transfer via parallel mode at rates of up to 96,000 baud.
- TRANSMISSION FACILITIES - Includes wire, carrier, coaxial cable, micro-wave, optical fiber, satellites, cellular radio, and marine cable operating in one of two modes depending on the vendor and the distribution of the network.
  - MODE - may be either:
    - ANALOG - Transmission or signal with continuous waveform representation, typified by AT&T's predominantly voice-grade DDD network and most telephone operating company distribution systems.



- . DIGITAL - Transmission or signal using discontinuous, discrete quantities to represent data, which may be voice, data, record, video, or text, in binary form.
- MEDIA - May be any of the following:
  - . WIRE - Varies from earlier single-line teletype networks, to two-wire standard telephone (twisted pair), to four-wire full-duplex balanced lines.
  - . CARRIER - A wave, pulse train, or other signal suitable for modulation by an information-bearing signal to be transmitted over a communications system, used in multiplexing applications to increase network capacity.
  - . COAXIAL CABLE - A cable consisting of an insulated central conductor surrounded by a cylindrical conductor with additional insulation on the outside and covered with an outer sheath used in HF (high frequency) and VHF (very high frequency), single frequency, or carrier-based systems; requires frequent reamplification (repeaters) to carry the signal any distance.
  - . MICROWAVE - UHF (ultra-high frequency) multi-channel, point-to-point, repeated radio transmission, also capable of wide frequency channels.
  - . OPTICAL FIBER - Local signal distribution systems employed in limited areas, using light-transmitting glass fibers and TDM for multi-channel applications.
  - . COMMUNICATIONS SATELLITES - Synchronous earth-orbiting systems that provide point-to-point, two-way service over significant distances without intermediate amplification



(repeaters), but requiring suitable groundstation facilities for up- and down-link operation.

• **CELLULAR RADIO** - Network of fixed, low-powered two-way radios that are linked by a computer system to track mobile phone/data set units. Each radio serves a small area called a cell. The computer switches service connection to the mobile unit from cell to cell.

## B. GENERAL DEFINITIONS

- 103/113 - Bell standard modem for low-speed transmission up to 300 bps, asynchronous, half or full duplex.
- 212 - Bell standard for medium-speed transmission at 1200 bps, asynchronous or synchronous, half or full duplex.
- ASCII - American National Standard Code for Information Interchange--eight-bit code with seven data bits and one parity bit.
- ASYNCHRONOUS - Communications operation (such as transmission) without continuous timing signals. Synchronization is accomplished through appending of signal elements to the data.
- BANDWIDTH - Range of transmission frequencies that can be carried on a communications path; used as a measure of capacity.
- BAUD - Number of signal events (discrete conditions) per second. Typically used to measure modem or terminal transmission speed.



- BENCHMARK - Method of testing proposed ADP system solutions for a specified set of functions (applications) employing simulated or real data inputs under simulated operating conditions.
- BPS - Bits per second--also mbps and kbps, million bits per second and thousand bits per second, respectively.
- BSC - IBM's binary synchronous communications data link protocol. First introduced in 1968 for use on point-to-point and multipoint communications channels. Frequently referenced as "bisync."
- BYTE - Usually equivalent to the storage required for one alphanumeric character (i.e., one letter or number).
- CBX - Computerized Branch Exchange--a PABX based on a computer system, implying programmability and usually voice and data capabilities.
- CENTRAL PROCESSING UNIT (CPU) - The arithmetic and control portion of a computer; i.e., the circuits controlling the interpretation and execution of computer instructions.
- CENTREX - Central office telephone service that permits local circuit switching without installation of customer premises equipment. Could be described as shared PBX service.
- CIRCUIT SWITCHING - A process that, usually on demand, connects two or more network stations and permits exclusive circuit use until the connection is released. Typical of the voice telephone network where a circuit is established between the caller and the called party.
- CO - Central Office--local telco site for one or more exchanges.
- CODEC - Coder/decoder, equivalent to modem for digital devices.





- CONSTANT DOLLARS - Growth forecasts in constant dollars make no allowance for inflation or recession. Dollar value based on the year of the forecast unless otherwise indicated.
- COMPUTER SYSTEM - The combination of computing resources required to perform the designed functions and which may include one or more CPUs, machine room peripherals, storage systems, and/or applications software.
- CPE - Customer Premises Equipment--DCE or DTE located at a customer site rather than at a carrier site such as the local telephone company CO. May include switchboards, PBX, data terminals, and telephone answering devices.
- CSMA/CD - Carrier Sense Multiple Access/Collision Detect. Contention protocol used in local-area networks, typically with a multi-point configuration.
- CURRENT DOLLARS - Estimates or values expressed in current-year dollars which, for forecasts, would include an allowance for inflation.
- DATA ENCRYPTION STANDARD (DES) - 56-bit key, one-way encryption algorithm adopted by NBS in 1977, implemented through hardware ("S-boxes") or software. Designed by IBM with NSA guidance.
- DATAGRAM - A self-contained packet of information with a finite length that does not depend on the contents of preceding or following packets.
- DCA - IBM's Document Content Architecture--protocols for specifying document (text) format which are consistent across a variety of hardware and software systems within IBM's DISOSS.
- DCE - Data Circuit-terminating Equipment--interface hardware that couples DTE to a transmission circuit or channel by providing functions to establish, maintain, and terminate a connection, including signal conversion and coding.



- DDCMP - Digital Data Communications Message Protocol--data-link protocol used in Digital Equipment Company's DECNET.
- DECNET - Digital Equipment Company's network architecture.
- DEDICATED CIRCUIT - A permanently established network connection between two or more stations; contrast with switched circuit.
- DEMS - Digital Electronic Message Service--nationwide common carrier digital networks which provide high-speed, end-to-end, two-way transmission of digitally-encoded information using the 10.6 GHz band.
- DIA - IBM's Document Interchange Architecture--protocols for transfer of documents (text) between different hardware and software systems within IBM's DISOSS.
- DISOSS - IBM's DIStributed Office Support System--office automation environment, based on DCA and DIA, which permits document (text) transfer between different hardware and software systems without requiring subsequent format or content revision.
- DISTRIBUTED DATA PROCESSING - The development of programmable intelligence in order to perform a data processing function where it can be accomplished most effectively through computers and terminals arranged in a telecommunications network adapted to the user's characteristics.
- DTE - Data Terminal Equipment--hardware which is a data source or sink or both, such as video display terminals that convert user information into data for transmission and reconvert data signals into user information.
- EBCDIC - Extended Binary Coded Decimal Interchange Code--eight-bit code typically used in IBM mainframe environments.



- EFT - Electronic funds transfer.
- ENCRYPTION - Electrical, code-based conversion of transmitted data to provide security and/or privacy of data between authorized access points.
- END USER - One who is using a product or service to accomplish his own functions. The end user may buy a system from the hardware supplier(s) and do his own programming, interfacing, and installation. Alternately, the end user may buy a turnkey system from a systems house or hardware integrator, or may buy a service from an in-house department or external vendor.
- ENGINEERING CHANGE NOTICE (ECN) - Product changes to improve the product after it has been released to production.
- ENGINEERING CHANGE ORDER (ECO) - The follow-up to ECNs--they include parts and a bill of materials to effect the change in the hardware.
- EQUIPMENT OPERATORS - Individuals operating computer control consoles and/or peripheral equipment (BLS definition).
- ETHERNET - Local area network developed by Xerox PARC using baseband signaling, CSMA/CD protocol, and coaxial cable to achieve a 10 mbps data rate.
- FACSIMILE - Transmission and reception of data in graphic form, usually fixed images of documents, through scanning and conversion of a picture signal.
- FDM - Frequency Division Multiplexing--a multiplexing method that permits multiple access by assigning different frequencies of the available bandwidth to different channels.



