F- S.M.U. A-E Letter Original

September 16, 1986

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Dear
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Enclosed are the first in a series of deliverables in the Software Service and Support Program of INPUT's 1986 Customer Service Program, composed of the following:

- A three-ring binder with title page, table of contents, list of exhibits, and tabbed sections I through VII.
- Five individual software service and support vendor performance analyses. These analyses are shrink-wrapped for protection and three-hole punched to facilitate placement in Section III of the enclosed Software Service and Support Program binder. Also a title page has been included to be filed before the table of contents section.

As research is completed, INPUT will send you additional vendor performance analyses, shrink-wrapped and three-hole punched to be filed in Section III of the Software Service and Support Program binder. Along with each set of analyses, INPUT will include an updated table of contents and list of exhibits.

Later in the year, INPUT will begin delivery of the Software Service and Support Vendor Profiles, which will be filed in Section IV of the binder, and the Software Service and Support Market Analysis, which will be filed in Section V of the binder. Along with the Service Market Analysis, INPUT will include the Executive Overview to be filed in Section II of the binder. Throughout the year, INPUT will send additional appendix information, such as industry totals, definitions, and questionnaires, to be filed in Section VI.

The goal of our new research format is to provide the fastest turnaround of research information to our clients by reducing any delay between research completion and delivery of our findings.

As always, we welcome your questions and comments about our new research format. Please feel free to call me directly at (415) 960-3990.

Sincerely,

Rick Brusuelas
Program Manager, Customer Service Program
RB:ml

Enclosure

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DATE 9-5-86

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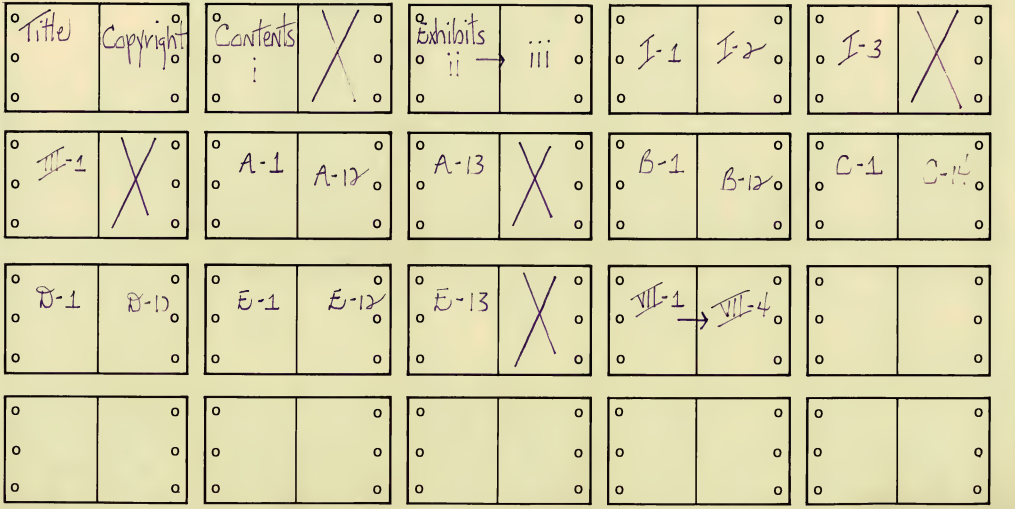

ANALYSIS OF SOFTWARE SERVICE AND SUPPORT

1986

Published by
INPUT
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Mountain View, CA 94043
U.S.A.

Customer Service Program (CSP)

Analysis of Software Service and Support - 1986

ANALYSIS OF SOFTWARE SERVICE AND SUPPORT

CONTENTS

EXHIBITS

I INTRODUCTION

- This is the first in a series of reports covering the software service and support market produced by INPUT for clients of the 1986 Customer Service Program. To minimize elapsed time between research completion and the delivery of the research findings, INPUT has adopted a new format for the 1986 program. Instead of separately bound, cumulative reports on an entire market segment (in this case the software service and support market), INPUT will now deliver individual vendor's user analyses and vendor profiles as quickly as the research is completed. These series will usually be released in groups of three to five analyses, shrink-wrapped and three-hole punched to facilitate placement in three-ring binders. Each service module (large systems, small systems, third-party maintenance, telecommunications, and software support) can be filed in clearly identified sections within each binder as received. As additional analyses are completed and delivered to clients, an updated table of contents will accompany the analyses.

- For the first time INPUT has added non-operating system software support as a standalone module of the Customer Service Program. In this section, INPUT will explore the ever-increasing service and support requirements of such software products as office automation applications, manufacturing applications, and specialized utility programs. In doing so, INPUT hopes to analyze the complete support requirements (both hardware and software) of computer users.

- The first in the series of deliverables are the software service and support user requirements/vendor performance analyses. In this section, which is to be filed in Section III of the software service and support binder, user service requirements in the areas of software support are compared to actual vendor performance. Specific services analyzed include documentation, software engineer skill level, consulting, and training. Each analysis provides traditional measures of vendor performance, such as number of problems resolved versus reported and problem resolution time. Also, each analysis will explore user attitudes and satisfaction with additional services, such as training, consulting, problem data bases, and upgrades/revisions. Finally, each analysis will attempt to measure the revenue potential of premium support offerings.

- The next series of deliverables in the software service and support module will be company profiles of leading software vendors. The in-depth analysis of these service organizations will provide information on each vendor's software support services, educational service offerings, and professional service options. As always, each profile will provide information on the service organization's structure, both internally and as a part of the company's corporate structure. Finally, each profile will provide an analysis of the future direction expected for that company's service organization.

- To reduce the elapsed time between completion of the research and the delivery of the research findings, these software service and support vendor profiles will be delivered in groups of three to five and will be filed in Section IV of the software service and support binder. As with the user series, an updated table of contents will be provided as new segments are released.

- The last deliverable in the software service and support module will be the Service Market and Forecast, 1986-1991. This report, to be filed in Section V of the software service and support binder, will provide both current and future market size forecasts for software support. Separate components of this market, such as educational services and professional services, will be explored. In addition, this report discusses the key service issues of the past

year, with an emphasis on their future impact on service. Lastly, this report provides strategic recommendations based on the entire year's research activities.

- Along with the Service Market Analysis and Forecast, 1986-1991, each client will receive copies of the Executive Overview, which will provide a summary of the key findings of the year's research. These summaries are prepared in presentation format, facilitating slide preparation. As a result, these summaries are popular with many service executives as a source of presentation graphics with corresponding text provided. The Executive Overview should be filed in Section II of the software service and support binder.

- The binder contains an Appendix section for information that may be sent at various times during the year. Summary exhibits, industry definitions, and INPUT's questionnaires are examples of appendix information that will be filed in this section.

III SOFTWARE SERVICE AND SUPPORT USER REQUIREMENTS

- In the following section, INPUT will present in-depth analyses of the software service and support requirements of mainframe, superminicomputer, and traditional minicomputer users. In the past, INPUT has provided analysis of user support needs in operating system software. This analysis is the first product-specific analysis of application and utility (systems) software to be presented by INPUT. Each analysis will be presented in a format as similar as possible to the hardware product service analyses in order to provide a complete picture of the data processing "total support" needs of users.

- Each analysis begins by defining the current software support environment for each product. User requirements for various software support offerings and delivery methods will be analyzed. User satisfaction with current support will be measured. Finally, user attitudes toward additional support offerings will be explored.

III A. NCA CORPORATION

- INPUT interviewed 34 NCA MAXCIM manufacturing software users concerning the support they received from their software vendor. All of the software packages were installed on DEC systems, either PDP minicomputers or VAX superminicomputers. All interviews were conducted by telephone and each lasted approximately 20 minutes. Not surprisingly, the vast majority of respondents were manufacturers (representing over 70% of the sample), although services made up an additional 21%. INPUT targeted the leading MIS official at each company.

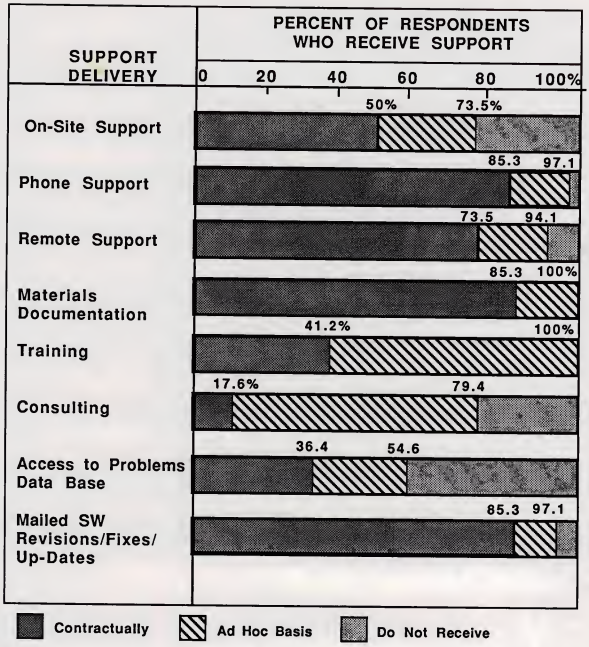
- Exhibit III-A-1 indicates that half of the NCA users receive on-site support contractually and almost one-quarter more of the sample receive on-site support on an ad hoc basis. The support is supplemented in most cases by telephone hotline support and remote support. Also, virtually all of the users receive updates of both the software and written materials (e.g., documentation) under their current contract.

