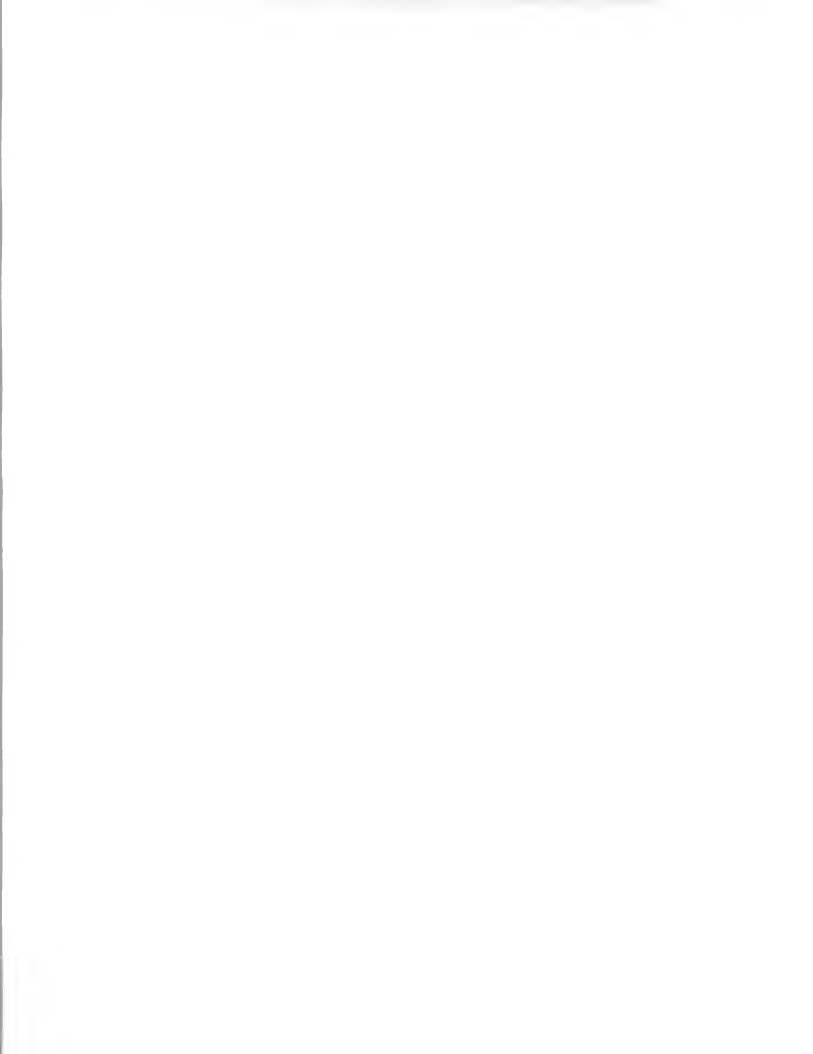# 1989 U.S. User Survey Results

Robert L. Goodwin
Vice President
INPUT

INPUT

1989 User Surveys

- Large systems
- Mid-range systems
- PC/workstations
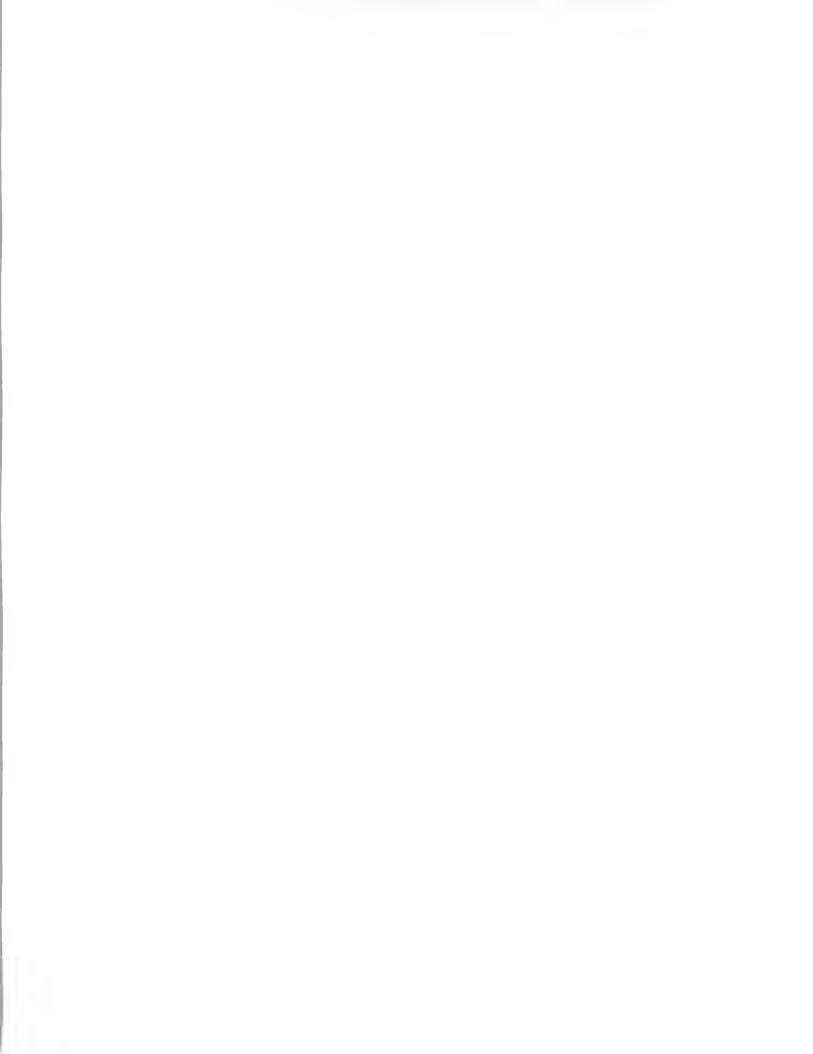- Third-party maintenance

INPUT

Notes

INPUT

1989 INPUT Research Base

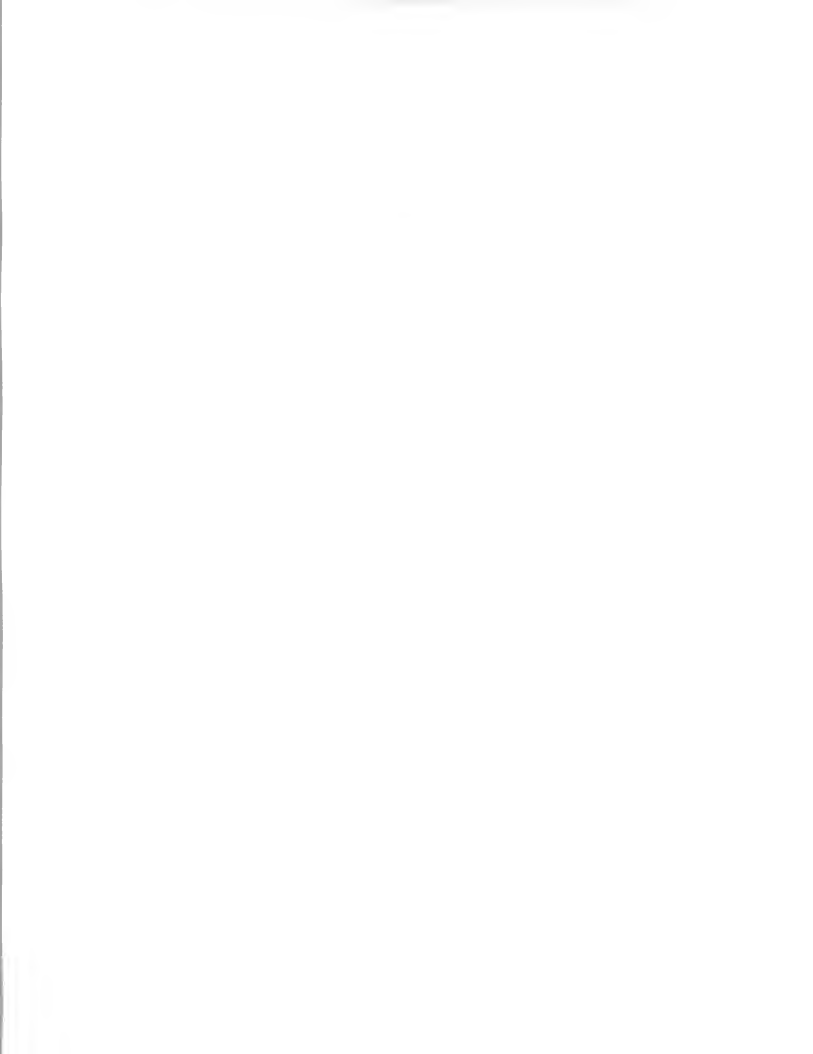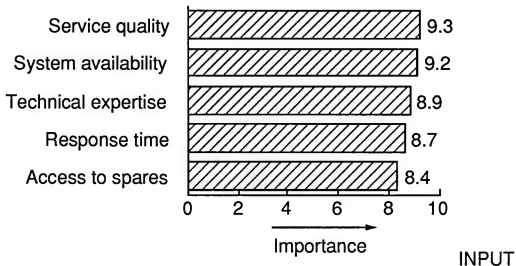| User Research	No. of Surveys
Large system users	374
Mid-range system users	399
PC/workstation users	178
TPM users	184
Total users	1,135

