SERVICE VENDOR ANALYSIS

THIRD-PARTY MAINTENANCE

VOLUME I

INPUT

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Abstract

This report, *Service Vendor Analysis—Third-Party Maintenance*, is the second deliverable in the third-party maintenance module of INPUT's 1988 Customer Service Program. The first report, *Third-Party Maintenance Service Analysis*, measured user requirements for and satisfaction with service and support as provided by leading TPM vendors. The last report in the series, *U.S. Customer Service Market Analysis*, will provide a current market size and five-year forecast for U.S. customer services, as well as summarize the year's research findings.

The report is broken out into two volumes. The first volume contains profiles of the service organizations of the top ten TPM organizations: CDC, Dataserv, Decision Data, GE, Grumman Systems Support, IDEA Servcom, Intelogic Trace, Sorbus, TRW, and Unisys. Each profile begins with a short discussion of the company and important service news items from the past year. Next, each profile presents demographic data about the service organization, including revenue totals, employee counts and office locations, when available. Each profile concludes with a discussion of service delivery, including contract coverage and services provided.

Following these profiles, the report provides summary tables of key service information about the profiled service organizations. These tables will allow quick comparisons between companies analyzed in this study.

The second volume contains concise two-page profiles of 100 leading providers of third-and fourth-party maintenance, including the top ten companies.

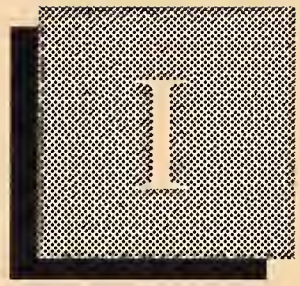
The report contains 50 pages, including 18 exhibits.

Table of Contents

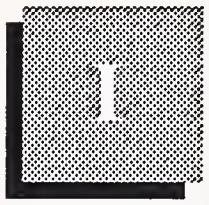
Exhibits

II

III



Introduction



Introduction

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A Scope

The report is broken out into two volumes. The first volume contains profiles of the service organizations of the top ten TPM organizations: CDC, Dataserv, Decision Data, GE, Grumman Systems Support, IDEA Servcom, Intelogic Trace, Sorbus, TRW, and Unisys. Each profile begins with a short discussion of the company and important service news items from the past year. Next, each profile presents demographic data about the service organization, including revenue totals, employee counts and office locations, when available. Each profile concludes with a discussion of service delivery, including contract coverage and services provided.

Following these profiles, the report provides summary tables of key service information about the profiled service organizations. These tables will allow quick comparisons between companies analyzed in this study.

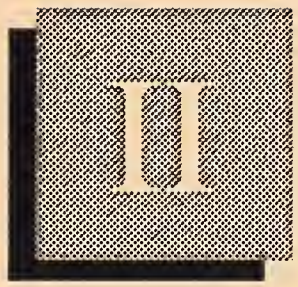
The second volume contains concise two-page profiles of 100 leading providers of third-party maintenance and fourth-party maintenance, including the top ten companies.

The appendix at the end of this report contains an example of the questionnaire used for this study.

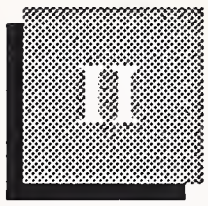
B

Methodology

INPUT attempted to directly survey the companies profiled in this study, using the questionnaire contained in Appendix A. When necessary, INPUT supplemented this effort with information (annual reports, Form 10Ks, press releases, marketing brochures, and press clippings) contained in INPUT's Information Center, located at INPUT's Mountain View (CA) Headquarters office.



Service Vendor Profiles



Service Vendor Profiles

COMPANY PROFILE

CONTROL DATA CORPORATION
1101 East 78th Street
Bloomington, MN 55420
(612) 851-4416

Robert M. Price, President and CEO
William Fitzgerald, VP, Technical Services
Total Employees: 34,500
Service Employees: 4,000*
Total Revenue, Fiscal Year End
12/31/87: $3.4 Billion
Service Revenue: $400 Million
TPM Revenue: $100 Million*

* INPUT estimate

The Company

Control Data Corporation, founded in 1957, manages a diverse set of technically oriented businesses that includes Business Services Computer Systems and Services, Data Storage Products, Government Systems, and Training and Education/Ticketron. The Computer Systems and Services Group supplies large systems and associated services primarily to customers in the scientific and engineering markets. The group is engaged in three key businesses: computers, third-party engineering services, and systems integration.

Revenue increased for the Computer Systems and Services Group in 1987, boosted by the decline in the value of the dollar and a shift from leasing to purchasing systems. Hardware and software maintenance, as well as systems integration and consulting services, are delivered through CDC's Technical Services Division (formerly the Engineering Services Division), which consists of two integral organizations-- Computer Maintenance Services and Professional Services.

With profit margins on traditional hardware maintenance squeezed by fierce competition, and with revenue growth in hardware maintenance limited by the increasing reliability of computer equipment, CDC has expanded its customer service offerings in an effort to broaden its revenue base. The 1987 restructuring that broke out professional services from computer maintenance services places CDC in a favorable position to exploit strong growth in the professional services and software support markets. Recent introductions in this area include CDC's Total Operating Performance Package (TOPP), which provides IBM system users with operating system maintenance planning and

installation services on IBM system products MVS, VSE or VM, and major subsystems such as CICS, IMS, and VTAM.

In late-1987, CDC announced an agreement with Comdisco, Inc. (Chicago, IL), an IBM equipment leasing and disaster recovery specialist, that will allow Comdisco to offer CDC IBM maintenance service to customers of selected IBM products. The agreement benefits both parties: Comdisco gains the capability to provide recognizable, nationwide support; and provides CDC access to more potential service customers.

CDC expanded their IBM large system maintenance coverage to include the 3090 series of mainframes. CDC will offer remote diagnostics out of its Minneapolis remote support center, although its system relies on customer-initiated diagnostics, not automatic dial-up (as featured by IBM's own remote diagnostics.) CDC hopes that 10-15% lower service prices will be sufficient inducement to overcome traditional large system reluctance to use TPM service.

CDC also expanded their small system coverage by adding the entire DEC VAX 8XXX line of minicomputers, including the VAX 8250, 8350, 8550, 8700, and 8800 systems. At the same time, CDC announced that they will implement support capability using their own proprietary diagnosis tools that will allow system failure analysis to be performed on-site or from a remote location. In doing so, CDC eliminates the need for VAX customers to purchase DEC's diagnostics.

Service Demographics

Gross profits declined for CDC's maintenance services business due to increased labor and parts replacement costs, increased pricing and discounting competition, and a shift in its revenue mix, with a greater portion of total revenue attributable to lower-margin maintenance services. Efforts to cut costs led to a significant reduction of personnel in 1987. Approximately 470 employees in administration, engineering, technical, support, clerical, sales and marketing staffs were let go. INPUT estimates total customer service revenues remained relatively flat at $400 million, while TPM revenues also stayed flat at $100 million.

CDC employs over 4000 service employees, including over 2600 field engineers (engineers and service locations serve both CDC and TPM customers). CDC operates approximately 110 service centers within the U.S. A World Distribution Center manages the parts inventories worldwide. CDC also has purchase, repair, and stocking arrangements with fourth-party suppliers that repair parts

and assemblies, as well as purchase arrangements with the original manufacturer.

Service Delivery

CDC provides a single, 24-hour, toll-free number for all customers requiring either hardware or software support. CDC's Computer Maintenance Services (CMS) organization uses an Incident Management System to dispatch engineers to customer sites. For difficult problems, CMS maintains a Central Support team that provides technical hardware and software support to customer engineers in the field.

CDC provides 24 hour, 7 day coverage for a wide range of IBM equipment: Series/1, System 303X, System 3X, System 43XX, System 370, System 308X, System 3090, IBM peripherals, and selected non-IBM plug-compatible peripherals and terminals. CDC offers preventive and remedial maintenance; installation, relocation, and deinstallation services; and multivendor installation management services. An 11 hour, Monday through Friday option is also available.