- Surprisingly, NCA users reported that they receive little training and consulting under their current contracts. Only 41% of the users receive training and less than 18% of the sample receive consulting under contract. In both of these support areas, the users receive their support on an ad hoc basis. This suggests that NCA might be leaving potential support revenue on the table unless NCA is billing users for this ad hoc support on a hourly basis. As it is, NCA users report that they are only paying 12.9% of the purchase price, which can run up to $300,000 for a VAX system, for support.

- Exhibit III-A-2 shows NCA MAXCIM as relatively free from major software problems (major problems being defined as ones in which processing of applications cannot be continued) and that NCA succeeds in resolving all of the major problems, although not in a timely manner. Users reported major problem resolution times of three days or greater (one reported that they

EXHIBIT III-A-1

SOFTWARE SUPPORT DELIVERY
NCA



FSMU S

EXHIBIT III-A-2

SOFTWARE SUPPORT PERFORMANCE
NCA

SUPPORT COMPONENT	1986
Number of Major Problems Reported per Month	0.4
Number of Major Problems Resolved per Month	0.4
Turnaround Time of Major Problems (hours)	97.4
Number of Minor Problems Reported per Month	4.1
Number of Minor Problems Resolved per Month	2.3
Turnaround Time of Minor Problems (hours)	445.4

waited 30 days on average). The median response, however, was less than 24 hours, which seems more reasonable.

- Minor problems (which typically can be worked around) appear to be a larger problem with NCA users who report that they occur four times per month. Problem resolution, if the users perceive the problem to be resolved, occurs very slowly, averaging 2.5 weeks. Furthermore, NCA users recognize the resolution of only half of the problems that they report. It should be noted that these are minor problems that can be worked around, and obviously a number of these situations are handled by mail. Also, a small number could be handled in the next revision.

- Exhibit III-A-3 supports the satisfaction that NCA users have with the freedom from major problems and the falling away of satisfaction with minor problem resolution time.

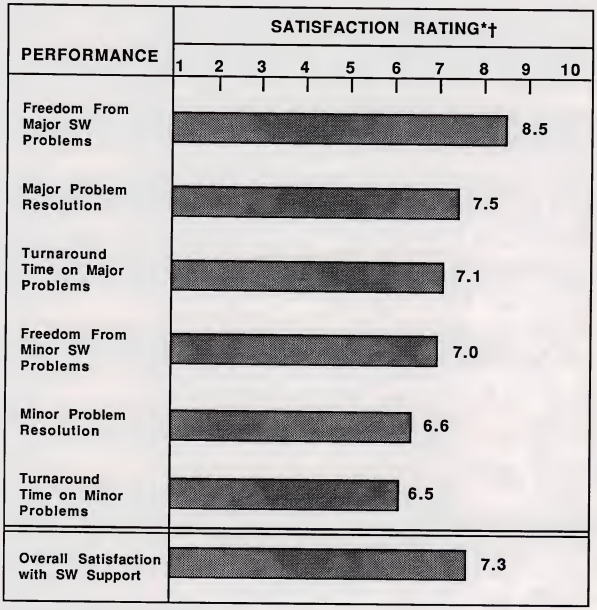
- Exhibit III-A-4 indicates what NCA areas have the greatest need for documentation and phone support. Unfortunately, NCA's documentation, not unlike software (and hardware) documentation throughout the industry, falls well short of user expectations. In addition, the NCA sample reported concern about the skill level of the software support engineers (shown later in Exhibit III-A-7), perhaps a reflection of delays in problem resolution.

- Exhibit III-A-5 supports the discrepancy between NCA user requirements and support received in the areas of telephone support and documentation, with only 43.6% and 40.6% of the NCA sample satisfied with these respective support areas. Exhibit III-A-6 graphically represents the discrepancy between NCA user support requirements and the level of support received.

- Exhibit III-A-7 delves a little deeper into the actual delivery of support, demonstrating that the NCA sample reported the greatest discrepancy in the actual provision of error fixes, again reinforcing user dissatisfaction with problem resolution time. Indeed, only 39% of the sample was satisfied with

EXHIBIT III-A-3

USER SATISFACTION WITH SOFTWARE SUPPORT PERFORMANCE NCA



* Rating: 1 = Low, 10 = High
† Average Standard Error of the Mean: 0.3

EXHIBIT III-A-4

1986 USER SOFTWARE SUPPORT RATINGS
NCA

SOFTWARE SUPPORT CATEGORY	LEVEL OF SUPPORT		SUPPORT EXCEEDS (Falls Below) USER REQUIREMENTS
	REQUIRED†	RECEIVED†	
Phone Support	8.0	7.2	(0.8)
Access to Problems Data Base	4.6	3.9	(0.7)
Documentation	8.6	6.9	(1.7)
Training	6.4	5.8	(0.6)
Consulting	4.6	5.3	0.7

User Expectations Exceeds Vendor Performance

* Rating: 1 = Low, 10 = High
† Average Standard Error of the Mean: 0.5

EXHIBIT III-A-5

USER SATISFACTION: SOFTWARE SUPPORT NCA

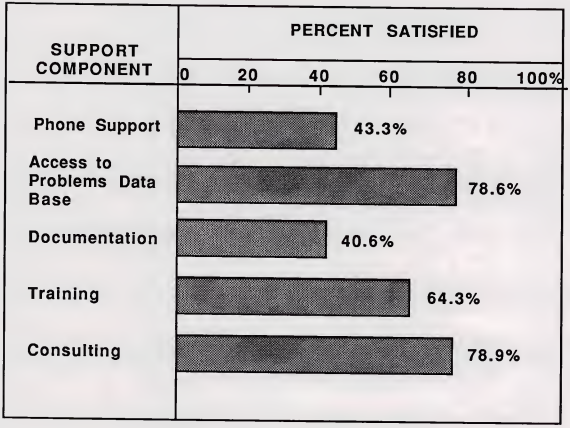
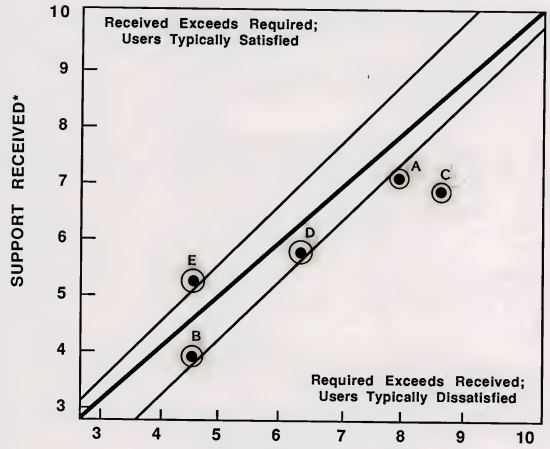


EXHIBIT III-A-6

SOFTWARE SUPPORT REQUIRED/RECEIVED
NCA



A: Phone Support
B: Access to Problems Data Base
C: Documentation
D: Training
E: Consulting

* Rating: 1 = Low, 10 = High

EXHIBIT III-A-7

ACTUAL SOFTWARE SUPPORT LEVEL RECEIVED
NCA

SOFTWARE SUPPORT LEVEL	LEVEL OF SUPPORT		SUPPORT EXCEEDS (Fall Below) USER REQUIREMENTS
	REQUIRED†	RECEIVED†	
Error Fixes	8.6	6.3	(2.3)
Upgrades/ Revisions	8.8	6.9	(1.9)
SW Engineer Skill Level	7.9	6.5	(1.4)
On-Site Support	3.7	5.1	1.4

User Expectations Exceeds Vendor Performance

* Rating: 1 = Low, 10 = High
† Average Standard Error of the Mean: 0.4

error fixes performed (shown in Exhibit III-A-8), suggesting an area of immediate concern. Over 60% of the sample is satisfied with the skill level of their software engineer, suggesting that user concern in this area is more localized. Exhibit III-A-9 graphically demonstrates the discrepancy in the actual level of software support received.

- Exhibit III-A-10 demonstrates the potential for additional support revenues for certain premium services. Note the attraction to telephone hotline support, which received the highest requirement rating from the NCA sample. Unfortunately, these users also receive this service; therefore, little additional revenue potential is available.

- On the other hand, these users' perceive the increased dollar value of on-site support as a premium service, as 47% of the sample requiring on-site support consider a 5% premium to be "reasonable."