INPUT

Notes

INPUT

User Surveys

• Large systems

Notes

Service Vendor Selection Criteria
Large Systems

Criteria	Importance
Service quality	9.3
System availability	9.2
Technical expertise	8.9
Response time	8.7
Access to spares	8.4

Importance

INPUT

Notes

FSEM-BG-4

INPUT

Service Vendor Selection Criteria
Large Systems

Criterion	Importance
Software support	7.5
Vendor reputation	7.5
Price	6.8
Contract flexibility	6.7
Ability to service other products	4.3

Notes

INPUT

Service Contract Coverage
All Large Systems

Contract Component	Sample Responding (Percent)	
	1988	1989
• Days of coverage		
- Monday - Friday	46	45
- Monday - Saturday	2	1
- Monday - Sunday	52	54

INPUT

Notes

INPUT

Service Contract Coverage
All Large Systems

Contract Component	Sample Responding (Percent)	
	1988	1989
• Hours of coverage		
- 1 to 9 hours	34	41
- 10 to 16 hours	11	6
- 17 to 24 hours	55	53

INPUT

Notes
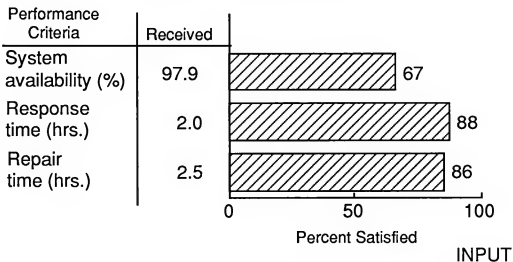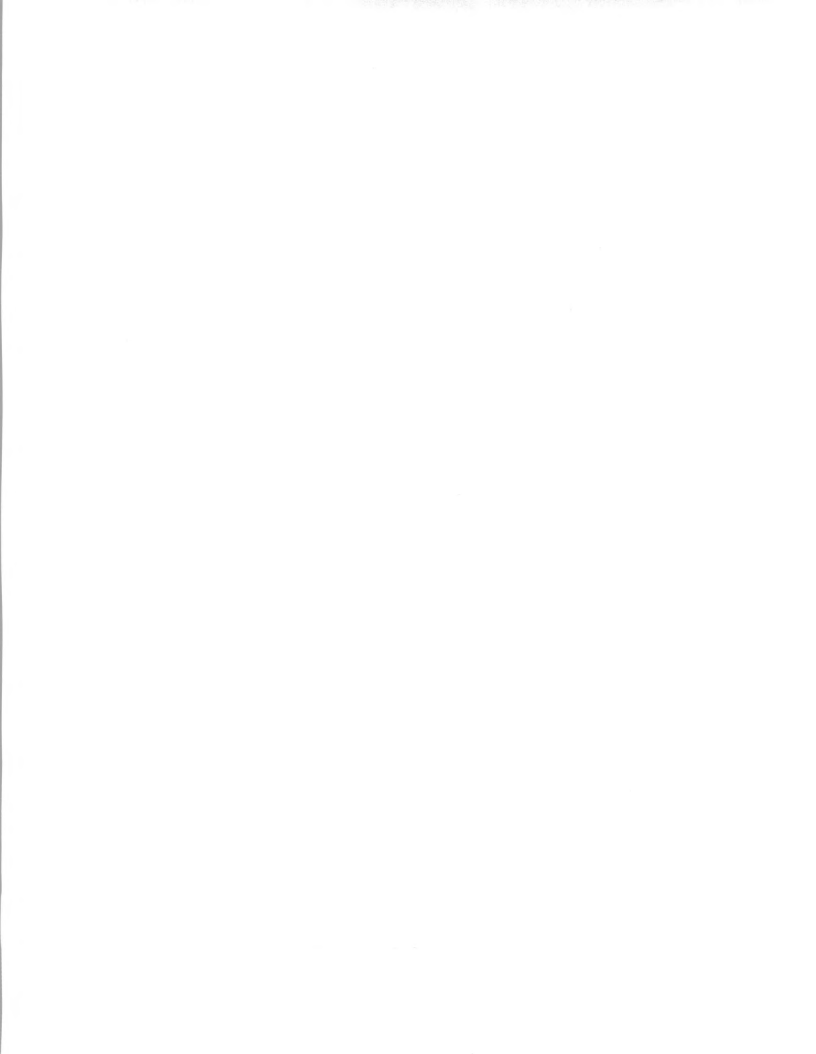
INPUT

System Availability Analysis
All Large Systems

Performance Criteria	Received	Percent Satisfied
System availability (%)	97.9	67
Response time (hrs.)	2.0	88
Repair time (hrs.)	2.5	86

Percent Satisfied: 0 — 50 — 100

INPUT

Notes

INPUT

Large Systems System Availability 1983-1989

INPUT

Notes

System Availability Satisfaction at Each Requirement Level
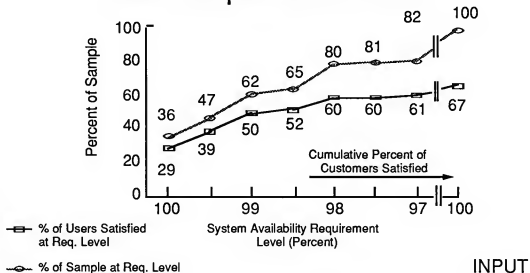
INPUT

System Interruption Analysis—All Large Systems

• System Interruptions (Per month)	.9

	Percent
- Hardware-caused	63
- System software-caused	16
- Application software-caused	5
- Other-caused	16

INPUT

Notes

INPUT

Large Systems User Needs Still Unmet

Requirement

A = Parts Availability
B = HW Eng. Skill
C = Overall HW Support
D = SW Documentation
E = SW Eng. Skill Level
F = Overall SW Support

INPUT

Notes

INPUT

Large Systems User Satisfaction with High-Priority Services

Dissatisfied	Satisfied	
Most Users Satisfied	HW Eng. Skill Level	65
	HW Support Overall	66
	Parts Availability	53
	SW Eng. Skill	53
	SW Support Overall	51

100 75 50 25 0 25 50 75 100

Percent of Users

INPUT

Notes

Large Systems User Satisfaction with High-Priority Services

Dissatisfied	Satisfied

Most Users Dissatisfied

63 SW Documentation

51 SW Remote Support

100 75 50 25 0 25 50 75 100
Percent of Users

INPUT

INPUT

System Availability Performance—Large Systems

Vendor	Sys. Avail. Received (Percent)	Percent Satisfied
IBM 308X	98.8	87
CDC	97.4	80
Bull H.N.	98.5	73
IBM 309X	98.7	72
NAS	98.3	68

Percent Satisfied

INPUT

Notes

System Availability Performance—Large Systems

Vendor	Sys. Avail. Received (Percent)	Percent Satisfied
Unisys 1100/XX	96.9	68
Unisys A-Series	96.2	59
NCR	96.8	53
Amdahl	99.2	49

INPUT

Notes

Response Time Performance
Large Systems

Vendor	Resp. Time Received (Percent)	Percent Satisfied
IBM 309X	1.0	100
IBM 308X	.9	100
Amdahl	1.1	90
CDC	2.4	90
Bull H.N.	1.4	89

Percent Satisfied
0   50   100

INPUT

Notes

INPUT

Response Time Performance
Large Systems

Vendor	Resp. Time Received (Percent)	Percent Satisfied
NAS	1.2	89
Unisys A-Series	1.9	85
Unisys 1100/XX	1.4	83
NCR	6.7	67