- According to CDC, the equipment is maintained to comply with IBM's specifications for maintenance service. CDC provides the services or covers the charges from the manufacturer to bring the equipment to specified levels. CDC-maintained equipment is certified maintainable by IBM prior to discontinuance of CDC service.

CDC provides 11 hour, Monday through Friday coverage--including parts, labor, and travel-- for its own line of Cyber equipment. For CDC OEM peripheral products and selected third-party systems, CDC offers a 4-hour response time. CDC will install at no charge mandatory Field Change Orders (FCOs) in any equipment under the contract. For CDC-manufactured equipment, CDC will provide the FCO at no additional cost.

CDC offers two programs for resellers. Under the Independent Marketing Representative (IMR) agreement, CDC allows resellers to sell CDC maintenance contracts to end users. CDC invoices the users directly and pays resellers the commission. Under the Master Agreement program, CDC acts as the reseller's sub-contractor. CDC discounts the maintenance price to the reseller, based on volume. The reseller has the option of invoicing the customer separately for maintenance or bundling the costs into its total solution. CDC provides preventive and remedial maintenance, and, under the Master Agreement, installation service.

Professional services are delivered by the Professional Services group within the Technical Services Division. Professional Services delivers a range of products and services, including system integration and connectivity, user need analysis, implementation support, software maintenance, technical systems support, application design and development, training, custom services and standardized products. Professional Services focuses its products and services on scientific and technical users in aerospace, business, utilities, government, higher education, petroleum, and manufacturing.

EXHIBIT II-1

SERVICE AT A GLANCE

CDC TECHNICAL SERVICES DIVISION

Brands supported include:

- IBM, DEC, DG, Cipher, Data Products, Zenith, Novell, Emulex

Service provided:

- Manufacturer warranty work
- Preventive maintenance
- Software maintenance
- Training
- Installation/relocation
- Refurbishment
- File conversion
- Remedial maintenance
- ECO/FCO (change orders)
- Consulting
- Disaster recovery
- Fourth-party maintenance
- Conversion/upgrade

Products maintained:

- Mainframes
- Minicomputers
- Superminis
- Microcomputers
- Peripherals
- Telecommunications
  - LAN

Industries targeted include:

- Manufacturing
- Utilities
- Distribution
- Insurance
- Services
- State/Local gov't
- Transportation
- Medical
- Banking/finance
- Education
- Federal gov't
- Other

COMPANY PROFILE

DATASERV INCORPORATED
12125 Technology Drive
Eden Prairie, MN 55344
(612) 829-6000

Phil Hinderaker, President
Total Employees: 1,034
Total Revenue, Fiscal Year End 12/31/87:
$79 Million

The Company

Dataserv, Incorporated provides third-party maintenance, leasing, equipment sales, and parts sales, predominantly in the IBM market. In 1987, regional Bell operating company BellSouth Corporation purchased Dataserv in a stock transaction valued at $97 million. Dataserv continues to operate independently as a wholly owned subsidiary of BellSouth. The acquisition provided BellSouth with a respected entrance into the service market, while bringing the strong financial backing of a $12 billion telecommunications giant.

Since Dataserv's primary service market is IBM large systems, IBM's Corporate Service Amendment (CSA) discount service policy was expected to cut deep into Dataserv's IBM service business. Dataserv refused to follow the lead of other large TPMs by matching (or "outdoing") IBM's CSA, preferring to compete price-wise (where possible) by negotiating service prices with customers and prospects. Instead, Dataserv hoped to compete by stressing quality and flexibility.

Another IBM service move made in late-1987 that impacted Dataserv was IBM's decision to eliminate after-hour time-and-material service. As a broker, Dataserv, on occasion, would rely on IBM service to perform time-and-material service. Dataserv no longer competes in the IBM product brokering business.

These two moves by IBM have obviously hurt Dataserv, reflected by Dataserv's March layoff of 66 service personnel (5% of its total service staff). The layoffs affected both corporate and field personnel.

Service Demographics

Dataserv offers third-party maintenance out of 150 service locations in the U.S. (located in 35 major metropolitan centers). Dataserv offers depot service out of four carry-in/mail-in service locations, the main depot (located in Minneapolis) doubles as the centralized spares handling center.

Dataserv, Inc. employs 1,034 people, 800 of which are dedicated to service activities. Of this subtotal, Dataserv currently employs 500 field engineers.

INPUT estimates that Dataserv's 1987 revenues were around $79 million. Approximately $10 million of these revenues were derived from spare parts sales.

Service Delivery

Dataserv concentrates its maintenance service activities predominantly on IBM equipment, however Dataserv also offers service on DEC, Memorex, Telex, HP, and NCR equipment, as well as a wide range of microcomputer brands. Dataserv attempts to gear its service offerings to the Fortune 1000-size customer, particularly those in the banking, insurance, and distribution industries. Trying to be a "single-source" service provider, Dataserv services mainframes, minicomputers, microcomputers, peripherals, networking equipment, and specialized products (such as POS terminals, ATMs, etc.) that one would expect to find in banking and retail environments. The addition of network support is a by-product of Dataserv's acquisition by BellSouth and must be seen as a future thrust of the company.

Dataserv attempts to "customize" the skill level of the field engineer to the service requirements of the customer. In other words, Dataserv will dedicate an FE who is trained to support the brands and types of equipment at each user's site. If they don't have a FE with the necessary skill mix, they will recruit one that does.

Although 90% of Dataserv service business is performed on-site, Dataserv recognizes the importance of depot maintenance in the support of easily transportable equipment. Dataserv will ship a replacement component or device overnight if the user's need is immediate.

Dataserv also stresses the importance of its parts business in satisfying the growing system availability of their service customers. Dataserv boasts an IBM parts inventory well in excess of $30 million, and an internally developed on-line inventory management system that allows immediate tracking and shipment of the needed spare part(s), usually within 24-hours of the initial call. Dataserv also sells spare parts to non-service customers and other service organizations at discounted prices.

EXHIBIT II-2

SERVICE AT A GLANCE

DATASERV

Brands supported include:

- IBM, DEC, Memorex, Telex, HP, NCR, Datachecker

Products maintained:

- Mainframes
- Minicomputers
- Superminis
- Microcomputers
- Peripherals

Service provided:

- Manufacturer warranty work
- Preventive maintenance
- Consulting
- Installation/relocation
- Refurbishment
- Equipment sale/lease
- Remedial maintenance
- ECO/FCO (change orders)
- Training
- Fourth-party maintenance
- Conversion/upgrade

Industries targeted include:

- Distribution
- Insurance
- Banking/finance
- Other

COMPANY PROFILE

DECISION DATA, INC.
400 Horsham Road
Horsham, PA 19044
(215) 694-3660

Larry Gerhard, President
Total Employees: 2,000
Total Revenue, Fiscal Year End 12/31/87:
$125 million

The Company

On September 15, 1988, the equipment sale and maintenance (including third-party maintenance) activities of Decision Industries Corporation and Momentum Technologies, Inc. were merged to form Decision Data, Inc. Decision Industries, Inc. was a leading supplier of products and services for the IBM System/36 marketplace. Momentum Technologies, Inc. was formed by the spinoff of Mohawk Data Science's service, financing, and contract manufacturing groups in 1986. Both companies shared ownership by Welsh, Carson, Anderson and Stowe (WCAS), a New York venture capital firm. The combined company will be operated as a wholly owned subsidiary of Onset Corporation, which is jointly owned by WCAS and fellow venture capital firm J.H. Whitney and Company.

According to WCAS, the purpose of the merger was to deter a hostile tender offered in late 1987 (by a bidder who was not identified). At that time, the investors in Momentum began to recognize the "fit" between the two companies, as both sold computer products (primarily in the small systems and related peripherals markets), both had large third-party maintenance organizations, and Momentum added a financing capability that could benefit potential Decision Industries customers.