- FEP - Front-End Processor--communications concentrator such as the IBM 3725 or COMTEN 3690 used to interface communications lines to host computers.
- FIELD ENGINEER (FE) - Field engineer, customer engineer, serviceperson, and maintenance person are used interchangeably and refer to the individual who responds to a user's service call to repair a device or system.
- FULL-DUPLEX - Bi-directional communications with simultaneous two-way transmission.
- GENERAL PURPOSE COMPUTER SYSTEM - A computer designed to handle a wide variety of problems. Includes machine room peripherals, systems software, and small business systems.
- HALF-DUPLEX - Bi-directional communications, but only in one direction at a time.
- HARDWARE INTEGRATOR - Develops system interface electronics and controllers for the CPU, sensors, peripherals, and all other ancillary hardware components. The hardware integrator also may develop control system software in addition to installing the entire system at the end-user site.
- HDLC - High-level Data Link Control.
- HERTZ - Number of signal oscillations (cycles) per second--abbreviated Hz.
- IBM TOKEN RING - IBM's local area network using baseband signalling and operating at 4 mbps on twisted-pair copper wire. Actually a combination of star and ring topologies--IEEE 802.5-compatible.
- IDN - Integrated Digital Network--digital switching and transmission; part of the evolution to ISDN.





- INDEPENDENT SUPPLIERS - Suppliers of machine room peripherals--usually do not supply general purpose computer systems.
- INFORMATION PROCESSING - Data processing as a whole, including use of business and scientific computers.
- INSTALLED BASE - Cumulative number or value (cost when new) of computers in use.
- INTERCONNECTION - Physical linkage between devices on a network.
- INTEROPERABILITY - The capability to operate with other devices on a network. To be contrasted with interconnection, which merely guarantees a physical network interface.
- ISDN - Integrated Services Digital Network--integrated voice and non-voice public network service which is completely digital. Not clearly defined through any existing standards although FCC and other federal agencies are participating in the development of CCITT recommendations.
- KEYPUNCH OPERATORS - Individuals operating keypunch machines (similar in operation to electric typewriters) to transcribe data from source materials onto punch cards.
- LEASED LINE - Permanent connection between two network stations. Also known as dedicated or non-switched line.
- MACHINE REPAIRERS - Individuals who install and periodically service computer systems.
- MACHINE ROOM PERIPHERALS - Peripheral equipment that is generally located close to the central processing unit.



- MAINFRAME - The central processing unit (CPU or units in a parallel processor) of a computer that interprets and executes computer (software) instructions of 32 bits or more.
- MAP - Manufacturing Automation Protocol--seven-layer communications standard for factory environments promoted by General Motors/EDS. Adopts IEEE 802.2 and IEEE 802.4 standards plus OSI protocols for other layers of the architecture.
- MEAN TIME TO REPAIR - The mean of elapsed times from the arrival of the field engineer on the user's site until the device is repaired and returned to user service.
- MEAN TIME TO RESPOND - The mean of elapsed times from the user call for service and the arrival of the field engineer on the user's site.
- MESSAGE - A communication intended to be read by a person. The quality of the received document need not be high, only readable. Graphic materials are not included.
- MMFS - Manufacturing Messaging Format Standard--application-level protocol included within MAP.
- MODEM - A device that encodes information into electronically transmittable form (MODulator) and restores it to original analog form (DEMODulator).
- NCP - Network Control Program--software used in IBM 3705/3725 FEPs for control of SNA networks.
- NODE - Connection point of three or more independent transmission points which may provide switching or data collection.



- OFF-LINE - Pertaining to equipment or devices that can function without direct control of the central processing unit.
- ON-LINE - Pertaining to equipment or devices under direct control of the central processing unit.
- OSI - ISO reference model for Open Systems Interconnection--seven-layer architecture for application, presentation, session, transport, network, data link, and physical services and equipment.
- OSI APPLICATION LAYER - Layer 7, providing end-user applications services for data processing.
- OSI DATA LINK LAYER - Layer 2, providing transmission protocols, including frame management, link flow control, and link initiation/release.
- OSI NETWORK LAYER - Layer 3, providing call establishment and clearing control through the network nodes.
- OSI PHYSICAL LAYER - Layer 1, providing the mechanical, electrical, functional, and procedural characteristics to establish, maintain, and release physical connections to the network.
- OSI PRESENTATION LAYER - Layer 6, providing data formats and information such as data translation, data encoding/decoding, and command translation.
- OSI SESSION LAYER - Layer 5, establishes, maintains, and terminates logical connections for the transfer of data between processes.
- OSI TRANSPORT LAYER - Layer 4, providing end-to-end terminal control signals such as acknowledgements.



- OVERSEAS - Not within the geographical limits of the continental United States, Alaska, Hawaii, and U.S. possessions.
- PABX - Private Automated Branch Exchange--hardware that provides automatic (electro-mechanical or electronic) local circuit switching on a customer's premises.
- PAD - Packet Assembler-Disassembler--a device that enables DTE not equipped for packet switching operation to operate on a packet switched network.
- PBX - Private Branch Exchange--hardware which provides local circuit switching on the customer premise.
- PCM - Pulse-Code Modulation--modulation involving conversion of a waveform from analog to digital form through coding.
- PDN - Public Data Network--a network established and operated by a recognized private operating agency, a telecommunications administration, or other agency for the specific purpose of providing data transmission services to the public.
- PERIPHERALS - Any unit of input/output equipment in a computer system, exclusive of the central processing unit.
- PPM - Pulse Position Modulation.
- PRIVATE NETWORK - A network established and operated for one user or user organization.
- PROGRAMMERS - Persons mainly involved in designing, writing, and testing of computer software programs.





- PROTOCOLS - The rules for communication system operation that must be followed if communication is to be effected. Protocols may govern portions of a network or service. In digital networks, protocols are digitally encoded as instructions to computerized equipment.
- PUBLIC NETWORK - A network established and operated for more than one user with shared access, usually available on a subscription basis. See related international definition of PDN.
- SCIENTIFIC COMPUTER SYSTEM - A computer system designed to process structured mathematics, such as Fast Fourier Transforms, and complex, highly redundant information, such as seismic data, sonar data, and radar, with large on-line memories and very high capacity throughput.
- SDLC - Synchronous Data Link Control--IBM's data link control for SNA. Supports a subset of HDLC modes.
- SDN - Software-Defined Network.
- SECURITY - Physical, electrical, and computer (digital) coding procedures to protect the contents of computer files and data transmission from inadvertent or unauthorized disclosure to meet the requirements of the Privacy Act and national classified information regulations.
- SERVICE DELIVERY POINT - The location of the physical interface between a network and customer/user equipment.
- SIMPLEX - Unidirectional communications.
- SMART BOX - A device for adapting existing DTE to new network standards such as OSI. Includes PADs and protocol converters, for example.



- SNA - Systems Network Architecture--seven-layer communications architecture designed by IBM. Layers correspond roughly but not exactly to OSI model.
- SOFTWARE - Computer programs.
- SUPPLIES - Includes materials associated with the use or operations of computer systems, such as printer paper, keypunch cards, disk packs, and tapes.
- SWITCHED CIRCUIT - Temporary connection between two network stations established through dial-up procedures.
- SYNCHRONOUS - Communications operation with separate, continuous clocking at both sending and receiving stations.
- SYSTEMS ANALYST - Individual who analyzes problems to be converted to a programmable form for application to computer systems.
- SYSTEMS HOUSE - Vendor that acquires, assembles, and integrates hardware and software into a total turnkey system to satisfy the data processing requirements of an end user. The vendor also may develop systems software products for license to end users. The systems house vendor does not manufacture mainframes.
- SYSTEMS INTEGRATOR - Systems house vendor that develops systems interface electronics, applications software, and controllers for the CPU, peripherals, and ancillary subsystems that may have been provided by a contractor or the government (GFE). This vendor may either supervise or perform the installation and testing of the completed system.
- T1 - Bell System designation for 1.544 mbps carrier capable of handling 24 PCM voice channels.