0   50   100
Percent Satisfied

INPUT

Notes

FSEM-BG-18

INPUT

Repair Time Performance
Large Systems

Vendor	Repr. Time Received (Percent)	Percent Satisfied
Amdahl	1.7	94
IBM 308X	2.1	94
IBM 309X	2.3	91
Bull H.N.	2.7	89
CDC	4.1	86

Percent Satisfied

INPUT

Notes

Repair Time Performance
Large Systems

Vendor	Repr. Time Received (Percent)	Percent Satisfied
Unisys A-Series	2.3	85
Unisys 1100/XX	2.2	85
NAS	1.7	85
NCR	3.6	74

Percent Satisfied

INPUT

INPUT

Notes

User Surveys

Mid-Range Systems

Notes

Service Vendor Selection Criteria
Mid-Range Systems

FSEM-BG-22

INPUT

Service Vendor Selection Criteria
Mid-Range Systems

Criteria	Importance
Software support	7.5
Vendor reputation	7.5
Price	6.2
Contract flexibility	6.2
Ability to service other products	4.3

INPUT

Notes

FSEM-BG-23

INPUT

Service Contract Coverage
All Mid-Range Systems

Contract Component	Sample Responding (Percent)	
	1988	1989
• Days of coverage		
- Monday - Friday	66	64
- Monday - Saturday	4	3
- Monday - Sunday	30	33

INPUT

Notes

FSEM-BG-24

INPUT

Service Contract Coverage
All Mid-Range Systems

Contract Component	Sample Responding (Percent)	
	1988	1989
• Hours of coverage		
- 1 to 9 hours	54	56
- 10 to 16 hours	14	13
- 17 to 24 hours	32	31

INPUT

Notes

System Availability Analysis
All Mid-Range Systems

Performance Criteria	Received		Percent Satisfied
System availability (%)	97.4		56
Response time (hrs.)	3.9		90
Repair time (hrs.)	4.0		91

Percent Satisfied
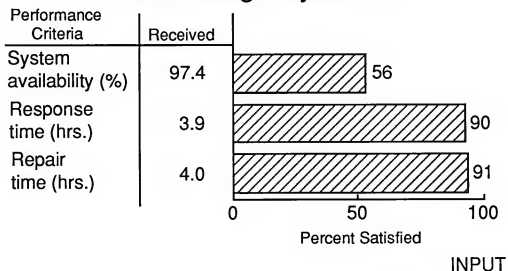
INPUT

INPUT

Notes

Mid-Range Systems System Availability 1983-1989

FSEM-BG-27
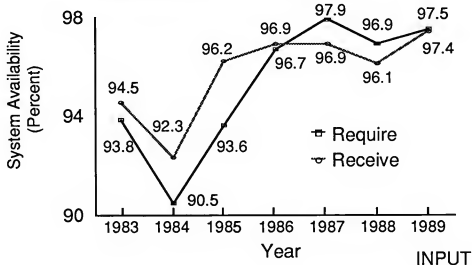
INPUT

System Availability Satisfaction at Each Requirement Level—All Mid-Range Systems
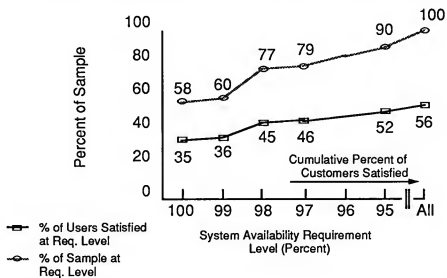
INPUT

System Interruption Analysis
All Mid-Range Systems

System Interruptions (Per month)	.59

	Percent
Hardware-caused	63
System software-caused	13
Application software-caused	4
Other-caused	20

INPUT

Notes

INPUT

Key Service Requirements vs. Received
All Mid-Range Systems
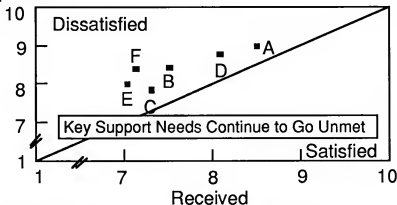
A = HW Maintenance
B = SW Support
C = HW Remote Support
D = Spare Parts Availability
E = SW Remote Support
F = SW Documentation

Notes

INPUT

Mid-Range Systems User Satisfaction
with High-Priority Services

| Dissatisfied | Satisfied |

Most Users Satisfied

HW Remote Support 63
HW Maint. Overall 59
SW Eng. Skill 57

100 75 50 25 0 25 50 75 100
Percent of Users

INPUT

Notes

FSEM-BG-31

INPUT

Mid-Range System User Satisfaction with High-Priority Services

Dissatisfied	Satisfied

Most Users Satisfied

Service	Value
SW Remote Support	55
Spares Availability	54
HW Eng. Skill	54
SW Support Overall	51

100 75 50 25 0 25 50 75 100

Percent of Users

INPUT

INPUT

Mid-Range System User Satisfaction with High-Priority Services

Dissatisfied	Satisfied
Most Users Dissatisfied	

53 SW Documentation

100 75 50 25 0 25 50 75 100

Percent of Users

INPUT

FSEM-BG-33

INPUT

System Availability Performance
Mid-Range Systems

Vendor	Sys. Avail. Received (Percent)	Percent Satisfied
IBM 937X	97.5	74
Concurrent	97.8	73
Data General	96.7	73
Prime	97.4	68
IBM AS 400	98.0	67

Percent Satisfied: 0 — 50 — 100

INPUT

System Availability Performance
Mid-Range Systems

Vendor	Sys. Avail. Received (Percent)	Percent Satisfied
HP	96.9	65
AT&T	95.9	59
Tandem	99.0	43
DEC	97.1	39
Wang	98.4	3

Percent Satisfied — 0 50 100

INPUT

Notes

Response Time Performance
Mid-Range Systems

Vendor	Resp. Time Received (Percent)	Percent Satisfied
Tandem	1.6	100
HP	4.1	95
Data General	7.1	92
Wang	1.9	92
Concurrent	5.3	90

INPUT

Notes

INPUT

Response Time Performance
Mid-Range Systems

Vendor	Resp. Time Received (Percent)	Percent Satisfied
IBM AS 400	1.0	89
IBM 937X	1.7	89
AT&T	11.3	85
DEC	2.1	85
Prime	2.2	83

Percent Satisfied

INPUT

Notes

FSEM-BG-37

INPUT

Repair Time Performance
Mid-Range Systems

Vendor	Repr. Time Received (Percent)	Percent Satisfied
Data General	4.1	97
Tandem	2.8	97
Wang	1.6	97
IBM AS 400	2.7	94
IBM 937X	2.9	93

Percent Satisfied

INPUT

Notes

INPUT

Repair Time Performance
Mid-Range Systems

Vendor	Repr. Time Received (Percent)	Percent Satisfied
DEC	3.6	90
HP	1.9	88
Concurrent	8.4	84
AT&T	9.0	83
Prime	2.9	68

INPUT

FSEM-BG-39

INPUT

User Surveys

Third-Party Maintenance

Notes

Service Vendor Selection Criteria
Third-Party Maintainers

Criterion	Importance
Service quality	9.2
Technical expertise	8.7
System availability	8.6
Response time	8.3
Access to spares	8.1

Importance →

0 2 4 6 8 10

INPUT

Notes

INPUT

Service Vendor Selection Criteria
Third-Party Maintainers

Criteria	Importance
Price	7.8
Vendor reputation	7.6
Contract flexibility	6.0
Ability to service other products	5.9
Software support	4.5

Importance scale: 0 2 4 6 8 10

INPUT

Notes

INPUT

TPM Contract Coverage
All Users

Service Coverage	Sample (Percent)	
	1988	1989
• Days of Coverage		
Monday - Friday	71	64
Monday - Saturday	4	2
Monday - Sunday	25	34

INPUT

Notes

TPM Contract Coverage
All Users

Service Coverage	Sample (Percent)	
	1988	1989
• Hours of Coverage		
1 - 9 hours	62	53
10 - 16 hours	9	12
17 - 24 hours	29	35

INPUT

Notes

INPUT

TPM System Availability Analysis
All Users

Component	Require	Receive			
System availability (%)	94.4	95.9		67	
Response time (hrs.)	5.0	3.9		91	
Repair time (hrs.)	7.8	6.1		81	