Currently, the merged company targets the IBM System/36, /38, and AS/400 markets, with sales of peripherals (terminals and printers), add-on memory, and power supplies. In addition, the company provides maintenance services on IBM System/36 and /38, Wang, DEC, Texas Instruments, and other makes of systems and peripherals. In addition, the company provides support on all Decision Data peripherals, Qantel products, and MDS/Momentum products.

In order to improve the company's financial position, it became necessary to reduce corporate overhead and field maintenance operation expenses. At the same time, the company attempted to distance itself from its manufacturing activities (through outside sourcing to OEMs, reducing manufacturing and product

engineering staffs), in effect, transforming itself into primarily a distribution and service company.

Service Demographics

Decision Data employs 2,000 employees, 1,200 of which are dedicated to service activities. Decision Data provides nationwide service out of 125 service locations, dispatching 700 field engineers.

Service revenues for Decision Industries (FYE 12/31/87) were $61.7 million and $63.8 million for Momentum (FYE 6/30/88), resulting in a combined service organization of $125 million (although stated as $123 million in the 6/30/88 pro forma). Gross profits for each company's service operations were $13.5 million and $23.3 million, respectively.

The company projects a healthy maintenance revenue growth over the next five years. Decision Data reports that they expect service revenues will grow by 12.5% over the next year, and 9.2% per year over the next four years.

Service Delivery

Decision Data will provide a wide range of services on the products listed above, including hardware maintenance, training, consulting, installation/relocation, conversion/upgrade, refurbishment, and fourth-party maintenance.

Decision Data attempts to be flexible with their service contracts. IBM system service customers receive 24-hour, 7-day per week contract coverage (to compete with IBM's contract coverage). The rest of their customers receive the standard prime shift coverage (9-hours, 5-days per week). While Decision Data does not guarantee response times, they report that they average between two to four hour response for most customers.

Decision Data also performs service for non-customers, charging time-and material rates of $110 per hour (portal to portal) for prime shift service and $127 per hour for service performed after hours, Saturdays, Sundays, and holidays. In all cases, Decision Data charges a two hour minimum for time and materials service calls.

EXHIBIT II-3

SERVICE AT A GLANCE

DECISION DATA, INC.

Brands supported include:

- IBM, DDCC, Wang, Texas Instruments, Qantel, MDS

Products maintained:

- Minicomputers
- Superminis
- Microcomputers
- Peripherals
- Telecommunications
  - PBX
  - Modems
  - Multiplexers

Service provided:

- Manufacturer warranty work
- Preventive maintenance
- Consulting
- Installation/relocation
- Refurbishment
- Equipment sale/lease
- Remedial maintenance
- ECO/FCO (change orders)
- Training
- Fourth-party maintenance
- Conversion/upgrade

Industries targeted include:

- Manufacturing
- Utilities
- Distribution
- Insurance
- Services
- State/local gov't
- Transportation
- Medical
- Banking/finance
- Education
- Federal gov't

COMPANY PROFILE

GENERAL ELECTRIC COMPUTER SERVICES
5775 Peachtree Dunwoody
Atlanta, GA 30348
(404) 843-6200

A.W. Crites, General Manager
Total Employees: 1,800
Total Revenue, Fiscal Year End 12/31/87:
$198 million

The Company

General Electric Computer Services operates as a separate business unit under GE's Communications & Services Organization (CSO). Parent company General Electric Company is a $40.5 billion leader (FYE 12/31/87) in its technology, services, and core manufacturing businesses.

After much industry talk involving GECS as an acquisition candidate, GE has engaged the services of Kidder, Peabody & Company, a New York-based investment banking firm, to actively broker the computer maintenance activities. This follows earlier actions by GE to sell off other parts of its Information Services business, including Calma (sold to Prime Computer in October 1988) and its Digital Video Interactive Technology Venture facility (to Intel).

Service Demographics

GECS currently employs 1,800 service employees, with 1,200 field engineers dispatched out of 283 service locations spread throughout the continental U.S. In addition, GECS offers mail-in and carry-in service out of 28 depot locations. All service locations carry spares, however the majority of all spare parts are centralized at the Norcross (a suburb of Atlanta) dispatching/parts center. In mid-1987, GECS installed a $5 million information management network (based upon Prime Computer systems) that uses both data and voice communications to allow customers to contact GECS dispatchers, as well as provide on-line customer information, dispatching capabilities, and spares tracking capabilities.

In addition to the 28 carry-in/mail-in depot locations discussed above, GECS offers specialized electronic equipment calibration and repair service (through its Electronics Services business unit) from 22 additional repair depots.

GECS does not release financial information, however INPUT estimates that GECS contributed $198 million in third-party maintenance revenues in 1988.

Service Delivery

GECS offers maintenance and support services for a wide range of equipment types and brands, geared to the user of mixed-vendor systems. In addition to more traditional maintenance services (such as hardware maintenance, installation and relocation service, conversion), GECS provides short- and long-term computer leasing services, and repair and recalibration services (out of their Electronics Services business).

GECS concentrates on the small systems, microcomputer, peripherals, and telecommunications products markets, servicing 100,000 products from 2,500 manufacturers. The fact that GECS concentrates on the lower end of the equipment market is reflected in the relatively large percentage of non-contract (40% of their business) service business.

GECS attempts to be flexible in the pricing and terms-and-conditions of its service. For example, while GECS' standard service contracts do not guarantee response times, GECS will negotiate such guarantees with customers with high system availability requirements. GECS is comfortable with this, citing response times averages of two hours.

GECS offers a service partnership program geared to VARs of DEC and Point-4 systems. Called GE-SERVE, the program offers VARs two ways to be able to provide GECS' nationwide service to their customers. The first, called a Second Party Agreement, calls for the VAR to be responsible for managing the service contract, including billing. Under this option, the service is subcontracted to GECS at a discount from GECS' standard list price. The second option, called Sales Representative Agreement, calls for the VAR to sell the service contract, and by doing so, receive a commission from GE. In addition, the VAR receives a commission for each annual service contract renewal.

EXHIBIT II-4

SERVICE AT A GLANCE

GE COMPUTER SERVICES

Brands supported include:

- DEC, DG, IBM, Point-4, ADDS, Altos, AT&T, Amdek, Centronics, C.Itoh, Compaq, CDC, Data Products, Diablo, Emulex, Epson, Fujitsu, Genicom, Hayes, Hazeltine, HP, Honeywell, Kennedy, Lear Siegler, 3M, NEC, Okidata, Plessey, Qume, Tandon, Toshiba, Wyse

Products maintained:

- Minicomputers
- Superminis
- Microcomputers
- Peripherals
- Telecommunications
  - LAN
  - PBX
  - Modems
  - FAX
  - Satellite earth stations

Service provided:

- Manufacturer warranty work
- Preventive maintenance
- Training
- Refurbishment
- Equipment sale/lease
- Remedial maintenance
- ECO/FCO (change orders)
- Installation/relocation
- Conversion/upgrade

Industries targeted include:

- Manufacturing
- Utilities
- Distribution
- Insurance
- Services
- State/local gov't
- Transportation
- Medical
- Banking/finance
- Education
- Federal gov't

COMPANY PROFILE

GRUMMAN SYSTEMS SUPPORT CORPORATION
90 Crossways Park Drive
Woodbury, NY 11797
(914) 682-5304

Joseph Mulderig, President
Total Employees: 500
Total Revenue, Fiscal Year End 12/31/87:
$40 Million

The Company

Grumman Systems Support Corporation (GSSC), a subsidiary of Grumman Data Systems, has been providing third-party maintenance since 1970. Initially, GSSC provided support for the complex systems that its parent company sold. The parent organization specializes in providing products and services to the federal government, hence, it is not surprising that GSSC also specializes on the federal government.