EXHIBIT III-A-8

USER SATISFACTION WITH LEVEL RECEIVED
NCA

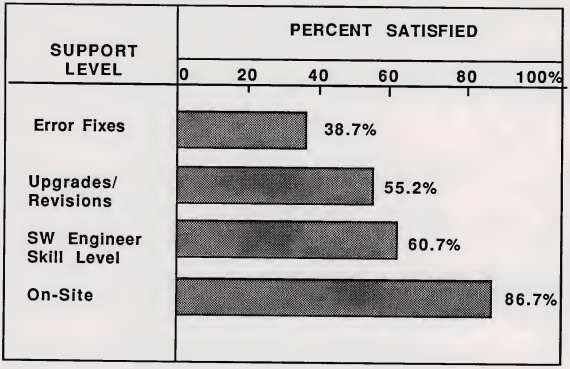
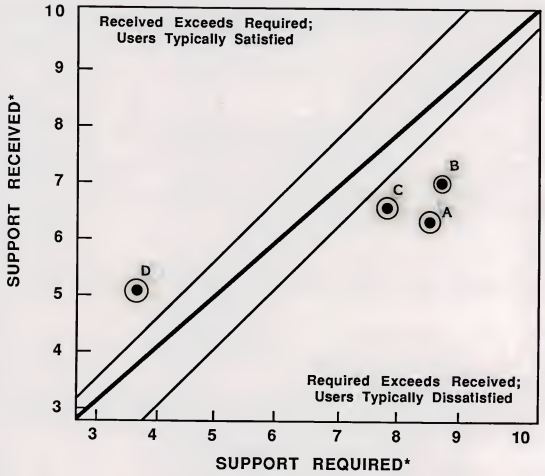


EXHIBIT III-A-9

SOFTWARE SUPPORT LEVEL REQUIRED/RECEIVED
NCA



A: Error Fixes
B: Upgrades/Revisions
C: SW Engineer Skill Level
D: On-Site Support

* Rating: 1 = Low, 10 = High

EXHIBIT III-A-10

DISTRIBUTION OF REASONABLE PREMIUMS FOR ADDED SERVICE NCA

SUPPORT	Requirement* (1-10)	PERCENTAGE OF USERS REQUIRING SUPPORT WHO WILL PAY PREMIUM OVER CURRENT SUPPORT CHARGE					
		PREMIUM LEVEL (Up to and Including)					
		0%	5%	10%	25%	50%	50+%
On-Site Support	3.9	55.8%	47.1%	17.7%	11.8%	2.9%	2.9%
Phone Support	8.2	38.2%	20.6%	11.8%	8.8%	5.8%	2.9%
Remote Support	5.6	44.1%	35.3%	11.8%	8.8%	2.9%	0.0%

* Requirement Scale: 1 = Low, 10 = High

III B. DIGITAL EQUIPMENT CORPORATION

- INPUT interviewd 25 DEC "All-in-One" office automation software users concerning the support that they received from their vendor. DEC "All-in-One" runs on VAX superminicomputer systems. All interviews were performed by telephone and each lasted approximately 20 minutes. The "All-in-One" sample was made up primarily of discrete manufacturing users (28% of the sample), business services users (28%), and educational users (24%). While INPUT attempted to interview the chief MIS official at each company, the wide range of companies surveyed resulted in a wide range of respondent titles, from Director of MIS to Owner. "All-in-One" users also reported an extremely low support charge of 7.5% of the package price per year (which can run between $6,000 and $20,000 per module selected).

- Exhibit III-B-1 demonstrates that while a large proportion of the "All-in-One" sample receives on-site support on an ad hoc basis, only 24% contract for this service. Instead, the prevalent form of support received contractually is telephone (also known as hotline) support, received by 84% of the respondent base. While few users contract for training and consulting services, 80% of the users receive these services either on a contract or an ad hoc basis. Instead, almost three-fourths of the sample contract for access to a problem data base, a popular and inexpensive (to the vendor) service offering.

- Exhibit III-B-2 indicates that "All-in-One" is extremely free of major problems, averaging one major problem (one which stops processing) per five months. Furthermore, total turnaround on major problems is less than one calendar day. The software is relatively resistant to minor problems (those that can be circumvented with a "work-around"). The closeness of minor problems reported and resolved also speaks well of DEC's software support, since users report that minor problem resolution usually occurs within three days. Exhibit III-B-3 reflects the overall satisfaction with DEC software support.

EXHIBIT III-B-1

SOFTWARE SUPPORT DELIVERY
DEC

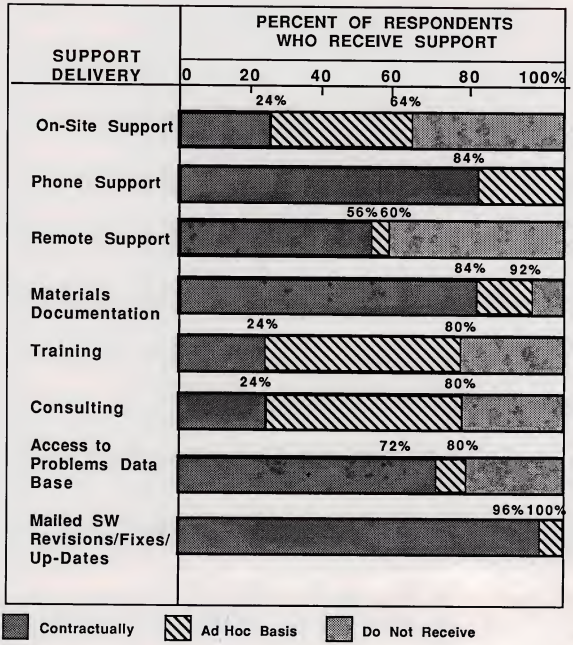


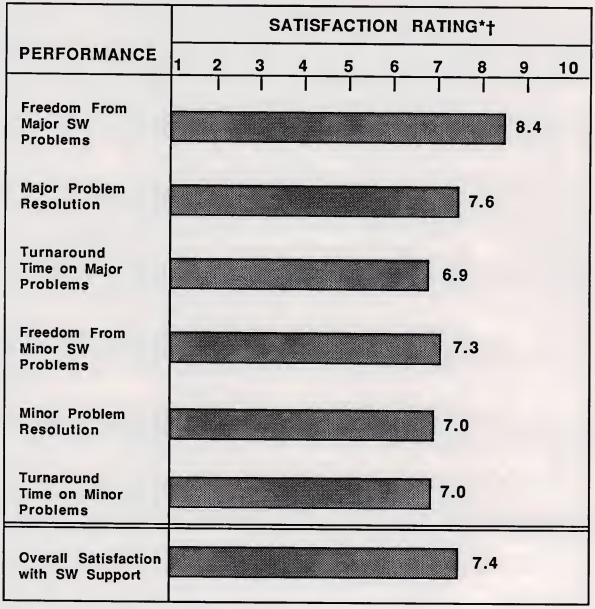
EXHIBIT III-B-2

SOFTWARE SUPPORT PERFORMANCE
DEC

SUPPORT COMPONENT	1986
Number of Major Problems Reported per Month	0.2
Number of Major Problems Resolved per Month	0.2
Turnaround Time of Major Problems (hours)	18.2
Number of Minor Problems Reported per Month	4.5
Number of Minor Problems Resolved per Month	4.1
Turnaround Time of Minor Problems (hours)	58.5

EXHIBIT III-B-3

USER SATISFACTION WITH SOFTWARE SUPPORT PERFORMANCE DEC



* Rating: 1 = Low, 10 = High
† Average Standard Error of the Mean: 0.4

- Exhibit III-B-4 suggests that "All-in-One" user support requirements are quite high, especially in such areas as documentation and telephone support. Yet in these two key areas DEC's actual performance falls significantly below user requirements levels in one area only—documentation. This is supported in Exhibit III-B-5, which shows that DEC satisfies over 50% of its users' needs in all areas except for documentation (which is an industry-wide problem). Exhibit III-B-6 graphically represents the "All-in-One" sample's actual level of support received versus requirement levels.

- While "All-in-One" users report relative satisfaction with their software engineer skill level, these users still express concern over the actual presentation of software fixes, as shown in Exhibit III-B-7. Exhibit III-B-8 highlights this concern, demonstrating that only one-third of the users are satisfied with the level of support received specific to actual error fixes. DEC users also express concern over the quality of updates and revisions, although much less than in the area of error fixes. Exhibit III-B-9 graphically represents the discrepancy between user requirements and vendor performance in the areas of revisions/upgrades and error fixes.

- Also noteworthy is that even though on-site support is a relatively low priority with "All-in-One" users (although two-thirds of the sample receives on-site support in one form or another), over 90% of the sample is satisfied with the level of on-site support received. This satisfaction carries over to Exhibit III-B-10, which suggests that while the entire sample has a low requirement for on-site support, almost 50% of the sample considers a 5% premium reasonable to receive support in this fashion.