0   25   50   75   100
Percent Satisfied

INPUT

INPUT

TPM System Availability Satisfaction at Each Requirement Level—All Users

FSEM-BG-46
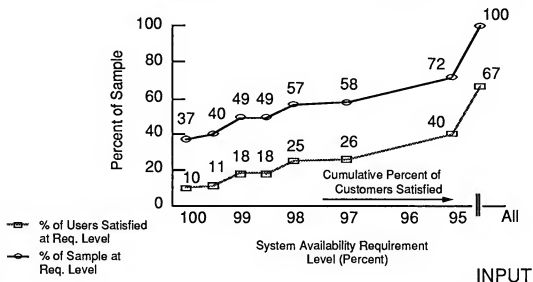
INPUT

TPM System Interruption Analysis—All Users

System Interruptions (per month)	1.2
	Percent
Hardware-caused	66
System software-caused	9
Applications software-caused	5
Other (i.e., user-caused)	20

INPUT

Notes

INPUT

TPM Hardware Maintenance Required
vs. Received—All Users

Requirement

Dissatisfied

Satisfied

Received

A = Hardware Engineer Skill   C = Spare Parts Availability
B = Hardware Remote Support   D = Overall Hardware Maintenance

INPUT

Notes

INPUT

TPM Hardware Maintenance Satisfaction—All Users

Service		
Hardware Engineer Skill		59
Hardware Remote Support		65

Percent Satisfied: 0 — 50 — 100

INPUT

Notes

INPUT

TPM Hardware Maintenance
Satisfaction—All Users

Service

Spare Parts
Availability — 58

Overall Hardware
Maintenance — 62

0   50   100
Percent Satisfied

INPUT

Notes

INPUT

TPM Versus Manufacturer System Availability Performance

Vendor Type	(Percent)		Percent Satisfied
	Req.	Rec.	
TPM	97.3	99.0	85
MFR	97.8	97.9	67
TPM	94.7	95.5	62
MFR	97.4	97.3	59
TPM	92.5	96.4	77
MFR	94.0	95.7	73

▫ PC/WS
▣ Mid-Range System
▫ Large System

Percent Satisfied

0 20 40 60 80 100

INPUT

Notes

INPUT

User Satisfaction With Hardware Maintenance—TPM Versus Manufacturer

Product Type	Percent Satisfied
Large Systems — TPM	78
Large Systems — Manufacturer	76
Small Systems — TPM	65
Small Systems — Manufacturer	54
PC/WS — TPM	68
PC/WS — Manufacturer	59

■ TPM
▨ Manufacturer

INPUT

Notes

INPUT

User Satisfaction with Parts Availability
TPM Versus Manufacturer

Product Type		
Large System	TPM	56
	Manufacturer	60
Small System	TPM	49
	Manufacturer	46
PC/WS	TPM	67
	Manufacturer	73

0 20 40 60 80 100
Percent Satisfied

■ TPM
▨ Manufacturer

INPUT

Notes

FSEM-BG-53

INPUT

User Surveys

PC/Workstations

Notes

Service Vendor Selection Criteria
PC/Workstation

Criteria	Importance
Technical expertise	8.4
System availability	8.1
Response time	8.0
Access to spares	8.0
Vendor reputation	7.5

Importance →

INPUT

Notes

INPUT

Service Vendor Selection Criteria
PC/Workstation

Criteria	Importance
Price	6.9
Service quality	6.6
Contract flexibility	6.5
Software support	5.9
Ability to service other products	5.4

Importance

INPUT

Notes

INPUT

Service Contract Coverage
PC/Workstations

Days Covered	Percent of Sample — 1989
Monday - Friday	76
Monday - Saturday	1
Monday - Sunday	23

INPUT

Notes

INPUT

Service Contract Coverage
PC/Workstations

Hours Covered	Percent of Sample —1989
1 - 9	75
10 - 16	4
17 - 24	21

INPUT

Notes

INPUT

System Availability Analysis
PC/Workstations

Performance Criteria	Received	Percent Satisfied
System availability (%)	95.0	71
On-site response time (hrs.)	9.4	62
On-site repair time (hrs.)	7.0	69
Depot turnaround time (days)	3.8	71

Percent Satisfied: 0   50   100
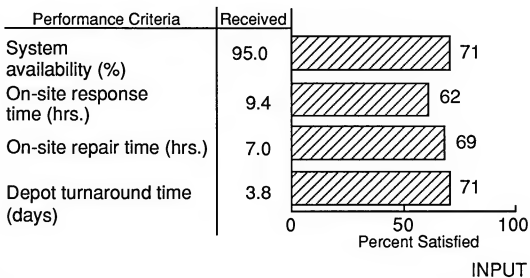
INPUT

Notes

INPUT

System Availability Performance Analysis PC/Workstations

	MFC	Dealers	TPM
System availability (%)	95.7	95.0	94.5
Response time (hrs.)	11.3	11.1	7.1
Repair time (hrs.)	6.9	3.9	8.9
Depot turnaround (days)	4.6	2.2	3.3

INPUT

Notes

INPUT

Satisfaction Levels—PC/Workstations

	TPM	Dealer	MFC
System availability	74	61	73
Response time	61	76	53
Repair time	68	72	67
HW maintenance overall	68	73	59

Percent Satisfied

INPUT

Notes

INPUT
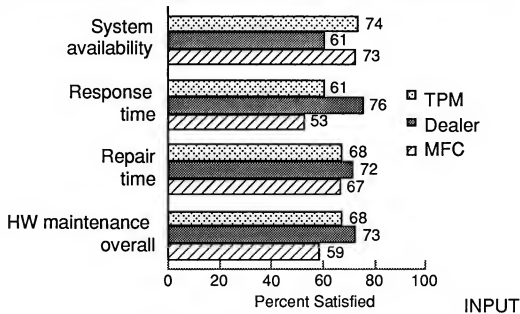
System Availability Satisfaction at Each Requirement Level—PC/Workstations
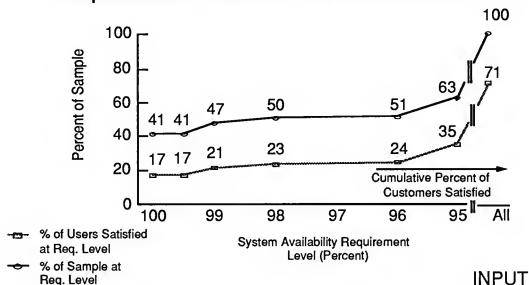
INPUT

Notes

System Interruption Analysis
PC/Workstations

	Mean (1989)
System interruptions per month	1.3
Hardware-caused	77.0
System software-caused	8.0
Application software-caused	5.0
Other-caused	10.0

INPUT

Notes

INPUT

PC/Workstation User Satisfaction
with High-Priority Services

Dissatisfied	Satisfied

Most Users Satisfied

Operational Training	70
Hotline Support	69
HW Maint. Overall	66
Spares Availability	65

100 75 50 25 0 25 50 75 100
Percent of Users

INPUT

Notes

INPUT

PC/Workstation User Satisfaction with High-Priority Services

Dissatisfied | Satisfied

Most Users Satisfied

HW Eng. Skill 64

SW Remote Support 52

100 75 50 25 0 25 50 75 100
Percent of Users

INPUT

Notes

INPUT

PC/Workstation User Satisfaction with High-Priority Services

Dissatisfied	Satisfied
Most Users Dissatisfied	

52	SW Documentation
51	SW Eng. Skill
51	SW Support Overall

100 75 50 25 0 25 50 75 100

Percent of Users

Notes

INPUT

System Availability Performance
PC/Workstations

Vendor	Sys. Avail. Received (Percent)	Percent Satisfied
Apollo (HP)	96.2	80
Tandy	94.4	75
IBM	93.7	73
ALTOS	93.0	70

INPUT

Notes

FSEM-BG-68

INPUT

System Availability Performance PC/Workstations

Vendor	Sys. Avail. Received (Percent)	Percent Satisfied
Compaq	97.0	68
Apple	94.6	68
Sun	96.0	60

Percent Satisfied

INPUT

Notes

Robert L. Goodwin
Vice President
Western Operation

PROFILE

**CAPABILITIES**

- Twenty-five years successful sales, marketing, and general management in the computer equipment, remote processing services and software industries.

- Expertise in business plan development, strategic partnering and acquisitions, industry marketing, VAR and reseller operations.