In 1988, GSSC added a Dealer Plus program aimed at VARs, parts distributors, software distributors, system integrators, and other equipment resellers. Under the program, GSSC will offer commissions to dealers who sign customers to service contracts, and GSSC than performs the support. Thus, dealers are able to make money by selling service without having to set up and manage an extensive service network.

In the third quarter of 1988, GSSC announced a joint marketing agreement with Sysgen Recovery Services, Inc. (Ronkonkoma, NY) that adds disaster recovery services to the range of support services that GSSC can offer to the Data General computer market. Disaster recovery service has become an increasingly important service to computer users since a company's corporate officers can now be held legally responsible for the irretrievable loss of data caused by a disaster.

GSSC also added a novel service offering targeted to DEC MicroVAX users, called MicroVAX Protection Plan. Under this program, MicroVAX users sign up for a three-year contract (at full DEC service price), and receive substantial discounts (up to 70% off the DEC service price) depending upon the amount of service actually required.

GSSC installed a consolidated dispatch and inventory management system in 1988. The integrated system replaces two separated information systems that were located at their

headquarter location. The new system is connected to GSSC service locations via leased lines and terminals.

Service Demographics

GSSC offers service nationwide out of 52 service locations. Currently, GSSC employs 500 service personnel, 350 of which are field engineers. GSSC offers depot support out of four repair depot locations (accounting for 10% of GSSC's service revenue). Spare parts are handled at three regional spare parts centers, and tracked by a new integrated and centralized inventory management system that can perform economic order and minimum-maximum level analyses, assuring optimum levels of sparing. The new system also handles dispatching, and will soon be used to provide such service efficiency reporting functions as MTBF and MTTRepair analyses.

Although GSSC declines to release TPM service revenue for 1987, INPUT estimates that GSSC TPM service revenue was $40 million, representing a 20% growth over 1986.

Service Delivery

GSSC offers a wide range of support services on over 300 different manufacturer's products, including CDC, IBM, ADDS, Anderson Jacobson, CIE, Epson, Fujitsu, NEC, ROLM, and STC. Primary product markets are DEC and Data General.

GSSC also supports a wide range of data processing equipment, including mainframes, minicomputers, microcomputers, peripherals, and telecommunications equipment (LANS, PBXs, MUXs, front-end processors, and modems).

Service provided include remedial maintenance, installation/relocation, fourth-party maintenance, ECO/FCOs, conversion/upgrade, preventive maintenance, consulting, training, disaster recovery, and software support.

GSSC offers on-site service contracts with 4-hour response provisions and 2-hour response provisions for critical applications. Ninety percent of GSSC customers sign up for maintenance contracts, the remaining pay the current time-and-material charge of $95 per hour.

EXHIBIT II-5

SERVICE AT A GLANCE

GRUMMAN SYSTEMS SUPPORT CORPORATION

Brands supported include:

- IBM, DEC, DG, CDC, Data Products, Kennedy, Concurrent, Televideo, Cordata, STC, Fujitsu, Diablo, Epson, NEC, Okidata, Texas Instruments, ADDS, CIE, Anderson Jacobson, Mitel, Rolm, Hayes

Products maintained:

- Mainframes
- Minicomputers
- Superminis
- Microcomputers
- Peripherals
  Telecommunications
  - LAN
  - PBX
  - Modems
  - FAX
  - Multiplexers
  - Front-end processors

Service provided:

- Manufacturer warranty work
- Preventive maintenance
- Software maintenance
- Training
- Installation/relocation
- Refurbishment
- Equipment sale/lease
- Remedial maintenance
- ECO/FCO (change orders)
- Consulting
- Disaster recovery
- Fourth-party maintenance
- Conversion/upgrade

Industries targeted include:

- Manufacturing
- Medical
- Banking/finance
- Education
- Federal gov't
- Utilities
- Distribution
- Insurance
- Services
- State/local gov't

COMPANY PROFILE

IDEA SERVCOM
1515 West 14th Street
Tempe, AZ 85281
(602) 894-7000

Steve Scott, General Manager
Total Employees: 700
Total Revenue, Fiscal Year End 12/31/87:
$79 Million

The Company

Alcatel Information Systems, consisting of Courier, XTRA Business Systems, and Servcom, was purchased by IDEAssociate, Inc. (Billerica, MA), a six-year old manufacturer of PC-related products and services on November 14, 1988 for an undisclosed amount. The new company was called IDEA Courier, Incorporated, and the third-party maintenance organization was renamed IDEA Servcom, a Division of IDEA Courier.

On November 20, 1988, IDEA Servcom announced a layoff of 300 people. The reduction touched all areas of the company, up to and including the divisional vice-presidential levels. Reasons for the personnel adjustment were not made public, however, the earlier acquisition and consolidation of certain aspects of IDEA Courier and IDEA Servcom responsibilities certainly can account for some of the reduction.

In May 1988, IDEA Servcom added fourth-party maintenance (FPM) to their list of services offered. With $3.5 million in test equipment already in place, the move into FPM was a natural direction for the company in light of the attractive growth prospects of the market. The company was able to sign up two large contracts almost immediately, and plans to push the service to a greater extent in the second quarter of 1989.

In late-1988, IDEA Servcom announced a new support offering that targeted IBM System/38 and 4300 users. Called, ServiceFIRST, the new plan provides new customers a 90-day "risk-free" introduction to IDEA Servcom support. Customers are billed in arears for the first 90-days of a one-year contract. At the end of the first 90-days, the customer can cancel the contract, for any reason, and not be required to pay.

Service Demographics

IDEA Servcom currently employs 700 people in service capacities. Their support organization can be further broken down as follows: 420 field engineers, 120 field support specialists, and the remaining 160 people split between management and administrative positions.

Service is offered out of 140 service locations spread throughout the U.S. and Canada. Seventeen of these are Mail-in/Carry-in (MICI) locations, and 24 also serve as major spare parts inventory. The company also maintains a centralized spares holding facility in Tempe.

IDEA Servcom reported TPM service revenues of $79 million for 1987 (up from $72 million in 1986). IDEA Servcom expects 1988 revenues will grow to $82 million.

Service Delivery

IDEA Servcom supports over 500 manufacturer's product, ranging from mainframe systems, through peripherals and microcomputers, and including the following telecommunications products: LANs, modems, multiplexors, and front-end processors.

For these products, IDEA Servcom will provide an extensive list of services, including software support, training, consulting, and as of May of 1988, fourth-party maintenance.

Ninety-five percent of IDEA Servcom's service is now performed on-site, up from 87% in 1987. This growth in on-site support was expected (and predicted in last year's service vendor profile), since IDEA Servcom began concentrating more on larger system service. While IDEA Servcom does not expect any future reduction in depot support offerings, the company does expect to continue focusing on on-site support, since most of its users place greatest priority on this mode of service delivery. Incidentally, IDEA Servcom tracks both on-site support delivery and depot maintenance through its centralized service management, COMSAC (COMmunications Support Activity Center) that provides call handling, dispatching, call status, and (for depot service customers) depot delivery instructions.

Ninety percent of IDEA Servcom's service revenue was derived from service contracts, with 5% coming from time-and-materials service (with T&M rates ranging from $115 per hour to $207 depending on shift and product). A growing part of IDEA Servcom's service business comes from support agreements signed with OEMs. IDEA Servcom reports that 5% of their service revenue now comes from warranty service performed under these agreements.

IDEA Servcom offers two support offerings designed to address price-sensitive customers service needs. The first plan, Deferred Maintenance, is comprised of two different options. The first option, Scheduled Deferred Maintenance, establishes a specified interval of maintenance visits, at which time the FE performs any necessary remedial maintenance at the equipment's location. The second option,"X" Units Down, specifies a minimum number of units "down" , at which time a FE will be dispatched to perform on-site support.