- TDM - Time Division Multiplexing--a multiplexing method that interleaves multiple transmissions on a single circuit by assigning a different time slot to each channel.
- TOKEN PASSING - Local area network protocol which allows a station to transmit only when it has the "token," an empty slot on the carrier.
- TOP - Technical Office Protocol--protocol developed by Boeing Computer Services to support administrative and office operations as complementary functions to factory automation implemented under MAP.
- TURNKEY SYSTEM - System composed of hardware and software integrated into a total system designed to completely fulfill the processing requirements of a single application.
- TWISTED-PAIR CABLE - Communications cabling consisting of pairs of single-strand metallic electrical conductors, such as copper wires, typically used in building telephone wiring and some LANs.
- VERIFICATION AND VALIDATION - Process for examining and testing applications and special systems software to verify that it operates on the target CPU and performs all of the functions specified by the user.
- VOICE-GRADE - Circuit or signal in the 300-3300 Hz bandwidth typical of the public telephone system--nominally a 4 KHz circuit.
- VTAM - Virtual Telecommunications Access Method--host-resident communications software for SNA networks.



C. OTHER CONSIDERATIONS

- When questions arise as to the proper place to count certain user expenditures, INPUT addresses the questions from the user viewpoint. Expenditures then are categorized according to what the users perceive they are buying.





**APPENDIX C - GLOSSARY OF FEDERAL ACRONYMS**



## APPENDIX C: GLOSSARY OF FEDERAL ACRONYMS

- The federal government's procurement language uses a combination of acronyms, phrases, and words that is complicated by different agency definitions and interpretations. The government also uses terms of accounting, business, economics, engineering, and law with new applications and technology.
- Acronyms and contract terms that INPUT encountered most often in program documentation and interviews for this report are included here, but this glossary should not be considered all-inclusive. Federal procurement regulations (DAR, FPR, FAR, FIRMR, FPMR) and contract terms listed in RFIs, RFPs, and RFQs provide applicable terms and definitions.
- Federal agency acronyms have been included to the extent they are employed in this report.

### A. ACRONYMS

- AAS Automatic Addressing System.
- AATMS Advanced Air Traffic Management System.
- ACO Administrative Contracting Offices (DCAS).
- ACS Advanced Communications Satellite (formerly NASA 30/20 GHz Satellite Program).



- ACT-I Advanced Computer Techniques (Air Force).
- Ada DoD High-Order Language.
- ADA Airborne Data Acquisition.
- ADL Authorized Data List.
- ADS Automatic Digital Switches (DCS).
- AFA Air Force Association.
- AFCEA Armed Forces Communications Electronics Association.
- AGE Aerospace Ground Equipment.
- AIP Array Information Processing.
- AMPE Automated Message Processing Equipment.
- AMPS Automated Message Processing System.
- AMSL Acquisition Management Systems List.
- AP(P) Advance Procurement Plan.
- Appropriation Congressionally approved funding for authorized programs and activities of the Executive Branch.
- APR Agency Procurement Request.
- ARPANET DARPA network of scientific computers.
- ATLAS Abbreviated Test Language for All Systems (for ATE -Automated Test Equipment).
- Authorization In the legislative process programs, staffing, and other routine activities must be approved by Oversight Committees before the Appropriations Committee will approve the money from the budget.
- AUSA Association of the U.S. Army.
- AUTODIN AUTOMATIC Digital Network of the Defense Communications System.
- AUTOVON AUTOMATIC VOICE Network of the Defense Communications System.
- BA Basic Agreement.
- BAFO Best And Final Offer.
- Base level Procurement, purchasing, and contracting at the military installation level.



- BCA Board of Contract Appeals.
- Benchmark Method of evaluating ability of a candidate computer system to meet user requirements.
- Bid protest Objection (in writing, before or after contract award) to some aspect of a solicitation by a valid bidder.
- BML Bidders Mailing List - qualified vendor information filed annually with federal agencies to automatically receive RFPs and RFQs in areas of claimed competence.
- BOA Basic Ordering Agreement.
- B&P Bid and Proposal - vendor activities in response to government solicitation/specific overhead allowance.
- BPA Blanked Purchase Agreement.
- Budget Federal Budget, proposed by the President and subject to Congressional review.
  
- C<sup>2</sup> Command and Control.
- C<sup>3</sup> Command, Control, and Communications.
- C<sup>4</sup> Command, Control, Communications, and Computers.
- C<sup>3</sup>I Command, Control, Communications, and Intelligence.
- CAB Contract Adjustment Board or Contract Appeals Board.
- CADE Computer-Aided Design and Engineering.
- CADS Computer-Assisted Display Systems.
- CAIS Computer-Assisted Instruction System.
- CAPS Command Automation Procurement Systems.
- CAS Contract Administration Services or Cost Accounting Standards.
- CASB Cost Accounting Standards Board.
- CASP Computer-Assisted Search Planning.
- CBD Commerce Business Daily - U.S. Department of Commerce publication listing government contract opportunities and awards.
- CBO Congressional Budget Office.
- CCDR Contractor Cost Data Reporting.





- CCN Contract Change Notice.
- CCPDS Command Center Processing and Display Systems.
- CCPO Central Civilian Personnel Office.
- CCTC Command and Control Technical Center (JCS).
- CDR Critical Design Review.
- CDRL Contractor Data Requirements List.
- CFE Contractor-Furnished Equipment.
- CFR Code of Federal Regulations.
- CIG Computerized Interactive Graphics.
- CIR Cost Information Reports.
- CM Configuration Management.
- CMI Computer-Managed Instruction.
- CNI Communications, Navigation, and Identification.
- CO Contracting Office, Contract Offices, or Change Order.
- COC Certificate of Competency (administered by the Small Business Administration).
  
- COCO Contractor-Owned, Contractor-Operated.
- CODSIA Council of Defense and Space Industry Associations.
- COMSTAT Communications Satellite Corporation.
- CONUS CONTinental United States.
- COP Capability Objectives Package.
- COTR Contracting Officer's Technical Representative.
- CP Communications Processor.
- CPAF Cost-Plus-Award-Fee Contract.
- CPFF Cost-Plus-Fixed-Fee Contract.
- CPIF Cost-Plus-Incentive-Fee Contract.
- CPR Cost Performance Reports.
- CPSR Contractor Procurement System Review.
- CR Cost Reimbursement (Cost Plus Contract).
- CSA Combat or Computer Systems Architecture.
- C/SCSC Cost/Schedule Control System Criteria (also called "C-Spec").
  
- CWAS Contractor Weighted Average Share in Cost Risk.



- DAL Data Accession List.
- DAR Defense Acquisition Regulations.
- DARPA Defense Advanced Research Projects Agency.
- DAS Data Acquisition System.
- DBHS Data Base Handling System.
- DCA Defense Communications Agency.
- DCAA Defense Contract Audit Agency.
- DCAS Defense Contract Administration Services.
- DCASR DCAS Region.
- DCC Digital Control Computer.
- DCP Development Concept Paper (DoD).
- DCS Defense Communications System.
- DCTN Defense Commercial Telecommunications Network
- DDA Dynamic Demand Assessment (Delta Modulation).
- DDC Defense Documentation Center.
- DDL Digital Data Link - A segment of a communications network used for data transmission in digital form.
  