BACKGROUND

- Robert (Bob) Goodwin brings to INPUT and its clients comprehensive experience in executive management in large and mid-size corporations.

- Most recently he has served as President of COMMAND DATA SYSTEMS, a public safety software and turnkey systems vendor. With Bob's leadership and marketing strategy, CDS became a highly visible and respected vertical market leader.

- Bob's qualifications include the role of Director of Marketing for Xerox Computer Services, in support of all field sales and customer services activities.

- IBM utilized Bob's skills as Branch Manager and Assistant District Manager.

EDUCATION

- B.A., Psychology, Occidental College.

- Attended the MBA program, Golden Gate University.
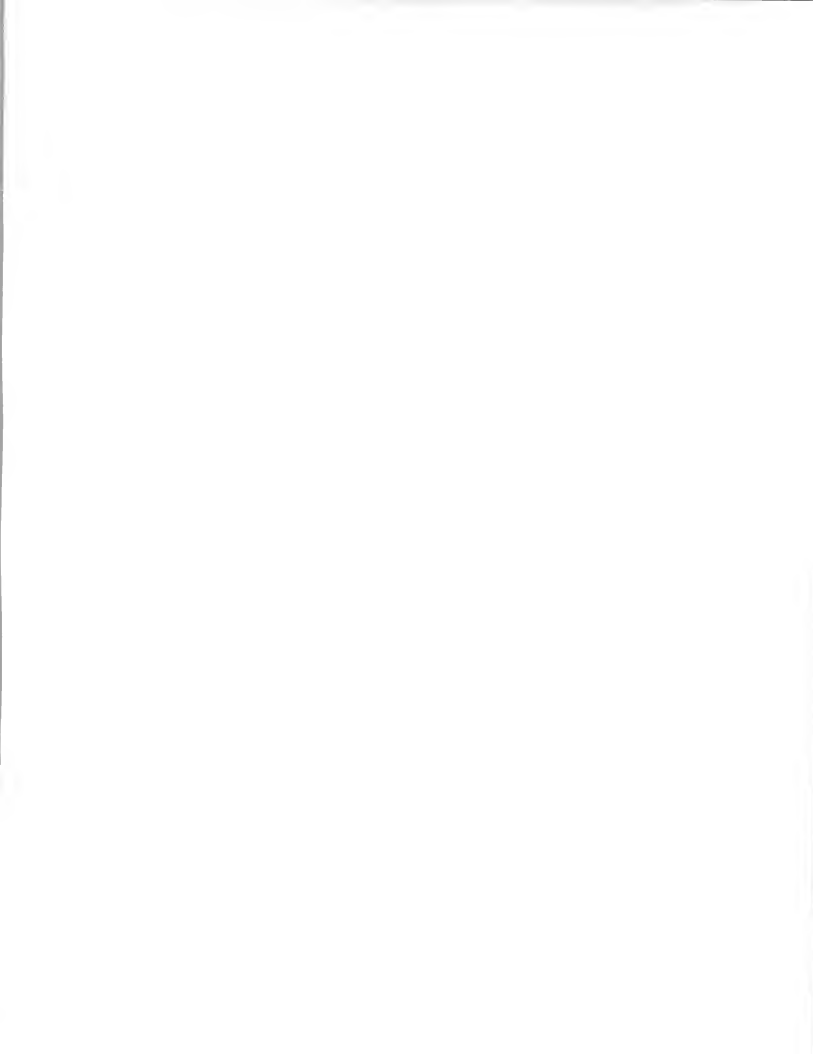
TITLE

DoB Goodwin

10/16/89

TO: Andrea Jeris
    INPUT
    MT View

From: Buddy Stigler

Attached are the pages for the
slide presentation that Bob Goodwin
will make on the 2nd day of
my conference —

I tried to use existing slide formats
where possible to simplify the production
process. There are 69 slides in the presentation.

Thanks!!!
Buddy

1989

User Surveys

- Large Systems
- ~~Small~~ *MidRange* Systems
- *PC/workstations*
- Third Party Maintenance

NOTES:

2

1989 ~~1988~~ INPUT Research Base

User Research	No. of Surveys	
Large System Users	~~381~~	374
Mid-range ~~Small~~ System Users / PC/workstation USERS	~~399~~	399 / 178
TPM Users	~~200~~	184
Total Users	~~980~~	1135

INPUT

NOTES:

FPRB-22a

INPUT

USER SURVEYS
- Large Systems

Input

Notes:

SERVICE VENDOR SELECTION CRITERIA
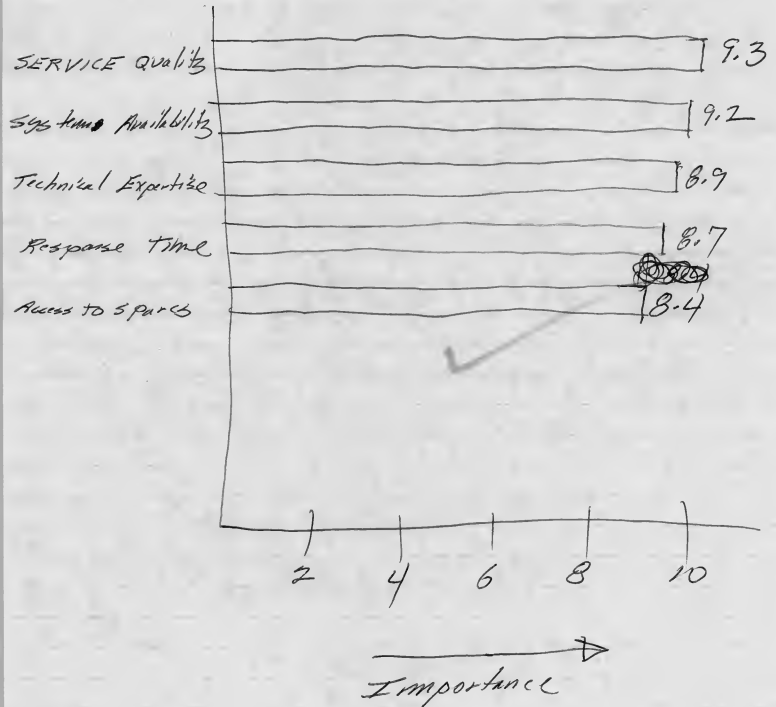
LARGE Systems

Criteria	Importance
SERVICE Quality	9.3
Systems Availability	9.2
Technical Expertise	8.9
Response Time	8.7
Access to Spares	8.4

Importance: 2 4 6 8 10

SERVICE VENDOR SELECTION CRITERIA

LARGE systems

Criteria	Importance
software support	7.5
Vendor Reputation	7.5
Price	6.8
Contract Flexibility	6.7
Ability to Service other Products	4.3

Importance

Service Contract Coverage
All Large-Systems

Contract Component	Sample Responding (Percent)		
		1988	1989
• Days of coverage			
- Monday – Friday		46	45
- Monday – Saturday		2	1
- Monday – Sunday		52	54

INPUT

NOTES:
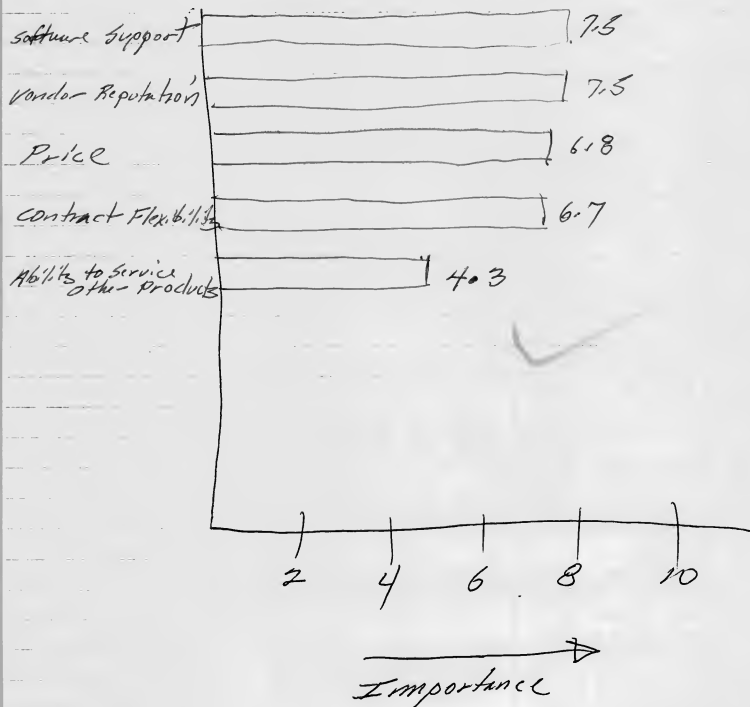
FPRB-23a

INPUT

Service Contract Coverage
All Large-Systems

Contract Component	Sample Responding (Percent)		
	1987	1988	1989
• Hours of coverage			
- 1 to 9 hours	~~39~~	34	41
- 10 to 16 hours	~~21~~	11	6
- 17 to 24 hours	~~40~~	55	53