EXHIBIT III-B-4

1986 USER SOFTWARE SUPPORT RATINGS
DEC

SOFTWARE SUPPORT CATEGORY	LEVEL OF SUPPORT		SUPPORT EXCEEDS (Falls Below) USER REQUIREMENTS
	REQUIRED†	RECEIVED†	
Phone Support	7.3	6.4	(0.9)
Access to Problems Data Base	6.1	4.9	(1.2)
Documentation	8.8	7.4	(1.4)
Training	4.9	4.4	(0.5)
Consulting	3.6	4.2	0.6

User Expectations Exceeds Vendor Performance

* Rating: 1 = Low, 10 = High
† Average Standard Error of the Mean: 0.6

EXHIBIT III-B-5

USER SATISFACTION: SOFTWARE SUPPORT
DEC

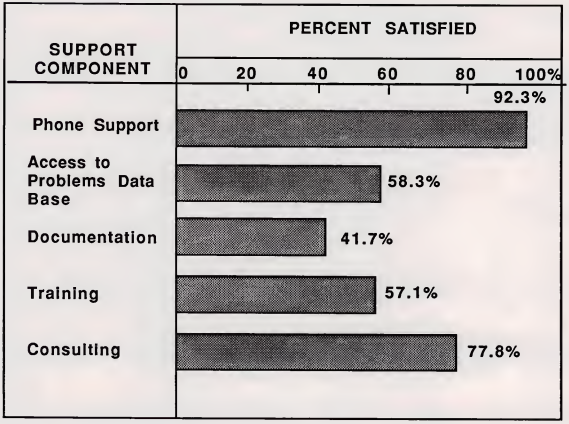
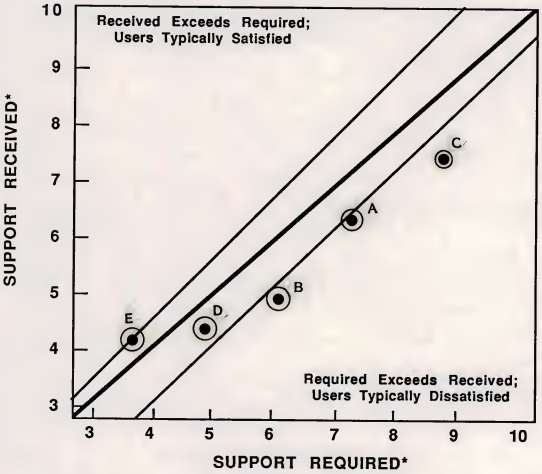


EXHIBIT III-B-6

SOFTWARE SUPPORT REQUIRED/RECEIVED
DEC



A: Phone Support
B: Access to Problems Data Base
C: Documentation
D: Training
E: Consulting

* Rating: 1 = Low, 10 = High

EXHIBIT III-B-7

ACTUAL SOFTWARE SUPPORT LEVEL RECEIVED
DEC

SOFTWARE SUPPORT LEVEL	LEVEL OF SUPPORT		SUPPORT EXCEEDS (Falls Below) USER REQUIREMENTS
	REQUIRED†	RECEIVED†	
Error Fixes	8.6	6.8	(1.8)
Upgrades/ Revisions	8.8	7.5	(1.3)
SW Engineer Skill Level	6.9	6.4	(0.5)
On-Site Support	3.8	4.3	0.5

User Expectations Exceeds Vendor Performance

* Rating: 1 = Low, 10 = High
† Average Standard Error of the Mean: 0.4

EXHIBIT III-B-8

USER SATISFACTION WITH LEVEL RECEIVED
DEC

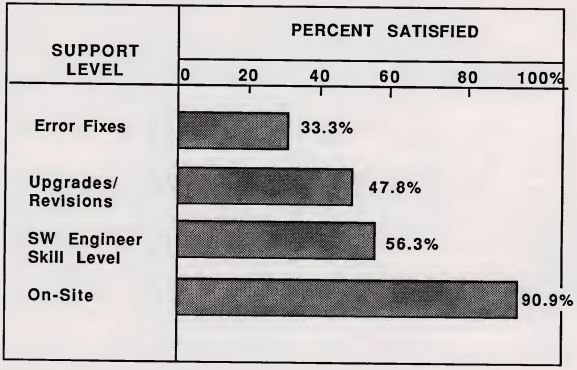
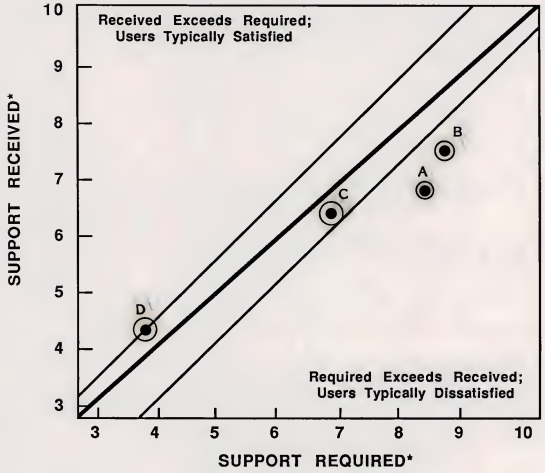


EXHIBIT III-B-9

SOFTWARE SUPPORT LEVEL REQUIRED/RECEIVED
DEC



A: Error Fixes
B: Upgrades/Revisions
C: SW Engineer Skill Level
D: On-Site Support

* Rating: 1 = Low, 10 = High

EXHIBIT III-B-10

DISTRIBUTION OF REASONABLE PREMIUMS FOR ADDED SERVICE DEC

SUPPORT	Requirement* (1-10)	PERCENTAGE OF USERS REQUIRING SUPPORT WHO WILL PAY PREMIUM OVER CURRENT SUPPORT CHARGE					
		PREMIUM LEVEL (Up to and Including)					
		0%	5%	10%	25%	50%	50+%
On-Site Support	3.6	48%	48%	12%	0%	0%	0%
Phone Support	8.1	32%	28%	20%	4%	4%	0%
Remote Support	5.7	36%	32%	8%	4%	0%	0%

* Requirement Scale: 1 = Low, 10 = High

- Twenty users of MSA application software packages were interviewed in July and August of this year. Installed primarily on IBM 43XX and 30XX mainframes, MSA MRP II manufacturing software and various accounting packages (payroll, general ledger, fixed asset, and accounts receivable) were discussed with ranking MIS directors and analysts. All interviews were conducted by phone, each lasting approximately 20 minutes. The majority of respondent companies were involved in manufacturing (80% of the sample). Transportation, medical, and insurance firms comprised the remaining 20%.

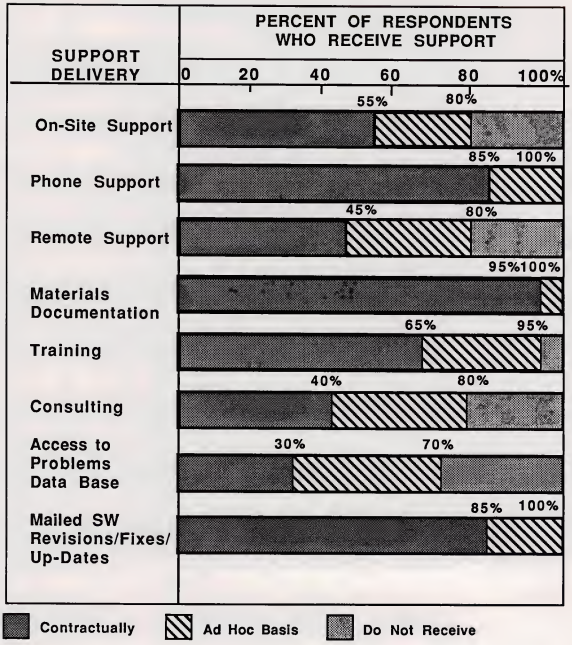
- Exhibit III-C-1 shows graphically the extent of support MSA software users are receiving. Documentation is the most common service contracted by the MSA user, with 95% of the sample receiving the written materials and updates under their agreement. Virtually all of the users sampled are supported via MSA's telephone hotline; the vast majority (85%) under current contract. Equally high percentages of users contract for mailed revisions, fixes, and updates to their package.

- Fifty-five percent of all users receive on-site support contractually, a much higher percentage than most software products analyzed. The option of remote support is also low in contract provision (45%), but is received in 80% of user cases.

- Not surprisingly, training is another widely received service among MSA users. The low percentage of users receiving ongoing training as part of contracted support, however, is unusually low at 65%. Problems data base access is another service contractually neglected by MSA users, with 70% accessing this mode of support, but only 30% through contract agreement. Given relative user interest in these two basic services, enhancement of training and problems data base availability in terms of contract offerings may be key to increased interest in MSA support contracts by software users.

EXHIBIT III-C-1

SOFTWARE SUPPORT DELIVERY
MSA



- Exhibit III-C-2 lists results MSA users have seen in problem turnaround. Major discrepancies between the number of problems reported and the number of problems resolved occur in both categories, major problem resolution appearing to be especially low (major problems causing processing of applications to cease, minor problems creating some processing degradation, by definition). This may be a reflection of the relative age of the software packages, but specific comments regarding lack of call-backs from MSA support groups indicate a need for improvement in customer response. Turnaround time on major problems once reported averages three days, ranging between a matter of hours and 10 days for resolution.

- Absolute numbers of minor problems reported are much higher than those of major problems, but the record of minor problem resolution is somewhat better, with over half of the minor problems being solved, on average, within a shorter period of time. The heavy reliance on telephone support versus on-site or remote involvement of MSA engineers may contribute to these ratings. Major software problems are less efficiently dealt with through phone interaction.

- Exhibit III-C-3 presents user ratings of satisfaction with problem turnaround. Little variance is seen between satisfaction with minor problem resolution and major problem turnaround despite longer turnaround times and fewer major fixes. MSA users appear to recognize the limits of the lower levels of service for which they contract.