- DDN Defense Data Network.
- DDS Dynamic Diagnostics System.
- D&F Determination and Findings - required documentation for approval of a negotiated procurement.
  
- DIA Defense Intelligence Agency.
- DIF Document Interchange Format, Navy-sponsored word processing standard.
  
- DHHS Department of Health and Human Services.
- DIDS Defense Integrated Data Systems.
- DISC Defense Industrial Supply Center.
- DLA Defense Logistics Agency.
- DMA Defense Mapping Agency.
- DNA Defense Nuclear Agency.
- DO Delivery Order.
- DOA Department of Agriculture (also USDA).
- DOC Department of Commerce.



- DOE Department of Energy.
- DOI Department of Interior.
- DOJ Department of Justice.
- DOS Department of State.
- DOT Department of Transportation.
- DPA Delegation of Procurement Authority (granted by GSA under FPRs).
- DPC Defense Procurement Circular.
- DQ Definite Quantity Contract.
- DQ/PL Definite Quantity Price List Contract.
- DR Deficiency Report.
- DSN Defense Switched Network.
- DSP Defense Support Program (WWMCCS).
- DSS Defense Supply Service.
- DTC Design-To-Cost.
  
- ECP Engineering Change Proposal.
- ED Department of Education.
- EEO Equal Employment Opportunity.
- 8(a) Set-Aside Agency awards direct to Small Business Administration for direct placement with a socially/economically disadvantaged company.
  
- EMC Electro-Magnetic Compatibility.
- EMCS Energy Monitoring and Control System.
- EO Executive Order - Order issued by the President.
- EOQ Economic Ordering Quantity.
- EPA Economic Price Adjustment.
- EPA Environmental Protection Agency.
- EPMR Estimated Peak Monthly Requirement.
- EPS Emergency Procurement Service (GSA) or Emergency Power System.
  
- EUC End User Computing, especially in DoD.



- FA Formal Advertising.
- FAC Facility Contract.
- FAR Federal Acquisition Regulations.
- FCA Functional Configuration Audit.
- FCC Federal Communications Commission.
- FCDC Federal Contract Data Center.
- FCRC Federal Contract Research Center.
- FDPC Federal Data Processing Center.
- FEDSIM Federal (Computer) Simulation Center (GSA).
- FEMA Federal Emergency Management Agency.
- FFP Firm Fixed-Price Contract (also Lump Sum Contract).
- FIPS NBS Federal Information Processing Standard.
- FIPS PUBS FIPS Publications.
- FIRMR Federal Information Resource Management Regulations.
- FMS Foreign Military Sales.
- FOC Final Operating Capability.
- FOIA Freedom of Information Act.
- FP Fixed-Price Contract.
- FP-L/H Fixed-Price - Labor/Hour Contract.
- FP-LOE Fixed-Price - Level-Of-Effort Contract.
- FPMR Federal Property Management Regulations.
- FPR Federal Procurement Regulations.
- FSC Federal Supply Classification.
- FSG Federal Supply Group.
- FSN Federal Supply Number.
- FSS Federal Supply Schedule or Federal Supply Service (GSA).
- FSTS Federal Secure Telecommunications System.
- FT Fund A revolving fund, designated as the Federal Telecommunications Fund, used by GSA to pay for GSA-provided common-user services, specifically including the current FTS and proposed FTS 2000 services.
- FTPS Federal Telecommunications Standards Program administered by NCS; Standards are published by GSA.





- FTS Federal Telecommunications System.
- FTS 2000 Proposed replacement for the Federal Telecommunications System.
- FY Fiscal Year.
- FYDP Five-Year Defense Plan.
  
- GAO General Accounting Office.
- GFE Government-Furnished Equipment.
- GFM Government-Furnished Material.
- GFY Government Fiscal Year (October to September).
- GIDEP Government-Industry Data Exchange Program.
- GOCO Government Owned - Contractor Operated.
- GOGO Government Owned - Government Operated.
- GPO Government Printing Office.
- GPS Global Positioning System.
- GS General Schedule.
- GSA General Services Administration.
  
- HPA Head of Procuring Activity.
- HSDP High-Speed Data Processors.
- HUD (Department of) Housing and Urban Development.
  
- ICA Independent Cost Analysis.
- ICAM Integrated Computer-Aided Manufacturing.
- ICE Independent Cost Estimate.
- ICP Inventory Control Point.
- ICST Institute for Computer Sciences and Technology, National Bureau of Standards, Department of Commerce.
  
- IDAMS Image Display And Manipulation System.
- IDEP Interservice Data Exchange Program.
- IDN Integrated Data Network.
- IFB Invitation For Bids.
- IOC Initial Operating Capability.



- IOI Internal Operating Instructions.
- IQ Indefinite Quantity Contract.
- IR&D Independent Research & Development.
- IRM Information Resource Manager.
- IXS Information Exchange System.
  
- JOCIT Jovial Compiler Implementation Tool.
- JSIPS Joint Systems Integration Planning Staff.
- JSOP Joint Strategic Objectives Plan.
- JSOR Joint Service Operational Requirement.
- JUMPS Joint Uniform Military Pay System.
  
- LC Letter Contract.
- LCC Life Cycle Costing.
- LCMP Life Cycle Management Procedures (DD7920.1).
- LCMS Life Cycle Management System.
- L-H Labor-Hour Contract.
- LOI Letters of Interest.
- LRPE Long-Range Procurement Estimate.
  
- MAISRC Major Automated Information Systems Review Council (DoD).
- MANTECH MANufacturing TEChnology.
- MAPS Multiple Address Processing System.
- MASC Multiple Award Schedule Contract.
- MDA Multiplexed Data Accumulator.
- MENS Mission Element Need Statement or Mission Essential Need Statement (see DD-5000.1 Major Systems Acquisition).
- MILSCAP Military Standard Contract Administration Procedures.
- MIL SPEC Military Specification.
- MIL STD Military Standard.
- MIPR Military Interdepartmental Purchase Request.
- MOD Modification.



- MOL Maximum Ordering Limit (Federal Supply Service).
- MPC Military Procurement Code.
- MYP Multi-Year Procurement.
  
- NARDIC Navy Research and Development Information Center.
- NASA National Aeronautics and Space Administration.
- NBS National Bureau of Standards.
- NCMA National Contract Management Association.
- NCS National Communications System; responsible for setting U.S. Government standards administered by GSA; also holds primary responsibility for emergency communications planning.
  
- NICRAD Navy-Industry Cooperative Research and Development.
- NIP Notice of Intent to Purchase.
- NMCS National Military Command System.
- NSA National Security Agency.
- NSEP National Security and Emergency Preparedness.
- NSF National Science Foundation.
- NSIA National Security Industrial Association.
- NTIA National Telecommunications and Information Administration of the Department of Commerce; replaced the Office of Telecommunications Policy in 1970 as planner and coordinator for government communications programs; primarily responsible for radio.
  
- NTIS National Technical Information Service.
  
- Obligation "Earmarking" of specific funding for a contract from committed agency funds.
- OCS Office of Contract Settlement.
- OFCC Office of Federal Contract Compliance.
- Off-Site Services to be provided near but not in government facilities.
- OFMP Office of Federal Management Policy (GSA).
- OFPP Office of Federal Procurement Policy.



- OIRM Office of Information Resources Management.
- O&M Operations & Maintenance.
- OMB Office of Management and Budget.
- O,M&R Operations, Maintenance, and Repair.
- On-Site Services to be performed on a government installation or in a specified building.
- OPM Office of Procurement Management (GSA) or Office of Personnel Management.
- Options Sole-source additions to the base contract for services or goods to be exercised at the government's discretion.
- OSHA Occupational Safety and Health Act.
- OSP Offshore Procurement.
- OTA Office of Technology Assessment (Congress).
- Out-Year Proposed funding for fiscal years beyond the Budget Year (next fiscal year).
  