INPUT

NOTES:

FPRB-23b

INPUT

System Availability Analysis
All Large Systems

Performance Criteria	Received	Percent Satisfied
System Availability (%)	97.9	67
Response Time (hrs)	~~7.7~~ 2.0	88
Repair Time(hrs)	~~4.2~~ 2.5	86
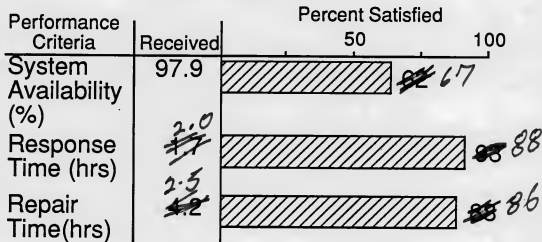
INPUT

NOTES:

FPRB-24

Large Systems System Availability
1983-1988

System Availability (Percent)

99

98

97

96

98.3   98.3   98.3

97.5

97.9   97.9

97.8

97.0
96.8   96.7   97.3   98.1

96.5   97.6

Achieved ---
Required —

1983   1984   1985   1986   1987   1988   1989

Year

INPUT

NOTES:

FPRB-25

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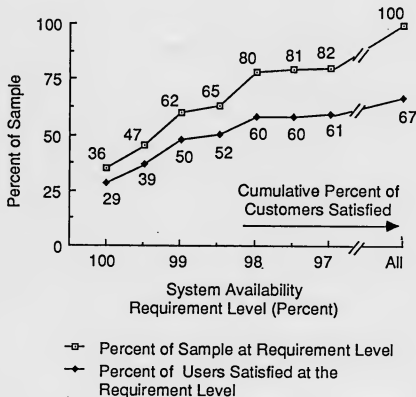onth
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**Availability
faction Increases**

In 1989, large-system users reported that they received system availability of 97.9% versus an expressed requirement of 97.8%. As stated in the previous section, user requirements for system availability dropped in 1989 (from 98.3% in 1988 to 97.8% in 1989), contributing to increased satisfaction with system availability in 1989, with 67% of the large-systems sample satisfied with system availability (up from 62% in 1988).

Exhibit II-3 presents the percentage of users who require system availability at each requirement level, as well as the cumulative percentage of users who are satisfied at each requirement level. For example, 36% of the 1989 large-systems users surveyed reported that they require 100% system availability. Of those users, the large-systems vendors were able to satisfy 29%. Sixty-two percent of the users require 99% system availability or better, and large-systems vendors were able to satisfy 50% of those users.

EXHIBIT II-3

SYSTEM AVAILABILITY SATISFACTION
AT EACH REQUIREMENT LEVEL

-□- Percent of Sample at Requirement Level
-◆- Percent of Users Satisfied at the
     Requirement Level

System Interruption
Analysis—All Large Systems

• Systems Interruptions (per month)	~~16~~ , 9
	Percent
- Hardware caused	~~49~~ 63
- System Software caused	~~21~~ 16
- Application Software caused	~~11~~ 5
- Other caused	19 16

INPUT

NOTES:

FPRB-27

INPUT

12

Large-Systems User Needs Still Unmet

Satisfied

Vital Service Needs Unmet

Dissatisfied

Value
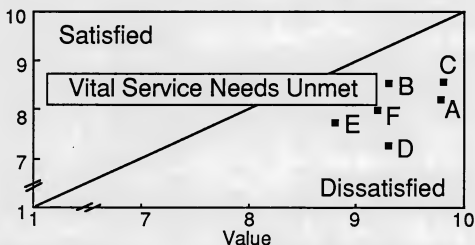
A=Parts Availability
B=Hardware Engineering Skill Level
C=Overall Hardware Support
D=Software Documentation
E=Software Engineering Skill Level
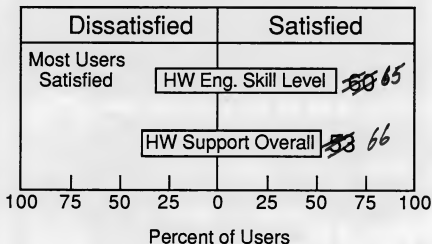F=Overall Software Support

INPUT

NOTES: Replot above for 1989

		Required	Received
A	Parts Avail	8.9	8.8
B	HW Eng Skill	9.0	8.5
C	Overall HW Support	9.1	8.6
D	SW Documentation	8.4	6.8
E	SW Eng Skill Level	8.8	7.9
F	Overall SW Support	8.6	7.8

FPRB-28

INPUT

13

Large System User Satisfaction with High-Priority Services

Dissatisfied				Satisfied			
Most Users Satisfied				HW Eng. Skill Level ~~50~~ 65			
				HW Support Overall ~~55~~ 66			

100 75 50 25 0 25 50 75 100

Percent of Users

INPUT

NOTES: Add to Above

Parts Availability 53~~8~~

SW Eng Skill   53   (Satisfied)

SW support overall 51

FPRB-29a

INPUT

14
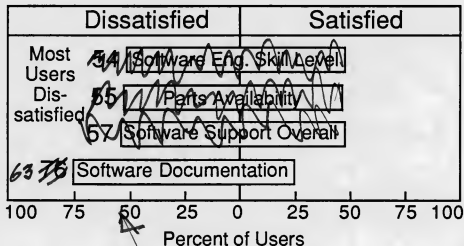
NOTES: add to above

SW Remote support   51 dissatisfied

Systems Availability Performance—Large Systems

Vendor	Sys. Avail. Received (Percent)	Percent Satisfied
NAS	99.0	85
Amdahl	98.2	78
NCR	97.1	61
IBM 309X	98.1	58
IBM 308X	98.6	58
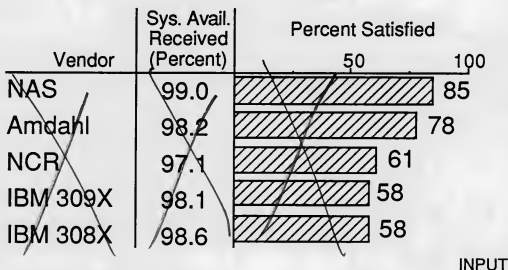
INPUT

NOTES:

	Received	%
IBM 308X	98.8	87
CDC	97.4	80
Bull H.N.	98.5	73
IBM 309X	98.7	72
NAS	983	68

FPRB-31

INPUT

Systems Availability Performance—
Large Systems

Vendor	Sys. Avail. Received (Percent)	Percent Satisfied
UNISYS (Sperry)	97.4	57
UNISYS (Burroughs)	97.5	56
CDC	97.5	53
Honeywell	97.1	49

INPUT

update

NOTES:

UNISYS 1100/xx	96.9	68
UNISYS A-series	96.2	59
NCR	96.8	53
Amdahl	99.2	49

FPRB-32

INPUT

Response Time Performance—
Large Systems

Vendor	Resp. Time Received (Percent)	Percent Satisfied
NAS	1.5	91
NCR	2.0	91
UNISYS (Burroughs)	1.6	88
UNISYS (Sperry)	1.5	79

INPUT

NOTES: Received   %

NAS   1.2   89

UNISYS A-Series   1.9   85

UNISYS 1100/XX   1.4   83

NCR   6.7   67

FPRB-34

INPUT

Repair Time Performance— Large Systems

Vendor	Repr. Time Received (Hours)	Percent Satisfied
UNISYS (Burroughs)	7.1	100
IBM 309X	2.9	96
CDC	8.8	91
NAS	1.9	90

INPUT

NOTES:

	Received	%D
Amdahl	1.7	94
IBM 308X	2.1	94
IBM 309X	2.3	91
Bull H.N.	2.7	89
CDC	4.1	86