- User ratings of support services, as presented in Exhibit III-C-4, show neglected user needs in most areas of support. Dissatisfaction with documentation is very high, a shortcoming seen industry-wide. Comments relevant to the speed of receipt and clarity of documentation and written updates shows frustration on the customer's part as, in absence of MSA-initiated support, the user relies on his own knowledge of the package. Requirements for documentation are highest among services listed.

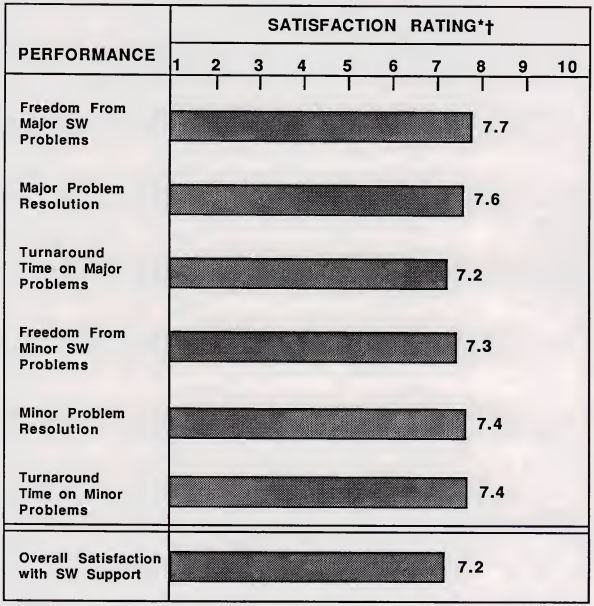
EXHIBIT III-C-2

SOFTWARE SUPPORT PERFORMANCE
MSA

SUPPORT COMPONENT	1986
Number of Major Problems Reported per Month	2.2
Number of Major Problems Resolved per Month	0.6
Turnaround Time of Major Problems (hours)	73.3
Number of Minor Problems Reported per Month	6.5
Number of Minor Problems Resolved per Month	3.4
Turnaround Time of Minor Problems (hours)	67.2

EXHIBIT III-C-3

USER SATISFACTION WITH SOFTWARE SUPPORT PERFORMANCE
MSA



* Rating: 1 = Low, 10 = High
† Average Standard Error of the Mean: 0.5

EXHIBIT III-C-4

1986 USER SOFTWARE SUPPORT RATINGS
MSA

SOFTWARE SUPPORT CATEGORY	LEVEL OF SUPPORT		SUPPORT EXCEEDS (Fall Below) USER REQUIREMENTS
	REQUIRED†	RECEIVED†	
Phone Support	8.5	6.7	(1.8)
Access to Problems Data Base	5.9	4.2	(1.7)
Documentation	9.3	6.8	(2.5)
Training	7.6	6.8	(0.8)
Consulting	5.3	5.5	0.2


User Expectations Exceeds Vendor Performance

* Rating: 1 = Low, 10 = High
† Average Standard Error of the Mean: 0.5

- Customer satisfaction with these categories of service is graphed in Exhibit III-C-5. Again, discontent with documentation shows at critical levels, with only 21.1% of respondents satisfied with currently available materials.

- Dissatisfaction with MSA support personnel is again reflected in the low phone support rating. Complaints of the knowledgeability of MSA support people were reported often, in addition to dissatisfaction with response timeliness. Person-to-person contact with the vendor can be a key determinant of users' perceived levels of satisfaction with a product.

- Exhibit III-C-6 illustrates the discrepancies between user needs and support received. Training and consulting come closest to users' acceptable levels, but still fall short of the target area. Dissatisfaction with documentation and phone support are again highlighted.

- Exhibit III-C-7 reconfirms user-encountered problems with turnaround and response on error fixes. With a high requirement for support to keep the software in full processing capability, satisfaction of respondents, as graphed in Exhibit III-C-8, is extremely low as MSA service falls well below user requirement levels.

- Comments regarding the amount and quality of released revisions and upgrades to the MSA packages in use were common, and the low percentage of satisfied users (27.8%, Exhibit III-C-8) reflects the dissatisfaction expressed by respondents. Exhibit III-C-7 shows MSA upgrade/revision support falling close to two points below users' required levels.

- The relatively high percentage of the sample satisfied with MSA on-site support (75%, Exhibit III-C-8) can be attributed to the low expectations of users, with requirements for on-site service ranking at only 4.5 (see Exhibit III-C-7) out of 10. With only 55% of respondents contractually relying on on-site support (see Exhibit III-C-1), it is apparent that relatively few MSA users place much of a requirement on on-site support.

EXHIBIT III-C-5

USER SATISFACTION: SOFTWARE SUPPORT MSA

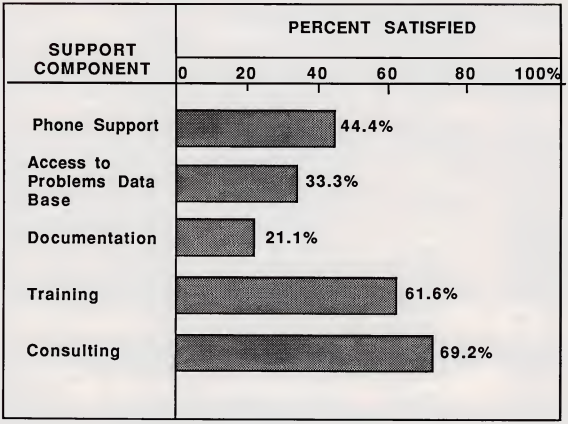
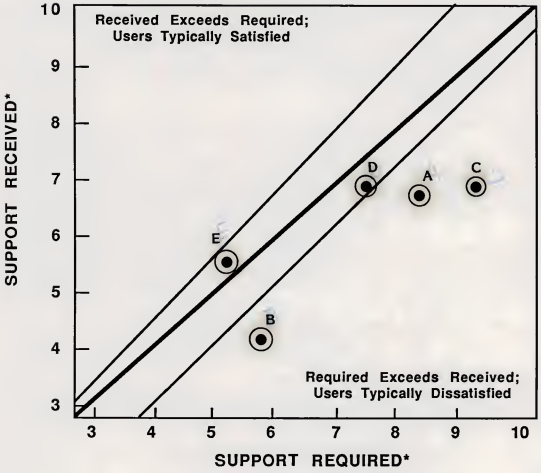


EXHIBIT III-C-6

SOFTWARE SUPPORT REQUIRED/RECEIVED
MSA



A: Phone Support
B: Access to Problems Data Base
C: Documentation
D: Training
E: Consulting

* Rating: 1 = Low, 10 = High

EXHIBIT III-C-7

ACTUAL SOFTWARE SUPPORT LEVEL RECEIVED
MSA

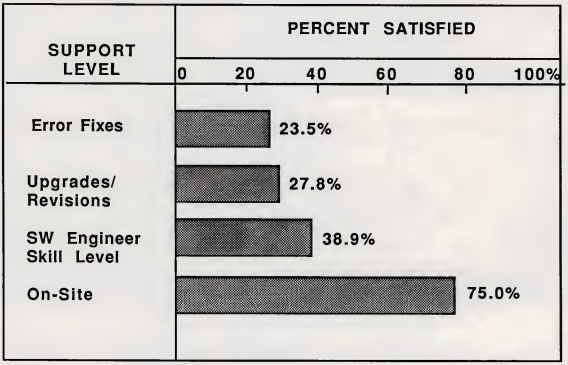
SOFTWARE SUPPORT LEVEL	LEVEL OF SUPPORT		SUPPORT EXCEEDS (Falls Below) USER REQUIREMENTS
	REQUIRED†	RECEIVED†	
Error Fixes	9.2	6.6	(2.6)
Upgrades/ Revisions	8.5	6.6	(1.9)
SW Engineer Skill Level	8.8	7.3	(1.5)
On-Site Support	4.5	5.6	1.1

▒ User Expectations Exceeds Vendor Performance

* Rating: 1 = Low, 10 = High
† Average Standard Error of the Mean: 0.5

EXHIBIT III-C-8

USER SATISFACTION WITH LEVEL RECEIVED
MSA



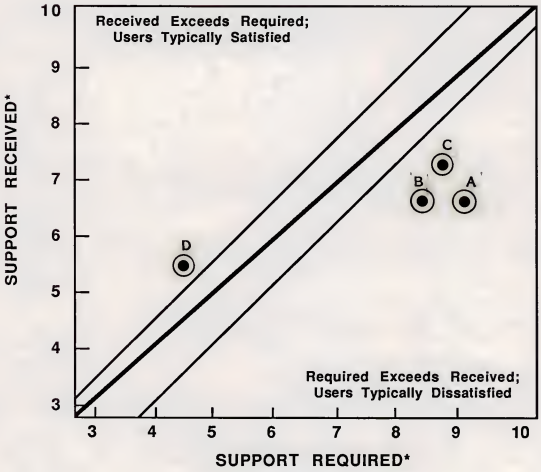
- These relative levels of support required and received by MSA users are further interpreted in Exhibit III-C-9, depicting discrepancies between user needs and MSA support delivery.

- Exhibit III-C-10 provides a guideline for pricing increased levels of support. Respondents indicated percentage premiums they would be willing to pay for upgraded support. The importance of the upgrade to these levels of support are appreciated by users, as reflected in the range of premiums they are willing to pay.