The second maintenance plan, Centralized Deferred Maintenance, is similar to Scheduled Deferred Maintenance, except that the customer is required to bring failed equipment to a centralized location for scheduled support.

EXHIBIT II-6

SERVICE AT A GLANCE

IDEA SERVCOM

Brands supported include:

- Amdek, AMS, Anadex, AST, Brother, CDC, C. Itoh, CMI, Corvus, Data South, Datapoint, Davong, Decision Data, Diablo, Epson, Hayes, HP, IBM, ITT, Okidata, Texas Instruments, Wang, Zenith, STC, Apple, Centronics, DEC, Compaq, Printronix, Televideo

Products maintained:

- Mainframes
- Minicomputers
- Superminis
- Microcomputers
- Peripherals
  Telecommunications
  - LAN
  - Modems
  - Multiplexers
  - Front-end processors

Service provided:

- Manufacturer warranty work
- Preventive maintenance
- Software maintenance
- Training
- Fourth-party maintenance
- Conversion/upgrade
- Remedial maintenance
- ECO/FCO (change orders)
- Consulting
- Installation/relocation
- Refurbishment

Industries targeted include:

- Manufacturing
- Banking/finance
- Education
- State/local gov't
- Utilities
- Insurance
- Federal gov't

COMPANY PROFILE

INTELOGIC TRACE, INC.
8415 Datapoint Drive
San Antonio, TX 78224
(512) 699-5700

Clark Mandigo, President and CEO
Total Employees: 1,525
Total TPM Revenue, Fiscal Year End
7/31/88: $135 Million

The Company

Intelogic Trace (IT) was formed as a spinoff from Datapoint Corporation in June of 1985. After much optimism regarding revenue growth, including unconsumated efforts to merge with the service arms of Mohawk Data Sciences (later spun off as Momentum Service and recently merged with Decision Industries TPM business) and Telex Corporation (later purchased by Memorex), IT has been faced with declining revenues since its entrance in the third-party maintenance industry, largely due to declining revenues from captive Datapoint products and slower than expected expansion into new product markets.

IT attempted to expand its presence in the small systems TPM service market by announcing guaranteed response times for users of IBM System 34 and 36 equipment. Users within 25 miles of an IT service center located in 22 major metropolitan areas are guaranteed 4-hour response, and users between 26 and 50 miles are guaranteed 6-hour response. If IT fails to meet the response time, the user receives credit equal to the monthly maintenance charge.

At the same time, IT announced that they would match IBM's "around-the-clock" standard contractual coverage by expanding service coverage for System 34 and 36 users from 5-day, 11-hours to 7-days, 24-hours.

Texcom, a computer leasing company acquired by IT in 1987, acquired the assets of Southwest Computer Sales, Inc. (San Antonio, TX), a lessor and VAR of IBM mid-range systems. Terms of the acquisition were not made public, except that Southwest Computer sales employs 25 people and has 1,200 customers nationwide.

Service Demographics

IT currently employs 1,525 total employees, including 641 field engineers and 351 field support personnel. Service is offered out of 229 service locations, 17 of which are repair depots and 44 double as major spare parts inventory locations.

For fiscal year ending July 31, 1988, IT reported total service revenues of $135 million, representing another significant decline in service revenues. This continued decline in revenues can be attributed to greater than anticipated defection of Datapoint product customers (who still make up the vast majority of IT service customers), as well as increased price competition from other service vendors. On a positive note, IT continues to benefit from cost-cutting measures first implemented in 1987, and accordingly reports improved profitability.

Service Delivery

IT provides service on an extensive list of microcomputers and peripheral devices, from such diverse manufacturers as Apple, AT&T, CDC, Compaq, Fujitsu, IBM, Kennedy, Memorex, NEC, Panasonic, Qume, Seagate, Shugart, Tandy, Televideo, Unisys, and Zenith, to name just a few. In addition, IT supports telecommunications products from 3-Com, Compaq Telecommunications, Pactel, Teknekron, Vitalink Communications, and Voice Computer Technologies. As stated previously, IT has most recently emphasized its support capabilities for IBM System 34 and 36 minicomputers, and hopes to expand into the IBM System 38, IBM AS/400 and DEC minicomputer lines.

Eighty-six percent of all IT's service revenue is derived from on-site service activities, and only 1% results from depot service. IT has been successful at growing the equipment sales/leasing aspect of their business, which now accounts for 13% of their total revenues.

EXHIBIT II-7

SERVICE AT A GLANCE

INTELOGIC TRACE

Brands supported include:

- Apple, AST, AT&T, Compaq, Convergent, Datapoint, Epson, IBM, NCR, NEC, Tandy, Toshiba,Televideo, Unisys, Wyse, Zenith, Amdek, Ampex, AST, DEC, Espirit, Memorex, Mitsubishi, Qume, Archive, CDC, Diablo, Fujitsu, Kennedy, Maxtor, Mountain, Seagate, Tandon

Products maintained:

- Minicomputers
- Superminis
- Microcomputers
- Peripherals
- Telecommunications
  - LAN
  - PBX
  - Modems
  - FAX
  - Multiplexers
  - Satellite earth stations
  - Front-end processors

Service provided:

- Manufacturer warranty work
- Preventive maintenance
- Consulting
- Disaster recovery
- Fourth-party maintenance
- Conversion/upgrade
- Remedial maintenance
- ECO/FCO (change orders)
- Training
- Installation/relocation
- Refurbishment
- Equipment sale/lease

Industries targeted include:

- Manufacturing
- Utilities
- Distribution
- Insurance
- Services
- State/local gov't
- Transportation
- Medical
- Banking/finance
- Education
- Federal gov't

COMPANY PROFILE

SORBUS
50 East Swedesford Road
Frazer, PA 19355
(215) 296-6000

Timothy M. Connolly, President
Subsidiary, Bell Atlantic Corporation
Total Employees: 2,300
Total Revenue, Fiscal Year End 12/31/87:
$202 Million (INPUT estimate)

The Company

Sorbus began as the independent service arm of Management Assistance, Inc. (MAI) in 1971. In January of 1985, MAI sold Sorbus to Bell Atlantic for $175 million. In January of 1988, Bell Atlantic closed a deal with MAI, selling back the MAI equipment service (which accounted for 25% of Sorbus' business) to MAI. The buyback represented nearly 10,000 accounts, 600 to 650 service employees, and a 12,000 square foot repair and refurbishment facility in Tustin, CA. The cash deal, which also included a stock buyback of the Canadian MAI subsidiary, amounted to $148 million.

The MAI deal enabled Bell Atlantic to continue acquiring third-party maintenance companies in 1988. The most intriguing acquisition made was DynService Network, a leading player in the fourth-party maintenance industry. The acquisition, attributed to Bell Atlantic's subsidiary Electronic Service Specialists (ESS), strengthened Sorbus' depot repair capabilities by adding 175 skilled technicians as well as all of DynService's assets.

On November 1, 1988, Sorbus announced a 4-5% layoff, eliminating approximately 100 field engineer and management positions. The layoff was attributed to a desire to maintain a competitive posture in the TPM industry.

Service Demographics

Sorbus employs 2,300 total service employees, 1,000 of which are field engineers. Sorbus offers nationwide service out of 200 service locations, including 18 repair depots and 2 regional spare parts depots.

Sorbus tracks spare parts through its internally developed Inventory Management Systems, an on-line data base that controls over 230,000 different spare part numbers, comprising over 6 million parts. Dispatching is handled by their Dispatch Data Gathering system, which locates field engineers, prioritizes calls,

provides 90-day customer records, and links to IMS to help locate needed parts.

Sorbus reports that they provide service to over 45,000 users worldwide, covering more than 400,000 pieces of data processing equipment.