FPRB-35

INPUT

Repair Time Performance— Large Systems

Vendor	Repr. Time Received (Hours)	Percent Satisfied
Amdahl	1.7	88
IBM 308X	2.3	86
Honeywell	4.1	85
NCR	3.0	75
UNISYS (Sperry)	5.6	69

INPUT

NOTES:

	Received	%
UNISYS A-series	2.3	85
UNISYS 1100/XX	2.2	85
NAS	1.7	85
NCR	3.6	74

FPRB-36

INPUT

2/
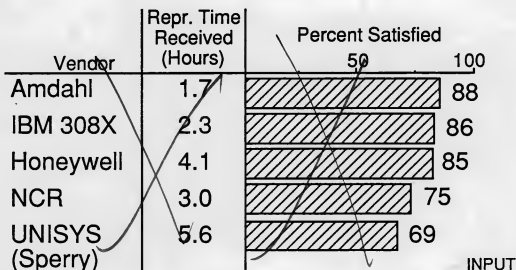
User Surveys

Mid-Range ~~Small~~ Systems

NOTES:

FPRB-37

SERVICE VENDOR SELECTION CRITERIA
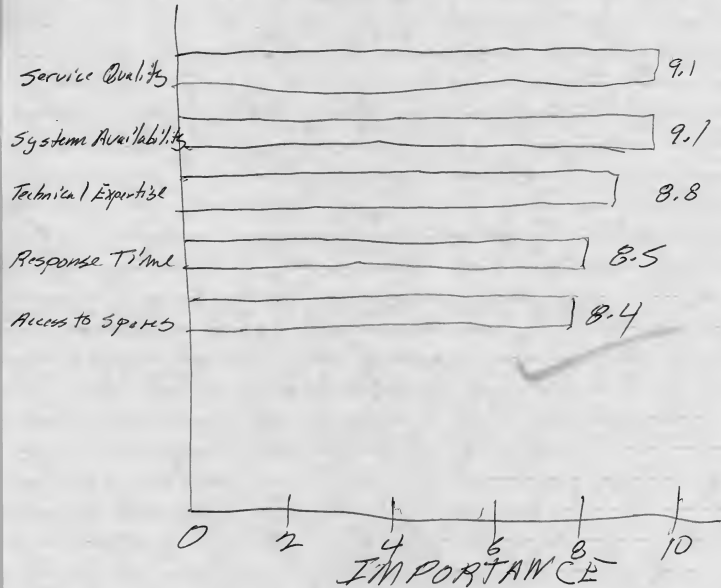
Mid-RANGE Systems

Horizontal bar chart. Y-axis criteria from top to bottom with importance values:

Criteria	Importance
Service Quality	9.1
System Availability	9.1
Technical Expertise	8.8
Response Time	8.5
Access to Spares	8.4

X-axis: IMPORTANCE (0, 2, 4, 6, 8, 10)

SERVICE VENDOR SELECTION CRITERIA

Mid-RANGE Systems

Criteria	Importance
Software Support	7.5
Vendor Reputation	7.5
Price	6.2
Contract Flexibility	6.2
Ability to service other products	4.3

IMPORTANCE
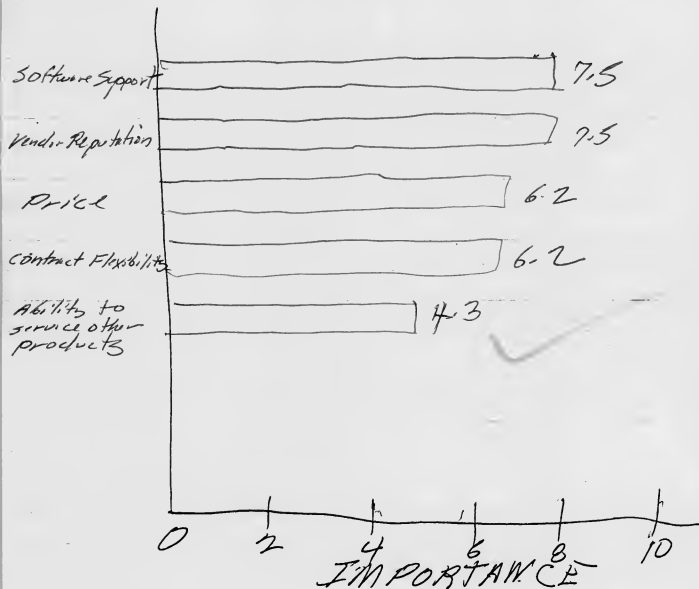
Service Contract Coverage
All ~~Small~~ Systems
Mid-Range

Contract Component	Sample Responding (Percent)	
Days of Coverage	*1988*	*1989*
Monday – Friday	~~66~~	64
Monday – Saturday	4	3
Monday – Sunday	30	33

NOTES:

FPRB-38a

23

Service Contract Coverage
All ~~Small~~ *Mid-Range* Systems

Contract Component	Sample Responding (Percent)	
Hours of Coverage	*1988*	*1989*
1–9 Hours	54	*56*
10–16 Hours	14	*13*
17–24 Hours	32	*31*

INPUT

NOTES:

FPRB-38b

INPUT

26

INPUT

27

Small Mid-Range Systems System Availability
1983-1988

Receive — Require

FPRB-40

INPUT

EXHIBIT VI-6

SYSTEM AVAILABILITY SATISFACTION AT EACH REQUIREMENT LEVEL ALL MID-RANGE SYSTEMS
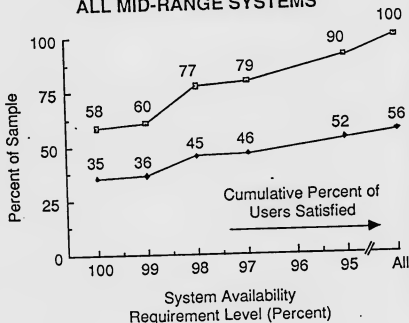
- Percent of Sample at Requirement Level
- Percent of Users Satisfied at the Requirement Level

EXHIBIT VI-7

HARDWARE MAINTENANCE REQUIRED VERSUS RECEIVED ALL MID-RANGE SYSTEMS

Key	Service	Required		Received	
		Mean	SE	Mean	SE
A	HW Engineer Skill	8.9	0.1	8.3	0.1
B	HW Remote Support	7.8	0.2	7.3	0.1
C	Spare Parts	8.8	0.1	8.1	0.1
D	HW Maintenance Overall	9.0	0.1	8.5	0.1

SE=Standard Error

29

System Interruption Analysis
All ~~Small~~ Systems
Mid-Range

System Interruptions (per Month)	~~12~~ .59
	Percent
Hardware Caused	56 63
System Software Caused	15 13
Applications Software Caused	8 4
Other Caused	21 20
(i.e., user-caused)	

INPUT

NOTES:

INPUT

30

Key Service Requirements vs. Received
All Small Systems

Requirement
Mid-Range

10
Dissatisfied   D   ∎ E
9   ∎ F   ∎ A
                        ∎ B
8   ∎ C

Key Support Needs
Continue to Go Unmet

7

                        Satisfied
1
1   7   8   9   10
            Received

A=Overall HW Maintenance   D=Spare Parts Availability   Remote Support
B=Overall SW Support   E=SW Product Reliability   INPUT
C=Overall Planning Services   F=SW Documentation
    HW Remote Support
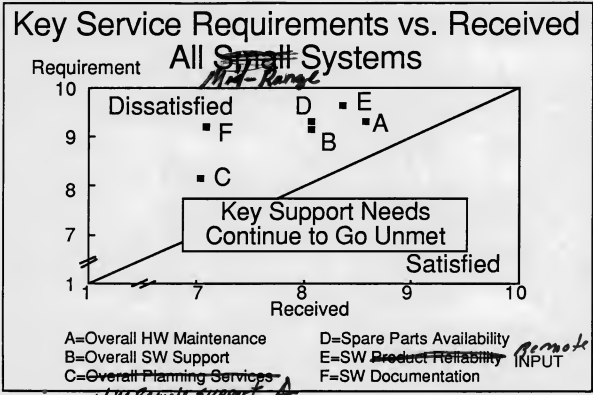
NOTES: Replot   Required | Received

A HW Maint   9.8 | 8.5
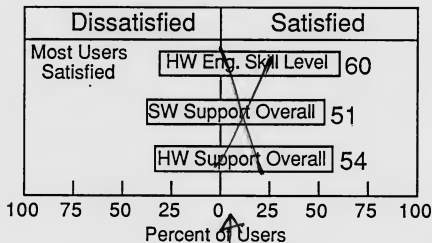
B - SW Support   8-5 | 7.5