- Phone support is an especially important category for MSA to review, as MSA users reported the high average requirement of 9.1 out of 10 for the service. Coupled with the 20% total of respondents who are willing to pay premiums beween 1% and 10%, phone support enhancement may prove a profitable mode of increasing MSA customer satisfaction.

EXHIBIT III-C-9

SOFTWARE SUPPORT LEVEL REQUIRED/RECEIVED
MSA



A: Error Fixes
B: Upgrades/Revisions
C: SW Engineer Skill Level
D: On-Site Support

* Rating: 1 = Low, 10 = High

EXHIBIT III-C-10

DISTRIBUTION OF REASONABLE PREMIUMS FOR ADDED SERVICE MSA

SUPPORT	Requirement* (1-10)	PERCENTAGE OF USERS REQUIRING SUPPORT WHO WILL PAY PREMIUM OVER CURRENT SUPPORT CHARGE					
		PREMIUM LEVEL (Up to and Including)					
		0%	5%	10%	25%	50%	50+%
On-Site Support	4.4	55%	30%	15%	5%	0%	0%
Phone Support	9.1	45%	20%	5%	0%	0%	0%
Remote Support	6.0	55%	15%	5%	0%	0%	0%

* Requirement Scale: 1 = Low, 10 = High

III D. DATA GENERAL

- INPUT interviewed 24 users of Data General's CEO office automation software concerning the support that they received from their software vendor. All of the CEO software was installed on Data General MV series superminicomputers. All interviews were conducted by telephone, and each lasted approximately 20 minutes. The CEO sample was very diversified, both by user industry (9 of 13 possible industries were represented: the largest breakout being process manufacturing with 5 respondents) and by respondent title. In most situations, INPUT interviewed the MIS manager or equivalent, although in some cases a high ranking software specialist (e.g., programming manager) was surveyed. The average software support charge, as a percentage of the one-time license fee of $15,000, was 12.5% per year.

- Exhibit III-D-1 demonstrates that the majority of CEO users receive a combination of on-site, phone, and remote support. Although most users receive training and consulting services on an ad hoc basis; relatively few (28% and 40%, respectively) contract for these services. And while Data General offers a problems data base, relatively few of this sample have taken advantage of the offering.

- Exhibit III-D-2 reports that CEO users average a major software problem (one that prohibits further operation of the system) once every two months, and that all major problems have been resolved, typically within one calendar day (19.8 hours). CEO appears to be relatively free of minor problems (the system operates with some degradation, allowing a workaround), averaging less than three minor problems per month. Turnaround time on minor problems can be quite extensive, averaging two weeks and ranging anywhere between four hours to 75 days. Still, user satisfaction with software reliability and vendor responsiveness is quite high, as indicated in Exhibit III-D-3.

EXHIBIT III-D-1

SOFTWARE SUPPORT DELIVERY
DATA GENERAL

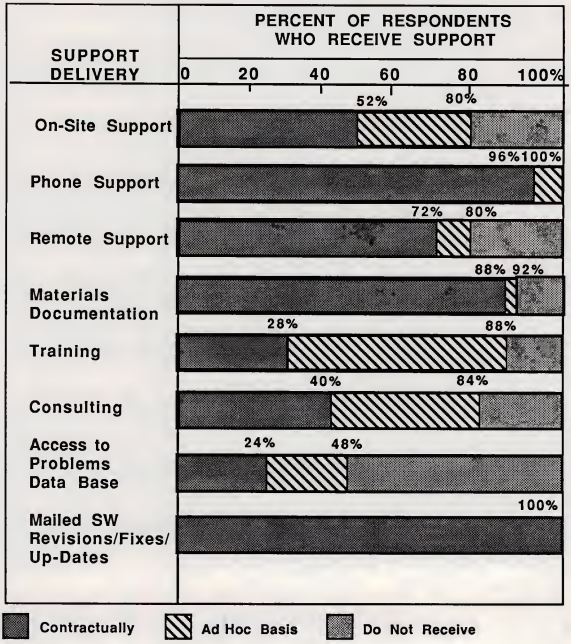


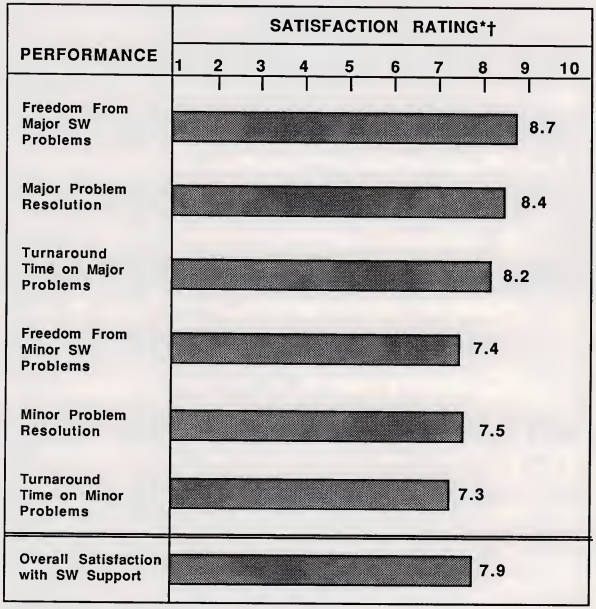
EXHIBIT III-D-2

SOFTWARE SUPPORT PERFORMANCE
DATA GENERAL

SUPPORT COMPONENT	1986
Number of Major Problems Reported per Month	0.4
Number of Major Problems Resolved per Month	0.4
Turnaround Time of Major Problems (hours)	19.8
Number of Minor Problems Reported per Month	2.8
Number of Minor Problems Resolved per Month	2.1
Turnaround Time of Minor Problems (hours)	335.4

EXHIBIT III-D-3

USER SATISFACTION WITH SOFTWARE SUPPORT PERFORMANCE
DATA GENERAL



* Rating: 1 = Low, 10 = High
† Average Standard Error of the Mean: 0.4

- Exhibit III-D-4 also indicates that Data General software support comes close to meeting and even exceeding all of the support requirements areas of its CEO users. Only in the difficult area of documentation does Data General miss the acceptable range of the standard error of the mean. Exhibit III-D-5 demonstrates that Data General succeeds in satisfying the majority of its users' requirements in all areas tested, including documentation. While few people contract for additional support offerings, such as training, consulting, and access to problems data bases, Data General support quality in these areas is exceedingly high. Exhibit III-D-6 graphically represents Data General support performance in these areas.

- CEO users report concern over the quality of error fixes received, as shown in Exhibit III-D-7. These users do not hold their software engineers responsible for this, however, as the sample rated the skill of their software engineers higher than their required level. Exhibit III-D-8 also shows CEO user dissatisfaction with the error fixes received (only 36% of the sample satisfied); however, user satisfaction with their software engineer is extremely high. Even more telling is the fact that all CEO users who experienced on-site support were satisfied with that aspect of their service. Exhibit III-D-9 graphically demonstrates how CEO users feel about the actual provision of software support.

- With such high overall satisfaction with the software support that they received, it is not surprising that these CEO users are not motivated to consider premium levels of software support measured in Exhibit III-D-10. CEO user comments about possible improvements tended to concentrate on the documentation, particularly in the area of simplifying manuals and newsletters.

EXHIBIT III-D-4

1986 USER SOFTWARE SUPPORT RATINGS
DATA GENERAL

SOFTWARE SUPPORT CATEGORY	LEVEL OF SUPPORT		SUPPORT EXCEEDS (Falls Below) USER REQUIREMENTS
	REQUIRED†	RECEIVED†	
Phone Support	7.6	7.4	(0.2)
Access to Problems Data Base	4.1	4.6	0.5
Documentation	8.3	7.6	(0.7)
Training	6.0	6.6	0.6
Consulting	4.9	5.9	1.0

▒ User Expectations Exceeds Vendor Performance

* Rating: 1 = Low, 10 = High
† Average Standard Error of the Mean: 0.4

EXHIBIT III-D-5

USER SATISFACTION: SOFTWARE SUPPORT
DATA GENERAL

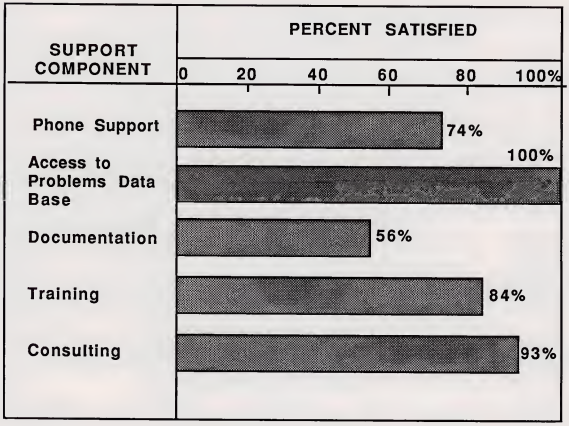
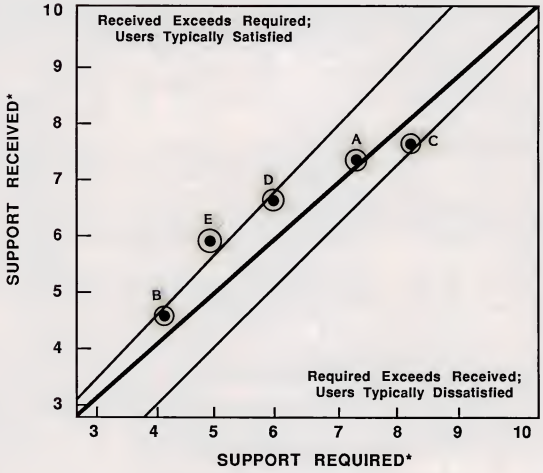