Service Delivery

Sorbus provides on-site remedial and preventive maintenance, system configuration, product modification and refurbishment, and subassembly repair and refurbishment to over 3,000 different hardware products, ranging from mainframes (such as IBM 308X), minicomputers (such as IBM System 3X, DEC PDP and VAX lines), microcomputers (from a wide range of vendors), peripherals (also an extensive list), telecommunications equipment (including PBXs and modems) and point-of-sale equipment.

Sorbus can also offer remote diagnostics on IBM 4300 and 308X computer lines, connecting the equipment to their National Support Center.

In targeting the DEC line of minicomputers, Sorbus offers guaranteed 4-hour response times (although Sorbus reports that they average 2-hour response), and 5-day by 11-hour basic service coverage (with flexible service coverage available).

Sorbus can provide subassembly depot support through its Repair and Refurbishment program. These services, provided in either a sealed media repair or a class 100 clean room, are directed to manufacturers, distributors, brokers, and other TPMs (by acting as a fourth-party maintenance firm). Sorbus currently offers these services for Ampex, Disctron, Rodime, Seagate, Tandon, and IBM disk drives.

Sorbus also offers subassembly and board level repair and refurbishment for DEC products through its sister company Electronics Service Specialists (ESS), which provides 5-day turnaround for repairs or module upgrades, in addition to one year warranties on all parts repaired or sold. ESS maintains an inventory of over 100,000 parts.

Sorbus can also provide product leasing capabilities, as well as two other Bell Atlantic Capital Corporation subsidiaries: Bell Atlantic Systems Leasing International and Bell Atlantic TriCon Leasing.

EXHIBIT II-8

SERVICE AT A GLANCE

SORBUS

Brands supported include:

- IBM, AT&T, CDC, Citizen, C. Itoh, Compaq, Datasouth, DEC, Diablo, Epson, Hayes, Hazeltine, Iomega, Kaypro, Mountain, NEX, Northstar, Okidata, Princeton, Quadram, Rodime, Seagate, Tallgrass, Televideo, Texas Instruments, Toshiba, Visual

Products maintained:

- Mainframes
- Minicomputers
- Superminis
- Microcomputers
- Peripherals
  Telecommunications
  - PBX
  - Modems

Service provided:

- Manufacturer warranty work
- Preventive maintenance
- Consulting
- Fourth-party maintenance
- Conversion/upgrade
- Remedial maintenance
- ECO/FCO (change orders)
- Installation/relocation
- Refurbishment

Industries targeted include:

- Manufacturing
- Utilities
- Distribution
- Insurance
- Services
- State/local gov't
- Transportation
- Medical
- Banking/finance
- Education
- Federal gov't
- Other

COMPANY PROFILE

TRW CUSTOMER SERVICE DIVISION
15 Law Drive
Fairfield, NJ 07007
(201) 575-7110

Paul Snyder, VP and GM, CSD
Total Service Employees: 2,100
TPM Revenue, Fiscal Year End 12/31/87:
$255 Million (INPUT Estimate)

The Company

TRW Customer Service Division (a division of $6.2 billion multinational, diversified company whose products and services range from satellites, Information Systems, and automobile electronics) is the leading provider of independent maintenance service and support.

TRW entered the third-party maintenance industry twelve years ago with the acquisition of the Singer computer service business, and supplemented that nationwide service base with an exclusive service arrangement with Fujitsu for their ATM equipment. This arrangement illustrated a successful strategy of signing exclusive and non-exclusive service contracts with manufacturers. These contracts, called Service Management contracts, provides TRW CSD access to spare parts, documentation, training, and other technical support (and, of course, service business) from the manufacturer, while providing the manufacturer a nationwide support organization.

TRW has spent the last year consolidating their position in the TPM industry. Primary attention was placed on centralizing its dispatching and logistics functions with the purchase and implementation of the FIELDWATCH service management software system (the DATA Group, Burlington, MA).

TRW also continued to expand their strength in two key markets: the fourth-party maintenance market and the medical equipment service market. TRW offers a wide range of assembly and board level repair and refurbishment services through its Electronics Services Division, including 24-hour run-in and burn-in services and access to its 1,600 square foot class 100 clean room repair facility.

In the first quarter of 1988, TRW acquired the TPM service business of 3M (St. Paul, MN), the four year old service organization that concentrated on microcomputer and related support.

Service Demographics

Although TRW Inc. does not release revenue information about subsidiaries or divisions, INPUT estimates that TRW CSD contributed around $155 million in TPM service revenues (including fourth-party service). This estimate projects that TRW CSD service revenue growth was relatively flat, after 3M service revenues are removed.

TRW reports that they employ 2,100 total service employees, including 1,300 field engineers and 500 technical support specialists (the balance are management and administrative personnel). Service is provided out of 125 service locations, 50 of which are carry-in/mail-in depot locations, all of which double as spare parts locations. TRW also utilizes these depot locations as customer drop off centers for its Depot Direct subassembly repair service.

TRW CSD maintains a massive supply of spare parts in excess of ten million parts carrying over 130,000 unique part numbers. All told, TRW CSD reports that their spare parts inventory costs over $90 million.

Service Delivery

TRW CSD offers a wide range of hardware maintenance services to users of an extensive list of data processing and telecommunications equipment. Product categories covered include mainframes, super- and traditional minicomputers, microcomputers, peripherals, LANs, modems, FAX equipment, and modems. TRW CSD currently services over 53 different brands of equipment, including IBM, DEC, CDC, Altos, AT&T, Compaq, Zenith, and many others.

As previously stated, TRW CSD recently replaced their regional approach to inventory and dispatching with a centralized FIELDWATCH service management system. In 1988, 80% of all TRW CSD service was performed on-site, and another 10% was performed in their network of depot service locations. TRW CSD has developed remote support capabilities for selected systems (including DEC VAX), and 5% of all TRW CSD service is performed via remote technology.

On the heels of IBM's Corporate Service Amendment, TRW CSD offered a competitive service discount policy called Service Plus. Although the discount structured fundamentally mirrored that of CSA, Service Plus took a slightly different tack at addressing lower service prices. Service Plus did not require increased user involvement in the service process (by requiring a "help desk"), rather users under Service Plus received a "concierge" who helped trouble shoot and coordinate support.

EXHIBIT II-9

SERVICE AT A GLANCE

TRW CUSTOMER SERVICE DIVISION

Brands supported include:

- 3-Com, Altos, Ampex, Anadex, AT&T, Bell & Howell, Compaq, CDC, Data Products, Diablo, DEC, Dilog, Emulex, Epson, Esprit, Fujitsu, Hayes, IBM, Iomega, Kennedy, Link, Mitac, Mitsuba, MItsubishi, Okidata, Plus Development, Quantum, Rodime, STC, Telex, Wyse

Products maintained:

- Mainframes
- Minicomputers
- Superminis
- Microcomputers
- Peripherals
  Telecommunications
  - LAN
  - Modems
  - FAX

Service provided:

- Manufacturer warranty work
- Preventive maintenance
- Consulting
- Installation/relocation
- Refurbishment
- Equipment sale/lease
- Remedial maintenance
- ECO/FCO (change orders)
- Training
- Fourth-party maintenance
- Conversion/upgrade

Industries targeted include:

- Manufacturing
- Medical
- Banking/finance
- Services
- State/local gov't
- Transportation
- Distribution
- Insurance
- Federal gov't

COMPANY PROFILE

UNISYS CORPORATION
P.O. Box 418
Detroit, MI 48232
(303) 972-7000

W. Michael Blumenthal, Chairman
Vincent M. Donovan, President, Customer Services Operations
Total Employees: 92,500
Total Revenue, Fiscal Year End 12/31/87: $9.7 billion
Service Revenue $3.3 billion
TPM Revenue: $45 million

The Company

Unisys Corporation was formed in September 1986, when Burroughs acquired Sperry for $4.8 billion. The resulting company (the name resulted from an in-house name contest) became one of the largest manufacturers of data processing equipment, behind only IBM ($51 billion in 1987) and Digital Equipment Corporation ($10.4 billion) in data processing revenues, with $8.7 billion.