- P-I FY Defense Production Budget.
- p<sup>3</sup>i Pre-Planned Product Improvement (program in DoD).
- PAR Procurement Authorization Request or Procurement Action Report.
- PAS Pre-Award Survey.
- PASS Procurement Automated Source System.
- PCO Procurement Contracting Officer.
- PDA Principal Development Agency.
- PDM Program Decision Memorandum.
- PDR Preliminary Design Review.
- PIR Procurement Information Reporting.
- PME Performance Monitoring Equipment.
- PMP Purchase Management Plan.
- PO Purchase Order or Program Office.
- POM Program Objective Memorandum.
- PPBS Planning, Programming, Budgeting System.
- PR Purchase Request or Procurement Requisition.





- PS Performance Specification - alternative to a Statement of Work, when work to be performed can be clearly specified.
  
- QA Quality Assurance.
- QAO Quality Assurance Office.
- QMCS Quality Monitoring and Control System (DoD software).
- QMR Qualitative Material Requirement (Army).
- QPL Qualified Products List.
- QRC Quick Reaction Capability.
- QRI Quick Reaction Inquiry.
  
- R-I FY Defense RDT&E Budget.
- RAM Reliability, Availability, and Maintainability.
- RC Requirements Contract.
- R&D Research and Development.
- RDA Research, Development, and Acquisition.
- RDD Required Delivery Date.
- RD&E Research, Development, and Engineering.
- RDF Rapid Deployment Force.
- RDT&E Research, Development, Test, and Engineering.
- RFI Request For Information.
- RFP Request For Proposal.
- RFQ Request For Quotation.
- RFTP Request For Technical Proposals (Two-Step).
- ROC Required Operational Capability.
- ROI Return On Investment.
- RTAS Real Time Analysis System.
- RTDS Real Time Display System.
  
- SA Supplemental Agreement.
- SBA Small Business Administration.
- SB Set-Aside Small Business Set-Aside contract opportunities with bidders limited to certified small businesses.



- SCA Service Contract Act (1964 as amended).
- SCN Specification Change Notice.
- SDN Secure Data Network.
- SEC Securities and Exchange Commission.
- SE&I Systems Engineering and Integration.
- SETA Systems Engineering/Technical Assistance.
- SETS Systems Engineering/Technical Support.
- SIBAC Simplified Intragovernmental Billing and Collection System.
- SIMP Systems Integration Master Plan.
- SIOP Single Integrated Operations Plan.
- SNAP Shipboard Nontactical ADP Program.
- Sole Source Contract award without competition.
- Solicitation Invitation to submit a bid.
- SOR Specific Operational Requirement.
- SOW Statement of Work.
- SSA Source Selection Authority (DoD).
- SSAC Source Selection Advisory Council.
- SSEB Source Selection Evaluation Board.
- SSO Source Selection Official (NASA).
- STINFO Scientific and Technical INFORMATION Program - Air Force/NASA.
- STU Secure Telephone Unit.
- SWO Stop-Work Order.
- Synopsis Brief description of contract opportunity in CBD after D&F and before release of solicitation.
  
- TA/AS Technical Assistance/Analyst Services.
- TEMPEST Studies, inspections, and tests of unintentional electromagnetic radiation from computer, communication, command, and control equipment that may cause unauthorized disclosure of information; usually applied to DoD and security agency testing programs.
- TILO Qualified Requirements Information Program - Army.



- TM Time and Materials contract.
- TOA Total Obligational Authority (Defense).
- TOD Technical Objective Document.
- TR Temporary Regulation (added to FPR, FAR).
- TRACE Total Risk Assessing Cost Estimate.
- TRCO Technical Representative of the Contracting Offices.
- TREAS Department of Treasury.
- TRP Technical Resources Plan.
- TSP GSA's Teleprocessing Services Program.
- TVA Tennessee Valley Authority.
  
- UCAS Uniform Cost Accounting System.
- USA U.S. Army.
- USAF U.S. Air Force.
- USCG U.S. Coast Guard.
- USMC U.S. Marine Corps.
- USN U.S. Navy.
- U.S.C. United States Code.
- USPS United States Postal Service.
- USRRB United States Railroad Retirement Board.
  
- VA Veterans Administration.
- VE Value Engineering.
- VHSIC Very High Speed Integrated Circuits.
- VIABLE Vertical Installation Automation BaseLine (Army).
- VICI Voice Input Code Identifier.
  
- WBS Work Breakdown Structure.
- WGM Weighted Guidelines Method.
- WIN WWMCCS Intercomputer Network.
- WIS WWMCCS Information Systems.
- WS Work Statement - Offerer's description of the work to be done (proposal or contract).



- WWMCCS World-Wide Military Command and Control System.

## B. GENERAL AND INDUSTRY

- ADP Automatic Data Processing.
- ADPE Automatic Data Processing Equipment.
- ANSI American National Standards Institute.
  
- CAD Computer-Aided Design.
- CAM Computer-Aided Manufacturing.
- CBEMA Computer and Business Equipment Manufacturers Association.
- CCITT Comite Consultatif Internationale de Telegraphique et Telephonique; Committee of the International Telecommunication Union.
  
- COBOL COMmon Business-Oriented Language.
- CPU Central Processor Unit.
  
- DBMS Data Base Management System.
  
- EIA Electronic Industries Association.
  
- IEEE Institute of Electrical and Electronics Engineers.
- ISO International Organization for Standardization; voluntary international standards organization and member of CCITT.
- ITU International Telecommunication Union.
  
- LSI Large-Scale Integration.
  
- PROM Programmable Read-Only Memory.
  
- UPS Uninterruptable Power Source.
  
- VLSI Very Large Scale Integration.





**APPENDIX D - POLICIES, REGULATIONS,  
AND STANDARDS**

THE UNIVERSITY OF CHICAGO  
DEPARTMENT OF CHEMISTRY

PH.D. THESIS  
BY  
[Name]  
SUBMITTED TO THE FACULTY OF THE DIVISION OF THE PHYSICAL SCIENCES  
IN CANDIDACY FOR THE DEGREE OF DOCTOR OF PHILOSOPHY  
DEPARTMENT OF CHEMISTRY  
CHICAGO, ILLINOIS  
[Date]

THE UNIVERSITY OF CHICAGO  
DEPARTMENT OF CHEMISTRY  
[Name]  
[Title]  
[Address]  
[City, State, Zip]  
[Phone Number]

APPENDIX D: POLICIES, REGULATIONS, AND STANDARDS

A. OMB CIRCULARS

- A-11 Preparation and Submission of Budget Estimates.
- A-49 Use of Management and Operating Contracts.
- A-71 Responsibilities for the Administration and Management of Automatic Data Processing Activities.
- A-76 Policies for Acquiring Commercial or Industrial Products and Services Needed by the Government.
- A-109 Major Systems Acquisitions.
- A-120 Guidelines for the Use of Consulting Services.
- A-121 Cost Accounting, Cost Recovery, and Integrated Sharing of Data Processing Facilities.
- A-123 Internal Control Systems.
- A-127 Financial Management Systems.



- A-130 Management of Federal Information Resources.