EXHIBIT III-D-6

SOFTWARE SUPPORT REQUIRED/RECEIVED
DATA GENERAL



A: Phone Support
B: Access to Problems Data Base
C: Documentation
D: Training
E: Consulting

* Rating: 1 = Low, 10 = High

EXHIBIT III-D-7

ACTUAL SOFTWARE SUPPORT LEVEL RECEIVED
DATA GENERAL

SOFTWARE SUPPORT LEVEL	LEVEL OF SUPPORT		SUPPORT EXCEEDS (Fall Below) USER REQUIREMENTS
	REQUIRED†	RECEIVED†	
Error Fixes	8.7	7.2	(1.5)
Upgrades/ Revisions	8.4	8.1	(0.3)
SW Engineer Skill Level	7.5	7.8	0.3
On-Site Support	3.6	6.0	2.4

User Expectations Exceeds Vendor Performance

* Rating: 1 = Low, 10 = High
† Average Standard Error of the Mean: 0.4

EXHIBIT III-D-8

USER SATISFACTION WITH LEVEL RECEIVED
DATA GENERAL

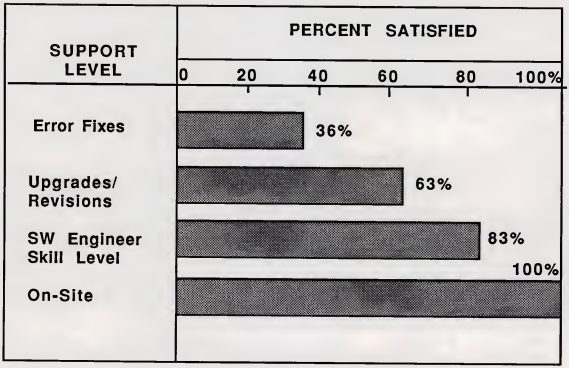
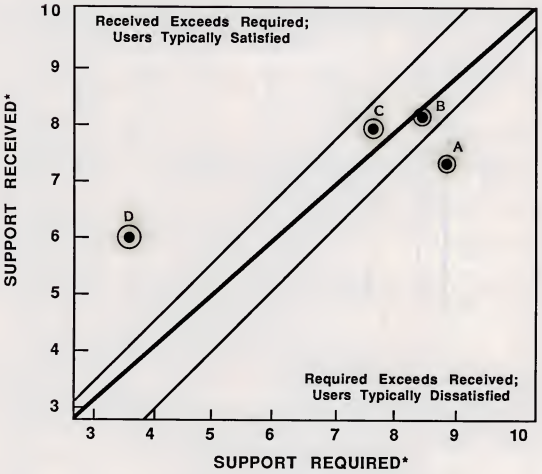


EXHIBIT III-D-9

SOFTWARE SUPPORT LEVEL REQUIRED/RECEIVED
DATA GENERAL



A: Error Fixes
B: Upgrades/Revisions
C: SW Engineer Skill Level
D: On-Site Support

* Rating: 1 = Low, 10 = High

EXHIBIT III-D-10

DISTRIBUTION OF REASONABLE PREMIUMS FOR ADDED SERVICE DATA GENERAL

SUPPORT	Requirement* (1-10)	PERCENTAGE OF USERS REQUIRING SUPPORT WHO WILL PAY PREMIUM OVER CURRENT SUPPORT CHARGE					
		PREMIUM LEVEL (Up to and Including)					
		0%	5%	10%	25%	50%	50+%
On-Site Support	2.9	36%	24%	-	-	-	-
Phone Support	8.6	12%	12%	-	-	-	-
Remote Support	5.1	32%	24%	-	-	-	-

* Requirement Scale: 1 = Low, 10 = High

III E. CANDLE CORPORATION

- A cross-section of Candle Omegamon software users were interviewed in July and August of this year. The sample was evenly distributed across industry lines, with slight concentration in manufacturing (33% of the sample) and within services industries (16%). The remaining sample was distributed between government, education, banking/finance, insurance, distribution, medical, and telecommunications. The majority of respondents were data processing managers or directors. In all but one case, the software was installed on IBM 43XX or 30XX mainframes. Each of the 27 interviews was conducted by phone, lasting approximately 20 minutes.

- Exhibit III-E-1 graphically illustrates the extent of each delivery mode Candle's customer base is utilizing. Contractually, very few of the Omegamon users are demanding direct intervention from Candle staff. A mere 3.7% of the sample have contracted for on-site support and only an additional 37% have called Candle CEs on-site on an ad hoc basis. Consulting is also at low usage rates, 18.5% via contractual agreement, 40.7% additionally requesting consultation outside of agreement terms.

- Services utilized by more self-sufficient software users, on the other hand, show much higher percentages received. Phone-in hotline support is the most popular and is received in 100% of responding cases. The vast majority of hotline users are calling under contract (92.6%). Documentation support, as well as mailed updates, fixes, and revisions to the software are received by 96.3% of the Candle users. All of this group received update/revision subscription material under contract and nearly all additionally contracted for documentation support (92.6%).

- In Exhibit III-E-2, Candle shows good reliability in product performance, with reports of only one major problem reported and resolved per year. Turnaround time for these problem fixes may initially be interpreted as somewhat high for

EXHIBIT III-E-1

SOFTWARE SUPPORT DELIVERY CANDLE

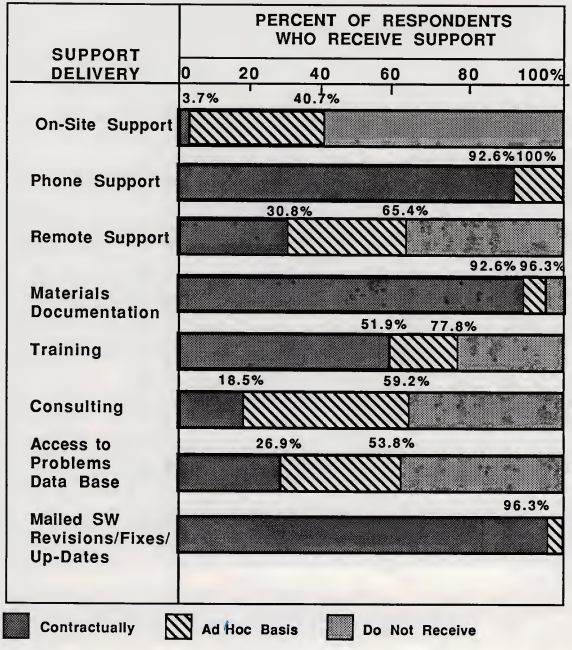


EXHIBIT III-E-2

SOFTWARE SUPPORT PERFORMANCE
CANDLE

SUPPORT COMPONENT	1986
Number of Major Problems Reported per Month	0.1
Number of Major Problems Resolved per Month	0.1
Turnaround Time of Major Problems (hours)	69.1
Number of Minor Problems Reported per Month	1.8
Number of Minor Problems Resolved per Month	1.7
Turnaround Time of Minor Problems (hours)	114.7

such major interruptions (defined as resulting in complete stoppage of application processing), but Exhibit III-E-3 shows very high satisfaction ratings in resolution and turnaround categories.

- Minor problems are resolved with nearly equal high levels of satisfaction from users (see Exhibit III-E-3), with less than two problems reported per month, and most coming to resolution within an average of four to five days (see Exhibit III-E-2). Overall satisfaction with Candle's support performance rates are at a level of excellence of 9 of a possible 10.

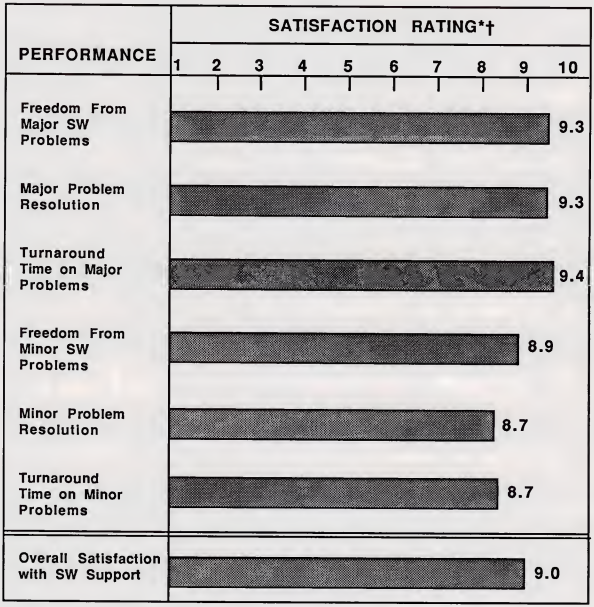
- Candle user satisfaction is rated more specific to delivery mode in Exhibit III-E-4. Users' required levels of service are compared to perceived levels delivered by Candle within each category of support. As can be viewed graphically in Exhibit III-E-5, Omegamon users are extremely satisfied in consulting, training, and phone support categories, all rating well above the 90% mark. Exhibit III-E-4 reveals Candle's support delivery is above levels required by the users in these categories.