Unisys' third-party maintenance presence came over with the Sperry service organization. Sperry entered the third-party maintenance market in February 1985 with the announcement of its "CUSTOMCARE" service offering (now marketed by Unisys under the same name).

In mid-1988, Unisys announced a cooperative marketing agreement with Advanced Information Management (Woodbridge, VA) that expanded CUSTOMCARE services into the area of disaster recovery. The agreement now provides Unisys with the capabilities to provide educational and consulting services in the area of contingency management (disaster recovery planning and information security planning).

Service Demographics

Total worldwide service and rental revenues accounted for $3.3 billion in 1987, up 44% from 1986's total of $2.3 billion. The U.S. total from service, just over $1.1 billion represented only a 1% growth over 1986. This reflects the increased pressures in remaining competitive in the U.S. service market. INPUT estimates that third-party maintenance accounted for $45 million of Unisys service revenue in 1987.

Unisys employs 15,000 service employees worldwide, 7,687 of which are located in 240 U.S. service locations. In addition, Unisys offers carry-in and mail-in service out of 100 U.S. repair

centers. Unisys engineers are shared between Unisys service and TPM activities

Spare parts are handled at their Worldwide Distribution Center, located in Chicago. Unisys has a highly sophisticated parts handling and inventory system that monitors more than 145,000 separate part numbers to assure their accessibility. In addition, Unisys maintains a separate International Distribution Center in Sassenheim, Netherlands.

Service Delivery

Unisys offers a wide range of services under contract coverage, including hardware maintenance, software support, operational training, installation/relocation, conversions/upgrades, and professional services. The normal service contract calls for 9-hour by 5-day per week service coverage. Unisys does not guarantee response times, but reports a response time objective of 2 hours (for large systems) and 4 hours (for anything else). Unisys also allows customers to customize their service contracts to include around-the-clock coverage, after hours preventive maintenance, resident engineer service, guaranteed FE availability, and scheduled maintenance.

Unisys customers can call a toll-free, 24-hour Customer Support center to request hardware maintenance. Unisys also offers software support through these centers, usually in the form of telephone support.

In addition, Unisys offers a wide range of professional services, including system planning, performance optimization services, and a series of consulting services that Unisys calls Professional Project Practices (PPP).

Unisys offers nearly 900 different training course, ranging from system operation to executive courses on business communications. Customers can choose to take training at Regional Education Centers, local training facilities, or at the customer's site. Most courses blend workbook, video, and computer-based formats in order to reduce training costs as well as improve training productivity.

EXHIBIT II-10

SERVICE AT A GLANCE

UNISYS

Brands supported include:

- IBM, DEC, AST, AT&T, Centronics, CIE, Cypher, Clearpoint, Codex, Compaq, CDC, Decision Data, Data Products, Emulex, Epson, Fujitsu, HP, Kennedy, Lear Siegler, NEC, Okidata, Panasonic, Pertec, Qume, STC, Systems Industries, Texas Instruments, Zenith

Products maintained:

- Mainframes
- Minicomputers
- Superminis
- Microcomputers
- Peripherals

Service provided:

- Manufacturer warranty work
- Preventive maintenance
- Software maintenance
- Training
- Refurbishment
- Remedial maintenance
- ECO/FCO (change orders)
- Consulting
- Installation/relocation
- Conversion/upgrade

Industries targeted include:

- Manufacturing
- Utilities
- Distribution
- Insurance
- Services
- State/local gov't
- Transportation
- Medical
- Banking/finance
- Education
- Federal gov't
- Other

Third-Party Maintenance Service Vendor Comparative Tables

III

Third-Party Maintenance Service Vendor Comparative Tables

EXHIBIT III-1

TPM REVENUE AND EMPLOYEE SIZE

Company	1987 TPM Revenues ($ Millions)	Number of Service Employees	Number of FE's	Number of Field Support
CDC	100	4,500 †	2,800 †	*
Dataserv	67 79	1,034	600	*
Decision Data	125	1,200	700	*
GE	198	1,800	1,200	235
Grumman	40	500	350	*
Idea Servcom	79	700	420	120
Intelogic Trace	135	1,525	641	351
Sorbus	202	2,300	1,000	*
TRW	255	2,100	1,300	500
Unisys	45	7,687*	*	*

* Company did not respond

† Shared between TPM and manufacturer business

EXHIBIT III-2

TPM GEOGRAPHIC COVERAGE

Company	Nationwide Coverage	Number of Service Locations	Number of Repair Depots	Number of Major Parts Centers
CDC	X	50	2	1
Dataserv	X†	150	4	1
Decison Data	X	125	*	*
GE	X	283	28	283
Grumman	X†	52	4	3
Idea Servcom	X	140	17	24
Intelogic Trace	X	229	17	44
Sorbus	X	200	18	2
TRW	X	125	50	50
Unisys	X	240	100	1

* Company did not respond

† Excludes Alaska and Hawaii

EXHIBIT III-3

TPM PRODUCT SERVICE COVERAGE

Company	Products Serviced					
	Main-Frames	Minis	Super-minis	Micros	Periph-erals	Telecom
CDC	X	X	X	X	X	X
Dataserv	X	X	X	X	X	X
Decision Data		X	X	X	X	X
GE		X	X	X	X	X
Grumman	X	X	X	X	X	X
Idea Servcom	X	X	X	X	X	X
Intelogic Trace		X	X	X	X	X
Sorbus	X	X	X	X	X	X
TRW	X	X	X	X	X	X
Unisys	X	X	X	X	X	X

EXHIBIT III-4

TPM TELECOM PRODUCT SERVICE COVERAGE

Company	Telecom Products Serviced						
	LAN	PBX	Modem	FAX	MUX	Earth Station Satellites	Front-End Processor
CDC	X						
Dataserv							
Decision Data		X	X		X		
GE	X	X	X	X		X	
Grumman	X	X	X	X	X		X
Idea Servcom	X		X		X		X
Intelogic Trace	X	X	X	X	X	X	X
Sorbus		X	X				
TRW	X		X	X			
Unisys							

EXHIBIT III-5

TPM SERVICES OFFERED

Company	Services Offered						
	Mfr Warranty	Remedial Maint.	Preventitive Maint.	ECO/ FCOS	Software Support	Consulting	Training
CDC	X	X	X	X	X	X	X
Dataserv	X	X	X	X		X	X
Decision Data	X	X	X	X		X	X
GE	X	X	X	X			X
Grumman	X	X	X	X	X	X	X
Idea Servcom	X	X	X	X	X	X	X
Intelogic Trace	X	X	X	X		X	X
Sorbus	X	X	X	X		X	
TRW	X	X	X	X		X	X
Unisys	X	X	X	X	X	X	X

EXHIBIT III-6

TPM SERVICES OFFERED (Continued)

Company	Services Offered						
	Disaster Recovery	Install/ Relocate	4th-Party Maint.	Refurb.	Convert/ Upgrade	Equip. Sales/ Lease	File Conver-sion
CDC	X	X	X	X	X		X
Dataserv		X	X	X	X	X	
Decision Data		X	X	X	X	X	
GE		X		X	X		
Grumman	X	X	X	X	X	X	
Idea Servcom		X	X	X	X		
Intelogic Trace	X	X	X	X	X	X	
Sorbus		X	X	X	X		
TRW		X	X	X	X	X	
Unisys		X		X	X		

EXHIBIT III-7

TPM CONTRACT USAGE

Company	Service Derived From: (Percent)			Current T & M Rate (Prime Shift) ($)
	Contract	Flat Fee	T & M	
CDC	90	0	10	*
Dataserv	100	0	0	200
Decision Data	*	*	*	110
GE	60	20	20	*
Grumman	90	0	10	95
Idea Servcom †	90	1	4	115-180
Intelogic Trace	93	0	7	80-90
Sorbus	*	*	*	*
TRW	75	15	10	*
Unisys	90	0	10	145-175