## B. GSA PUBLICATIONS

- The FIRMR as published by GSA is the primary regulation for use by federal agencies in the management, acquisition, and use of both ADP and telecommunications information resources.
- Certain parts of the FIRMR are particularly applicable to federal office information systems. These include:
  - 201-8 Implementation of Use of Federal Standards.
  - 201-22 Records Management Programs.
  - 201-45 Management of Records.
- The following Bulletins in Appendix B of the FIRMR provide additional guidance.
  - 6 Office Technology Plus.
  - 23 Electronic Record Keeping.
  - 30 Use of Small Government-Owned Computers Off-Site and Use of Personally Owned Computers in Federal Offices.
  - 34 Microcomputer Security.



C. DOD DIRECTIVES

- DD-5000.1 Major System Acquisitions.
- DD-5000.2 Major System Acquisition Process.
- DD-5000.11 DoD Data Elements and Data Codes Standardization Program.
- DD-5000.31 Policy and Procedures for the Management and Control of High-Order Languages and Mandate for Use of Ada Language for all DoD Mission-Critical Applications.
- DD-5000.35 Defense Acquisition Regulatory Systems.
- DD-5200.1 DoD Information Security Program.
- DD-5200.28 Security Requirements for Automatic Data Processing (ADP) Systems.
- DD-5200.28-M Manual of Techniques and Procedures for Implementing, Deactivating, Testing, and Evaluating Secure Resource Sharing ADP Systems.
- DD-7920.1 Life Cycle Management of Automated Information Systems (AIS).
- DD-7920.2 Major Automated Information Systems Approval Process.
- DD-7935 Automated Data Systems (ADS) Documentation.





#### D. STANDARDS

- ADCCP                   Advanced Data Communications Control Procedures; ANSI standard X3.66 of 1979; also NBS FIPS 71.
  
- CCITT G.711            International PCM Standard.
  
- CCITT T.0              International Standard for Classification of Facsimile Apparatus for Document Transmission Over Telephone-Type Circuits.
  
- DEA-I                  Proposed ISO Standard for Data Encryption Based on the NBS DES.
  
- EIA RS-170             Monochrome Video Standard.
  
- EIA RS-170A            Color Video Standard.
  
- EIA RS-464             EIA PBX Standards.
  
- EIA RS-465             Facsimile Standard; Procedures for Document Transmission in the General Switched Telephone Network.
  
- EIA RS-466             Facsimile standard; procedures for document transmission in the general switched telephone network.
  
- EIA RS-232-C          EIA DCE to DTE Interface Standard Using a 25-Pin Connector; Similar to CCITT V.24.



- EIA RS-449            New EIA Standard DTE to DCE Interface which Replaces RS-232-c.
  
- FED-STD 1000        Proposed Federal Standard for Adoption of the Full OSI Reference Model.
  
- FED-STD 1026        Federal Data Encryption Standard (DES) Adopted in 1983; also FIPS 64.
  
- FED-STD 1041        Equivalent to FIPS 100.
  
- FED-STD 1061        Group II Facsimile Standard (1981).
  
- FED-STD 1062        Federal Standard for Group III Facsimile; Equivalent to EIA RS-465.
  
- FED-STD 1063        Federal Facsimile Standard Equivalent to EIA RS-466.
  
- FED-STDs 1005,      Federal Standards for DCE Coding and Modulation  
1005A-1008
  
- FIPS 46                NBS Data Encryption Standard (DES).
  
- FIPS 81                DES Modes of Operation.
  
- FIPS 100              NBS Standard for Packet Switched Networks; Subset of 1980 CCITT X.25.
  
- FIPS 107              NBS Standard for Local Area Networks, Similar to IEEE 802.2 and 802.3.



- IEEE 802.2            OSI-Compatible IEEE Standard for Data-Link Control in Local Area Networks.
- IEEE 802.3            Local Area Network Standard Similar to Ethernet.
- IEEE 802.4            OSI-Compatible Standard for Token-Bus Local Area Networks.
- IEEE 802.5            Local Area Network Standard for Token-Ring Networks.
  
- MIL-STD-188-114C    Physical Interface Protocol Similar to RS-232 and RS-449.
- MIL-STD-1750A        Embedded System Microchip Architecture Specification.
- MIL-STD-1777        IP - Internet Protocol.
- MIL-STD-1778        TCP - Transmission Control Protocol.
- MIL-STD-1780        File Transfer Protocol.
- MIL-STD-1781        Simple Mail Transfer Protocol (Electronic Mail).
- MIL-STD-1782        TELNET - Virtual Terminal Protocol.
- X-21                    CCITT Standard for Interface between DTE and DCE for Synchronous Operation on Public Data Networks.
- X.25                    CCITT Standard for Interface between DTE and DCE for Terminals Operating in the Packet Mode on Public Data Networks.



- X-75 CCITT Standard for Links that Interface Different Packet Networks.
- X.400 ISO Application-level Standard for the Electronic Transfer of Messages (Electronic Mail).





**APPENDIX E - RELATED INPUT REPORTS**



**APPENDIX E: RELATED INPUT REPORTS**

**A. ANNUAL REPORTS**

- Procurement Analysis Reports, GFY 1986-1991
- U.S. Information Services Cross-Industry Markets, 1986-1991
- U.S. Information Services Vertical Markets, 1986-1991

**B. INDUSTRY SURVEYS**

- Eighteenth Annual ADAPSO Survey of the Computer Services Industry, 1984
- Director of Leading U.S. Information Services Vendors



## C. MARKET REPORTS

- Distributed Processing Services in the New Telecommunications Environment, 1986
- Network Services Directions, 1986
- U.S. Processing/Network Services Market, 1985-1990, 1985
- U.S. Processing and Turnkey Systems Markets, 1984-1989, 1984
- Federal Systems Integration Market, 1986-1991
- Federal ADP Facilities Management Market, 1985-1990
- Decision Support Systems and Beyond, 1984
- On-Line Data Base Market Opportunities, 1984-1985, 1984
- End-User Micro-Mainframe Needs, 1984
- Micro-Mainframe Telecommunications, 1984
- Trends in Processing Services and Integrated Systems Pricing, 1983
- Organizing the Information Center, 1983
- Personal Computer Opportunities for Remote Computing Services Vendors, 1983



APPENDIX F - QUESTIONNAIRES





APPENDIX F:

FEDERAL PROCESSING SERVICES - INDUSTRY SURVEY

1. Are you currently providing any of the following Processing Services?

a. Remote Computing Services (timesharing) \_\_\_Yes \_\_\_No

b. Batch Processing \_\_\_Yes \_\_\_No

c. Distributed Processing Services \_\_\_Yes \_\_\_No

d. Value-Added Networks (VANS) \_\_\_Yes \_\_\_No

e. Processing Facility Management (COCO) \_\_\_Yes \_\_\_No

1a. If no: Did you ever? \_\_\_\_\_

1b. If no: Discontinue interview.

Name: \_\_\_\_\_ Phone Number: \_\_\_\_\_

Company: \_\_\_\_\_

1c. If yes: Begin interview.

\_\_\_\_\_

1. What part of your revenue was derived from processing services last year? \_\_\_\_\_%

2. What percentage of your processing services business was done with the Federal Government last year? \_\_\_\_\_%

3. Have you recently been awarded any contracts whose revenues are not included in these figures?

\_\_\_Yes \_\_\_No

If yes:

AGENCY

PROGRAM

_____	_____
_____	_____
_____	_____



4a. In the next five years, do you see your company increasing or decreasing its share of government revenues? \_\_\_Increase \_\_\_Decrease

4b. By what percent per year? \_\_\_\_\_%

5. By which of the following procurement processes have you obtained your Federal Processing Service Contracts?

\_\_\_ Negotiated Contracts

\_\_\_ TSP/BA

\_\_\_ TSP/MASC

6. Is your company now or has it ever been on the MASC schedule for the TSP program?

\_\_\_Yes \_\_\_No

7. In your opinion, how could the MASC be improved? \_\_\_\_\_  
\_\_\_\_\_

8. Is your company now or has it ever been on the BA schedule for the TSP program?

\_\_\_Yes \_\_\_No

9. In your opinion, how could the BA be improved? \_\_\_\_\_  
\_\_\_\_\_

10. What percent of your company's Federal Processing Services are derived from the following services?

Interactive \_\_\_\_\_%

Batch \_\_\_\_\_%

FM Processing \_\_\_\_\_%

Distributed Data Processing \_\_\_\_\_%

Value-Added Networks \_\_\_\_\_%

10b. In your opinion, which of these services do you expect to see an increase, decrease, or revenues to stay the same?