- Documentation is the only mode of support failing to exceed user needs (see Exhibit III-E-4). It proves the general lament of industry consumers and is the source of lowest satisfaction ratings among delivery modes utilized by Candle (see Exhibit III-E-5). By far the most common source of complaint by respondents, Candle, like other technical product vendors, should review documentation for clarity and usefulness of organization. A repeated comment of Omegamon users regarded cross-referencing and summary needs.

- The support positioning of Candle's services is illustrated in Exhibit III-E-6. To keep the vast majority of users happy in most service categories listed, Candle approaches the target area in virtually all modes of support. Sensitive to user requirement levels, Candle does an exemplary job of providing support in amounts correspondent to customer needs, without excess spending on levels above what the market requires.

EXHIBIT III-E-3

USER SATISFACTION WITH SOFTWARE SUPPORT PERFORMANCE CANDLE



* Rating: 1 = Low, 10 = High
† Average Standard Error of the Mean: 0.2

EXHIBIT III-E-4

1986 USER SOFTWARE SUPPORT RATINGS
CANDLE

SOFTWARE SUPPORT CATEGORY	LEVEL OF SUPPORT		SUPPORT EXCEEDS (Fall Below) USER REQUIREMENTS
	REQUIRED†	RECEIVED†	
Phone Support	7.3	7.7	0.4
Access to Problems Data Base	3.8	4.1	0.3
Documentation	7.7	7.6	(0.1)
Training	4.0	4.6	0.6
Consulting	3.4	4.2	0.8


User Expectations Exceeds Vendor Performance

* Rating: 1 = Low, 10 = High
† Average Standard Error of the Mean: 0.4

EXHIBIT III-E-5

USER SATISFACTION: SOFTWARE SUPPORT CANDLE

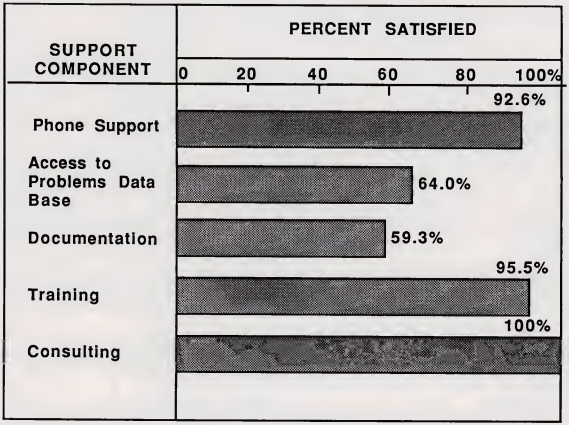
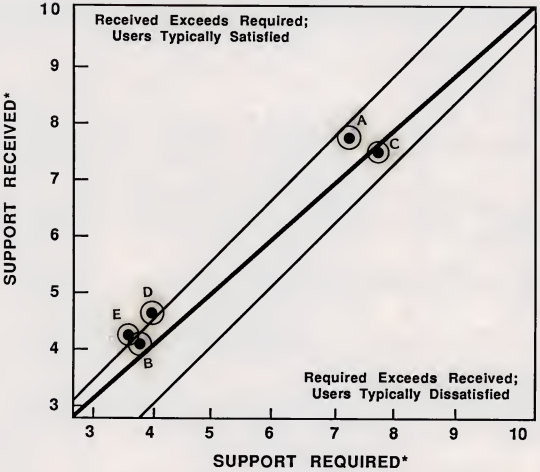


EXHIBIT III-E-6

SOFTWARE SUPPORT REQUIRED/RECEIVED CANDLE



A: Phone Support
B: Access to Problems Data Base
C: Documentation
D: Training
E: Consulting

* Rating: 1 = Low, 10 = High

- Exhibit III-E-7 provides further illustration of Candle's positioning expertise. The levels of actual software support provided by Candle hit dead on the mark in three areas of high importance--error fixes, upgrades/revisions, and software engineer skill level. The required levels range from 7.4 to 8.2.

- On-site support, due to the success of and satisfaction with other modes of delivery, has a significantly lower level of requirement. Candle, with the relatively low received rating of 3.1, surpasses user needs in this service area.

- Exhibit III-E-8 presents Candle users' high incidence of satisfaction with the specific levels of software support. The lowest rating of 74.1% satisfaction with upgrades/revisions reflects comments by users on the timeliness of update shipments.

- Again depicting Candle's responsiveness to customer needs, Exhibit III-E-9 shows three of the four levels of service as precisely on target--a feat few other software vendors have managed to date.

- As might be expected, the extremely high satisfaction rates with service do not encourage users to consider premium service levels, as shown in Exhibit III-E-10. Users indicate virtually no requirement for on-site and remote support as premium services (indicated by the extremely low requirement ratings) and appear to be only attracted to telephone support.

EXHIBIT III-E-7

ACTUAL SOFTWARE SUPPORT LEVEL RECEIVED
CANDLE

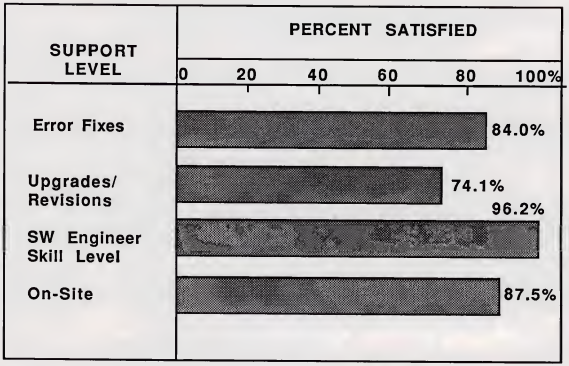
SOFTWARE SUPPORT LEVEL	LEVEL OF SUPPORT		SUPPORT EXCEEDS (Falls Below) USER REQUIREMENTS
	REQUIRED†	RECEIVED†	
Error Fixes	8.2	8.2	0.0
Upgrades/ Revisions	7.4	7.4	0.0
SW Engineer Skill Level	7.9	7.9	0.0
On-Site Support	1.8	3.1	1.3

▨ User Expectations Exceeds Vendor Performance

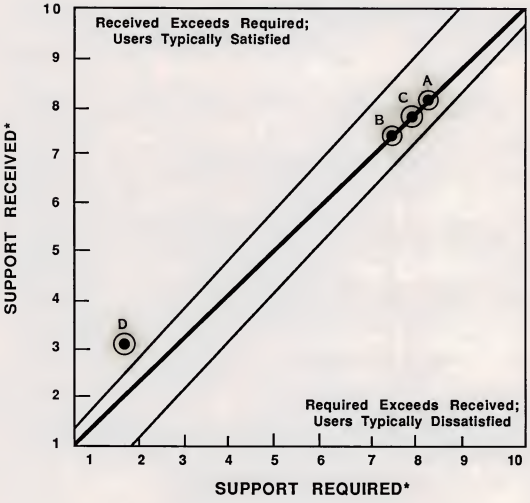
* Rating: 1 = Low, 10 = High
† Average Standard Error of the Mean: 0.4

EXHIBIT III-E-8

USER SATISFACTION WITH LEVEL RECEIVED
CANDLE



SOFTWARE SUPPORT LEVEL REQUIRED/RECEIVED CANDLE



A: Error Fixes
B: Upgrades/Revisions
C: SW Engineer Skill Level
D: On-Site Support

* Rating: 1 = Low, 10 = High

EXHIBIT III-E-10

DISTRIBUTION OF REASONABLE PREMIUMS FOR ADDED SERVICE CANDLE

SUPPORT	Requirement* (1-10)	PERCENTAGE OF USERS REQUIRING SUPPORT WHO WILL PAY PREMIUM OVER CURRENT SUPPORT CHARGE					
		PREMIUM LEVEL (Up to and Including)					
		0%	5%	10%	25%	50%	50+%
On-Site Support	1.7	55.6%	37.0%	11.0%	0	0	0
Phone Support	7.4	25.9%	18.5%	14.8%	0	0	0
Remote Support	2.3	52.0%	37.0%	11.0%	0	0	0

* Requirement Scale: 1 = Low, 10 = High

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' on-going planning information needs.

INPUT Planning Services

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

- **Market Analysis and Planning Service (MAPS)** provides up-to-date market analyses, five-year forecasts, trend analyses, and sound recommendations for action. MAPS is designed to satisfy planning and marketing requirements of information services vendors.

- **Company Analysis and Monitoring Service (CAMS)** is a comprehensive reference service covering more than 4,000 U.S. information services vendor organizations. CAMS is often used for competitive analysis and pre-screening of acquisition and joint venture candidates.

- **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 senior 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** 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 common issues; and **custom consulting** for a single client. Some of the recent and more frequent topics are:

- Strategy planning and support.
- Product evaluation.
- New market identification.
- Distribution channels.
- 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 conducts proprietary research, regularly, 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 productivity, and ultimately profit, in 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.

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