* Company did not respond

† Plus 5% from warranty work

EXHIBIT III-8

TPM SERVICE BY DELIVERY MODE

Company	Service Performed (Percent)			
	On-Site	Depot	Remote Diagnostics	Other
CDC	*	*	*	*
Dataserv	90	5	5	0
Decision Data	*	*	*	*
GE	80	20	0	0
Grumman	90	10	0	0
Idea Servcom	95	5	0	0
Intelogic Trace	86	1	0	13†
Sorbus	*	*	*	*
TRW	80	10	5	5
Unisys	90	10	0	0

* Company did not respond

† Sales and leasing

Appendix: Questionnaire

Questionnaire: 1988 CSP TPM

A. Background

1 manufacturer/model: _____

2 service vendor:
- ❑ a. TPM
- ❑ b. manufacturer (go to systems questionnaire)

3 TPM vendor: _____

4 service coverage:
- ____ a. days
- ____ b. hours

B. Purchase Decision Criteria

5 Please rate on a scale of 1 to 10 (1 low, 10 high) the importance of the following criteria in choosing your TPM vendor:

	Importance (1-10)
a. dissatisfaction with manufacturer	____
b. price	____
c. quality of service	____
d. ability to service mixed-shop (multiple vendor systems)	____
e. other (specify)_____	____

C. Hardware Maintenance

6 a. How many system interruptions (on average) do you experience per month? _____/mo.

b. What percent of these are:

1. hardware related?	%HW	____
2. systems software related?	%sys SW	____
3. applications software related?	%app SW	____
4. other (user, power source, etc.)	%other	____

7 On average over the past year:

	a. require	b. received
1. system availability	_____.__%	_____.__%
2. response time	_____.__ hrs.	_____.__hrs.
3. repair time	_____.__ hrs.	_____.__hrs.

8 a. Please rate on a scale of 1 to 10 (1 low, 10 high) the importance of each of the following aspects of support.

b. Then, on the same scale, please rate your current level of satisfaction with the support you're receiving from your TPM vendor in that area.

	a. imptce vs. (1-10)	b. sat.
1. HW engineer skill	_____	_____
2. HW phone-support staff	_____	_____
3. HW dispatch	_____	_____
4. spare parts availability	_____	_____
5. overall satisfaction with HW maintenance	_____	_____

9 a. Are you currently involved in the service of your system by performing any of the following tasks?

b. If no: On a scale of 1 to 10, how willing would you be to perform these tasks for a discount on your systems service contract?

c. If yes: Do you receive a discount currently? If no: What discount would you expect to receive?

	a. involved now? (y/n)	b. willing (1-10)	c. percent discount (%)
1. board swaps	_____	_____	_____
2. component replacement	_____	_____	_____
3. diagnosis	_____	_____	_____
4. depot (mail/carry-in)	_____	_____	_____
5. support mgmt/control ("help desk") functions	_____	_____	_____

D. Software Support

10 a. Are you currently receiving software support from your TPM vendor? (Yes/No)_____

b. If yes: About what percent of license fee do you pay for support? ____% (proceed to question 11)

c. If no: proceed to question 14.

11 Which of the following software services do you receive from your TPM vendor on a contract basis, and/or an ad-hoc basis? (check all that apply)

	a. contract	vs.	b. ad-hoc
1. on-site	❑		❑
2. telephone hotline	❑		❑
3. remote	❑		❑
4. problems data base	❑		❑

12 a. Please rate on a scale of 1 to 10 (1 low, 10 high) the importance of each of the following aspects of software support.

b. Then, on the same scale, please rate your current level of satisfaction with the support you're receiving from your TPM vendor.

	a. imptce	vs. (1-10)	b. sat.
1. on-site support	_____		_____
2. telephone hotline	_____		_____
3. remote support	_____		_____
4. problems data base	_____		_____
5. SW engineer skill	_____		_____
6. SW product reliability	_____		_____
7. software support overall	_____		_____

13 For the following questions, a "major software problem" can be defined as one in which processing cannot be continued, while a "minor software problem" allows processing to be performed with minor degradation. All questions refer to an average number of problems over the past 12 months.

a. average number of major problems reported _____
b. average number of major problems resolved _____
c. turnaround time of major problem resolution _____ hrs.

d. average number of minor problems reported _____
e. average number of minor problems resolved _____
f. turnaround time of minor problem resolution _____ hrs.

E. Telecommunications

14 a. Does your TPM vendor support any of your telecommunications equipment? (Yes/No)_____

b. If no:

How willing (on a scale of 1 to 10) would you be to include your telecomm equipment under your TPM contract, (assuming the service was available)? (1 low, 10 high) _____

c. If yes:

1. For what equipment? _____

2. Please rate your satisfaction with the telecommunications support you receive from your TPM vendor in terms of :

	(1-10)
a. engineer skill level	_____
b. overall telecomm support	_____

F. Educational Services

15 a. Which of the following types of education or training services do you receive from your TPM vendor? (Qs 1.-3.)

If yes: b. Do you receive that training on-site?
c. At a training center?
d. Through interactive video?
e. As computer-based training?
(check all that apply)

	a. y/n	education/ training service	b. on-site	c. training center	d. inter-active video	e. computer-based training
1.		operational training				
2.		maintenance training				
3.		other				

16 Please rate your current level of satisfaction with the training/education support you're receiving from your TPM vendor.

	satisfaction (1-10)
1. subject matter	_____
2. amount of training	_____
3. training methods	_____

17 Are there areas in which you feel more courses should be offered? _____

_____

G. Professional Services

18 Have you received planning or consulting support from your TPM vendor? (Yes/No) _____

19 If no: proceed to question 22.
If yes:

a. Please rate the importance of planning and consulting services in each of the following areas (1-10).

b. Then rate your satisfaction with the service you've received from your TPM vendor in each area (1-10).

	a. imptce vs. (1-10)	b. sat
planning:		
1. installation planning (environmental/site)	_____	_____
2. needs assessment planning	_____	_____
3. capacity planning	_____	_____
4. network design planning	_____	_____
5. overall planning services	_____	_____
consulting:		
6. site/facility management	_____	_____
7. network management	_____	_____
8. systems integration	_____	_____
9. disaster recovery	_____	_____
10. overall consulting services	_____	_____
other:		
11. installation/moves	_____	_____
12. changes/upgrades	_____	_____

20 Please rate on a scale of 1 to 10 (1 low, 10 high) your current level of satisfaction with the support you've received from your TPM vendor in each area of planning/ consulting.

	satisfaction (1-10)
a. expertise of staff	_____
b. offerings suitable to needs	_____
c. results of plng/consulting	_____

21 In what areas do you foresee a need for planning/consulting in the future? _____

_____

H. Pricing

22 Please rate your level of satisfaction with the price of the following services you receive from your TPM vendor:

	(1-10)
a. hardware service	_____
b. software support	_____
c. education/training	_____
d. planning/consulting	_____

23 Do you receive a discount for any of the following reasons?

	(Yes/No)
a. reduced service coverage	_____
b. scheduled maintenance visits	_____
c. other (specify)_____	_____

I. TPM Market Growth Potential

24 Please rate (1-10) your willingness to use TPM for:

	(1-10)
a. applications SW support	_____
b. operating SW support	_____
c. education and training	_____
d. planning and consulting	_____
e. network management	_____
f. system moves/changes/upgrades	_____

25 a. Do you plan to expand your use of TPM in the future? (Yes/No) _____

b. In which areas (e.g., a.-f. above) _____

_____

26 Have you been approached by the manufacturer to return to their service? (Yes/No) _____

27 Which other TPMs have approached you in the last six months? _____

_____

THANK YOU!