INCREASE

DECREASE

SAME

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



11. What agencies do you provide processing services to currently? \_\_\_\_\_  
\_\_\_\_\_

12. Which agencies provide the most revenue from services? \_\_\_\_\_  
\_\_\_\_\_

13. What are the three largest revenue producing applications that your company has with the Federal Government?

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

14. In the past, have you lost any RCS applications to other forms of data processing?

\_\_\_ Yes \_\_\_ No Example: \_\_\_\_\_

15. Which applications, in order of importance, have suffered the greatest loss in the past year to alternate forms of data processing?

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

16. What applications do you feel are most vulnerable to replacement by alternate forms of data processing over the next year? The next 2-5 years?

Next 12 Months

Next 2-5 Years

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

17a. If not currently providing processing facilities management (PFM/COCO), does your company have plans to provide this service? \_\_\_ Currently Offer \_\_\_ Future Plans

17b. What benefits does this service offer government users? \_\_\_\_\_  
\_\_\_\_\_

18. Does your company offer or plan to offer products or services specifically designed to combine personal computers with RCS? \_\_\_ Yes \_\_\_ No

If no: Why not? \_\_\_\_\_  
\_\_\_\_\_



19. In your opinion, what do you think has been the government's reaction to the RCS/Micro approach or Distributed Data Processing?

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20. Does your company currently offer any Value-Added Network (VAN) services which you plan to make available to the government? \_\_\_Yes \_\_\_No

21. How might the VAN services be utilized by the government? What applications?

---

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22. On a scale of 1 to 5 (1 = unsatisfied, 5 extremely satisfied), how do you think the Agencies rate the following service vendor characteristics?

1. Customer Support	1	2	3	4	5
2. Training	1	2	3	4	5
3. Documentation	1	2	3	4	5
4. Delivery of Special Applications	1	2	3	4	5
5. Staying within Cost Estimates	1	2	3	4	5
6. Uptime	1	2	3	4	5
7. Response Time	1	2	3	4	5

- 23a. Have you ever provided processing services as a subcontractor to a firm who held a prime contract with the government? \_\_\_Yes \_\_\_No

- 23b. If yes: Did you subcontract to any of the following:

1. A Big Eight accounting firm (Arthur Anderson)? \_\_\_Yes \_\_\_No
2. A consulting firm (Booz Allen)? \_\_\_Yes \_\_\_No
3. A professional services firm (PRC)? \_\_\_Yes \_\_\_No
4. A "Not for Profit" firm (MITRE)? \_\_\_YES \_\_\_No
5. An 8A firm (Wilson Hill)? \_\_\_Yes \_\_\_No
6. An R&D firm (BDM)? \_\_\_Yes \_\_\_No
7. A Small Business Firm (OAO, Raven)? \_\_\_Yes \_\_\_No





24a. Have you ever provided any processing services to the government outside the TSP?

\_\_\_ Yes    \_\_\_ No

24b. If yes: What application? \_\_\_\_\_

Which Agency? \_\_\_\_\_

Procurement Method? \_\_\_\_\_

25. In your opinion, what are the two most easily identifiable factors that will have the greatest impact on the government's increased or decreased use of commercial processing services?

1. \_\_\_\_\_

2. \_\_\_\_\_

Thank You.



## FEDERAL PROCESSING SERVICES - AGENCY SURVEY

1. Are you currently using any of the following Processing Services?

- a. Remote Computing Services (timesharing)  Yes  No
- b. Batch Processing  Yes  No
- c. Distributed Processing Services  Yes  No
- d. Value-Added Networks (VANS)  Yes  No
- e. Processing Facility Management (COCO)  Yes  No

1a. If no: Did you ever? \_\_\_\_\_

1b. If no: Could you refer me to the division of your agency that does?

Name: \_\_\_\_\_ Phone Number: \_\_\_\_\_

Agency Division: \_\_\_\_\_

1c. If yes: Begin interview.

\_\_\_\_\_

### PART A

1. What are the three main applications you are running on RCS and with which vendors?

APPLICATION	VENDOR
1. _____	_____
2. _____	_____
3. _____	_____

2. Do you foresee any future applications which could go RCS? (emphasize).  Yes  No

If yes: Applications: \_\_\_\_\_

3. How much of your RCS work would you say is interactive versus batch?

Interactive \_\_\_\_\_% Batch \_\_\_\_\_%



4a. In the past, has your office moved any applications from RCS to other forms of data processing?

Yes  No

4b. If yes: What kind? \_\_\_\_\_

4c. What were the two most important reasons for switching the application(s) from RCS to other computing services?

1. \_\_\_\_\_

2. \_\_\_\_\_

5. Do you anticipate moving any applications off RCS in the future?  Yes  No

Why? \_\_\_\_\_

6. Does your agency have any data of value to the public which could generate revenue for the government if placed with an RCS vendor? For example, Agriculture has commodities data which it is selling to the public through a third-party RCS vendor.  Yes  No

7a. Have you had any experience procuring RCS services under the Teleprocessing Services Program (TSP)?  Yes  No

7b. Which of the following TSP methods have you used to acquire commercial remote computing services?  MASC  BA

7c. In your opinion, how could the MASC or BA be improved? \_\_\_\_\_

\_\_\_\_\_

8. Have you ever bought RCS Services that were not offered under the TSP?  Yes  No

If yes: What application and which vendor? \_\_\_\_\_

\_\_\_\_\_

How were these services procured? \_\_\_\_\_

\_\_\_\_\_

9. Has your agency used negotiated contracts for any procurement of processing services?

Yes  No

Types of services: \_\_\_\_\_

\_\_\_\_\_



10. Does your agency currently use vendor-furnished processing facilities management or "COCO"?

Yes  No

If yes: What type of applications are being handled under the PFM contract? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

How are these services procured? \_\_\_\_\_

\_\_\_\_\_

If no: Are you planning to use these processing facilities in the future?  Yes  No

11a. Is your agency presently using Distributed Data Processing?  Yes  No

If yes: Are you currently acquiring the DDP services under the TSP?  Yes  No

Other procurement methods: \_\_\_\_\_

If no: Would you consider or do you have any future plans to acquire these services from the TSP?

Yes  No

11b. Which applications are currently or would be run in a DDP configuration? \_\_\_\_\_

\_\_\_\_\_

12a. Is your agency currently or planning to use a leased value-added network (VAN)?

Yes  No

12b. Would you consider the leasing of a VAN from the TSP?  Yes  No

If yes: What would be the advantage to your agency of leasing the VAN? \_\_\_\_\_

\_\_\_\_\_

If no: Why would you not consider the leasing of a VAN from the TSP? \_\_\_\_\_

\_\_\_\_\_

12c. What applications might employ the VAN? \_\_\_\_\_

\_\_\_\_\_





13. On a scale of 1 to 5 (1 = unsatisfied, 5 extremely satisfied), what has been your level of satisfaction regarding the following processing services vendor characteristics?

1. Customer Support	1	2	3	4	5
2. Training	1	2	3	4	5
3. Documentation	1	2	3	4	5
4. Delivery of Special Applications	1	2	3	4	5
5. Staying within Cost Estimates	1	2	3	4	5
6. Uptime	1	2	3	4	5
7. Response Time	1	2	3	4	5

14. In your opinion, what are the two government-wide non-technical factors that will have the greatest impact on your agency's increased or decreased usage of commercial processing services?

1. \_\_\_\_\_
2. \_\_\_\_\_



PART B

The last few questions are related to actual budget expenditures. If you cannot answer them, would you please refer me to someone who can?

Name: \_\_\_\_\_ Title: \_\_\_\_\_

Telephone Number: \_\_\_\_\_

1. How much are you currently spending on RCS per month? \$ \_\_\_\_\_
2. What is your total expenditure on services from the TSP per month? \$ \_\_\_\_\_  
Per year? \$ \_\_\_\_\_
3. Have agency expenditures for processing services increased or decreased over the past year?  
\_\_\_\_ Increased      \_\_\_\_ Decreased  
By what percent? \_\_\_\_\_ % And why? \_\_\_\_\_  
\_\_\_\_\_
4. Which processing service mode(s) have increased or decreased most substantially over the past year?  
\_\_\_\_\_
- 5a. Do you expect overall spending for processing services to increase or decrease over the next 12 months? \_\_\_\_ Increase      \_\_\_\_ Decrease
- 5b. By what percent? \_\_\_\_\_ % And why? \_\_\_\_\_  
\_\_\_\_\_  
What services? \_\_\_\_\_
- 6a. Do you foresee an increase or decrease in this spending over the next two to five years?  
\_\_\_\_ Increase      \_\_\_\_ Decrease
- 6b. By what percent? \_\_\_\_\_ % And why? \_\_\_\_\_  
\_\_\_\_\_  
Which services? \_\_\_\_\_

Thank You.



IX ABOUT INPUT



## ABOUT INPUT

### Company Profile

Founded in 1974, INPUT has become a leading international planning services firm. Clients include over 200 of the world's largest and most technically advanced companies.

Through market research, technology forecasting, and competitive analysis, INPUT supports client management in making informed decisions. Continuing services are provided to users and vendors of computers, communications, office systems, and information services. Clients receive reports, presentations, access to data on which analyses are based, and continuous client support.

INPUT is a service company. Through advisory/research subscription services, multiclient studies, and proprietary consulting, INPUT serves clients' ongoing planning information needs.

### INPUT Planning Services

INPUT offers six continuous information services addressing U.S. markets and two programs covering Western European markets:

- **Market Analysis Service (MAS)**  
Provides up-to-date market analyses, five-year forecasts, trend analyses, and sound recommendations for action. MAS is designed to satisfy planning and marketing requirements of information services vendors.
- **Company Analysis Service (CAS)**  
A comprehensive reference service covering more than 4,000 U.S. information services vendor organizations. CAS is often used for competitive analysis and pre-screening of acquisition and joint venture candidates.
- **Electronic Data Interchange Planning Service (EDIPS)**  
Focusing on what is fast becoming a major computer/communications market opportunity, INPUT's EDIPS keeps you informed. Through monthly newsletters, timely new flashes, comprehensive studies, joint user/vendor conference, and telephone inquiry privileges you will learn about the events and issues impacting this burgeoning market.
- **Information Systems Program (ISP)**  
Is designed for executives of large information systems organizations and provides crucial information for planning, procurement, and management decision making. The program examines new service offerings, technological advances, user requirements for systems and services, MIS spending patterns, and more. ISP is widely used by both user and vendor organizations.





- **Customer Service Program (CSP)**  
Provides customer service organization management with data and analysis needed for marketing, technical, financial, and organizational planning. The program pinpoints user perceptions of service received, presents vendor-by-vendor service comparisons, and analyzes and forecasts the following markets:
  - Large systems service.
  - Small systems service.
  - Telecommunications systems service.
  - Software maintenance.
  - Third-party maintenance.
  
- **Federal Information Systems and Services Program (FISSP)**  
Presents highly specific information on federal procurement practices, identifies vendor opportunities, and provides guidance from INPUT's experienced Washington professionals to help clients maximize sales effectiveness in the government marketplace.
  
- **Western European Customer Service Program (CSPE)**  
Parallels the U.S. Customer Service Program, dealing with comparable issues in European markets.
  
- **Western European Software and Services Planning Service (SSPS)**  
Analyzes and forecasts information for European information services markets. Clients receive timely planning information through research-based studies, conferences, client meetings, and continuous client support.

### Proprietary Services

The combination of INPUT's planning services and staff expertise provides clients with a uniquely qualified resource for custom research. These proprietary studies take two forms: **multiclient research services**, or in-depth analyses of issues common to multiple clients; and **custom consulting** for a single client. Some of the recent and more frequent topics are:

- Strategy planning and support.
- Service evaluation.
- Market penetration planning.
- Due diligence analysis and support.
- Customer attitude surveys.
- Acquisition research and support.
- Sales and marketing audits.

Clients also benefit from secondary research performed by INPUT for other programs and from INPUT's concentration on the information services industry in general.



## Staff Profile

INPUT's professional staff have backgrounds in marketing, planning, information processing, and market research. Educational backgrounds include both technical and business specializations, and many INPUT staff hold advanced degrees.

Many of INPUT's professional staff have held executive positions in the following business sectors:

- Computer systems
- Software
- Turnkey systems
- Field service  
(customer service)
- Processing services
- Professional services
- Data processing
- Network services
- Communications

## About INPUT...

- More than 5,000 organizations worldwide have charted business directions based on INPUT's research and analysis.
- Many clients invest more than \$50,000 each year to receive INPUT's recommendations and planning information.
- INPUT regularly conducts proprietary research for some of the largest companies in the world.
- INPUT has developed and maintains one of the most complete information industry libraries in the world (access is granted to all INPUT clients).
- INPUT clients control an estimated 70% of the total information industry market.
- INPUT analyses and forecasts are founded upon years of practical experience, knowledge of historical industry performance, continual tracking of day-to-day industry events, knowledge of user and vendor plans, and business savvy.
- INPUT analysts accurately predicted the growth of the information services market--at a time when most research organizations deemed it a transient market. INPUT predicted the growth of the microcomputer market in 1980 and accurately forecasted its slowdown in 1984.

## For More Information...

INPUT offers products and services that can improve the productivity, sales, and ultimately profit, of your firm. Please give us a call today. Our representatives will be happy to send you further information on our services or to arrange a formal presentation at your offices.

For details on delivery schedules, client service entitlement, or **Hotline support**, simply call your nearest INPUT office (listed on the next page); our customer support group will be available to answer your questions.



## **INPUT Offices**

**California** (Headquarters)  
1280 Villa Street  
Mountain View, CA 94041  
(415) 961-3300  
Telex 171407

**INPUT, Inc.**  
8298 C, Old Courthouse Road  
Vienna, VA 22180  
(703) 847-6870

**United Kingdom**  
INPUT Ltd.  
41 Dover Street  
London W1X 3RB  
England  
(441) 493-9335  
Telex 27113

**Japan**  
FKI  
Future Knowledge Institute  
Shanpia Bldg., 8-1,  
Kanda Sakuma-cho 2-chome,  
Chiyoda-ku,  
Tokyo, 101  
Japan  
(03) 864-4026

**New York**  
Parsippany Place Corporate Center  
Suite 201  
959 Route 46 East  
Parsippany, NJ 07054  
(201) 299-6999  
Telex 134630

**Sweden**  
Athena Konsult AB  
Box 22232  
S-104 22 Stockholm  
Sweden  
(08) 542025  
Telex 17041