C - HW Remote Support   7.8 | 7.3

D Spare Parts Availability   8.8 | 8.1

E SW Remote Support   8.0 | 7.1

F SW Documentation   8.4 | 7.2

FPRB-43

INPUT

Mid-Range
~~Small~~ System User Satisfaction
with High-Priority Services

Dissatisfied	Satisfied	
Most Users Satisfied	HW Eng. Skill Level	60
	SW Support Overall	51
	HW Support Overall	54

100 75 50 25 0 25 50 75 100
Percent of Users

INPUT

NOTES:

HW Remote Support   63
HW Maint overall   59
SW Eng. Skill   57

FPRB-44a

INPUT

32

Mid-Range

~~Small~~ System User Satisfaction
with High-Priority Services

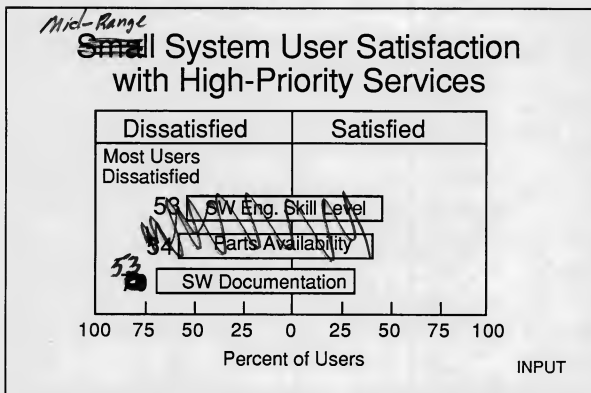| Dissatisfied		Satisfied	
Most Users Satisfied	HW Eng. Skill Level		60
	SW Support Overall		51
	HW Support Overall		54

100   75   50   25   0   25   50   75   100
Percent of Users
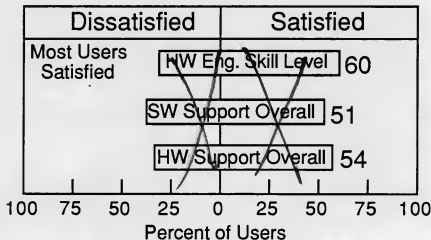
INPUT

NOTES:

SW Remote Support   55

Spares Availability   54

HW Engineering Skill   54

SW Support overall   51

FPRB-44a

INPUT

Mid-Range ~~Small~~ System User Satisfaction
with High-Priority Services

Dissatisfied	Satisfied

Most Users
Dissatisfied

53 SW Eng. Skill Level

54 Parts Availability

53 SW Documentation

100 75 50 25 0 25 50 75 100

Percent of Users

INPUT

NOTES:

FPRB-44b

INPUT

34

Systems Availability Performance—
Mid-Range ~~Small~~ Systems

Vendor	Sys. Avail. Received (Percent)	Percent Satisfied
DEC VAX 8XXX	96.5	93
AT&T	96.3	67
Concurrent	96.3	63
HP	97.1	63
Prime	95.8	62

INPUT
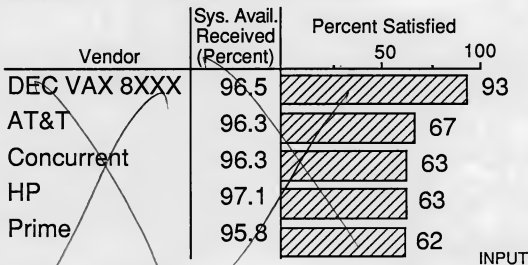
NOTES:

	Received	%
IBM 937X	97.5	74
Concurrent	97.8	73
Data General	96.8	73
Prime	97.4	68
IBM AS 400	98.0	67

FPRB-45

INPUT

35

Systems Availability Performance— *Mid-Range* ~~Small~~ Systems

Vendor	Sys. Avail. Received (Percent)	Percent Satisfied
IBM Sys/38	96.2	53
DG	97.0	50
DEC PDP	95.3	47
IBM 9370	94.6	45
Wang	95.5	31

INPUT
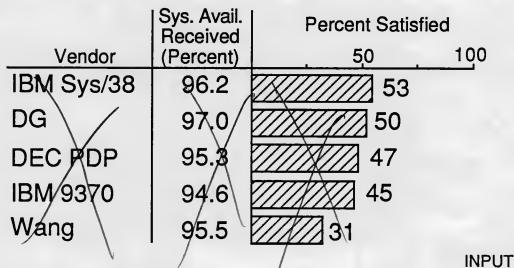
NOTES:

	Received	%
H P	96.9	65
AT+T	95.9	59
Tandem	99.0	43
DEC	97.1	39
Wang	98.4	3

FPRB-46

INPUT

Response Time Performance—
Mid-Range ~~Small~~ Systems

Vendor	Resp. Time Received (Percent)	Percent Satisfied
HP	3.4	96
Prime	2.6	94
IBM Sys/38	1.7	92
Concurrent	6.3	92
DEC VAX 8XXX	3.2	89

INPUT
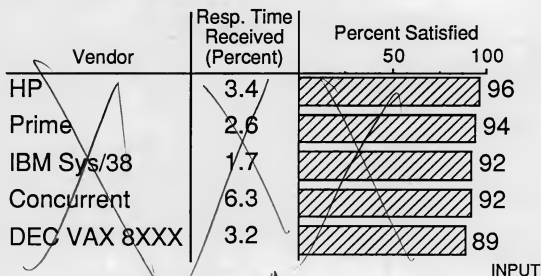
NOTES:

	Received	%
Tandem	1.6	100
H.P.	4.1	95
Data General	7.1	92
Wang	4.9	92
~~IBM AS 400~~	~~10~~	
~~IBM 9XX~~	~~13~~	~~89~~
Concurrent	5.3	90

FPRB-47

INPUT

Response Time Performance—
Mid-Range ~~Small~~ Systems

Vendor	Resp. Time Received (Percent)	Percent Satisfied
IBM 9370	1.7	86
DEC PDP	3.5	85
DG	3.6	81
AT&T	10.7	77
Wang	3.9	75

INPUT

(handwritten annotations)
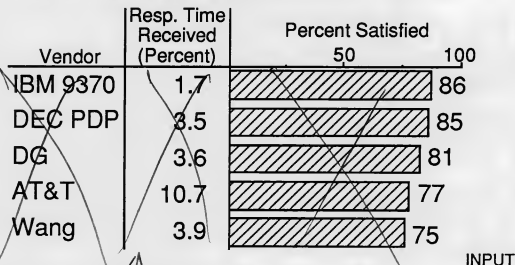
Received

IBM AS400   1.0   89

NOTES:

	Received	
IBM 937X	1.7	89
AT&T	11.3	85
DEC	2.1	85
Prime	2.2	83

FPRB-48

Repair Time Performance—
~~Small~~ Systems
Mid-Range

Vendor	Repr. Time Received (Percent)	Percent Satisfied
Concurrent	4.7	97
HP	4.4	96
IBM 9370	3.1	96
DEC PDP	3.6	92
DEC VAX 8XXX	5.2	91

INPUT

NOTES:

	Received	%
Data General	4.1	97
Tandem	2.8	97
Wang	1.6	97
IBM AS 400	2.7	94
IBM 937X	2.9	93

FPRB-49

INPUT

Repair Time Performance—
MID-RANGE ~~Small~~ Systems

Vendor	Repr. Time Received (Percent)	Percent Satisfied
Prime	6.0	88
AT&T	7.6	87
IBM Sys/38	6.5	83
Wang	3.1	81
DG	3.2	71
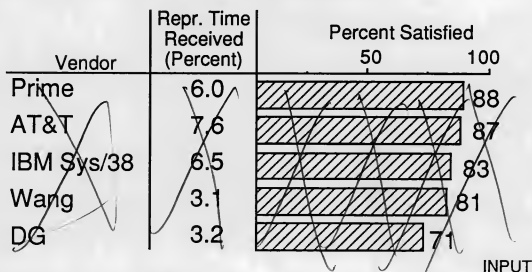
INPUT

NOTES:

	Received	%
DEC	3.6	90
HP	1.9	88
Concurrent	8.4	84
AT&T	9.0	83
Prime	2.9	68

FPRB-50

INPUT

User Surveys

Third-Party Maintenance

NOTES:

FPRB-51

SERVICE VENDOR SELECTION CRITERIA
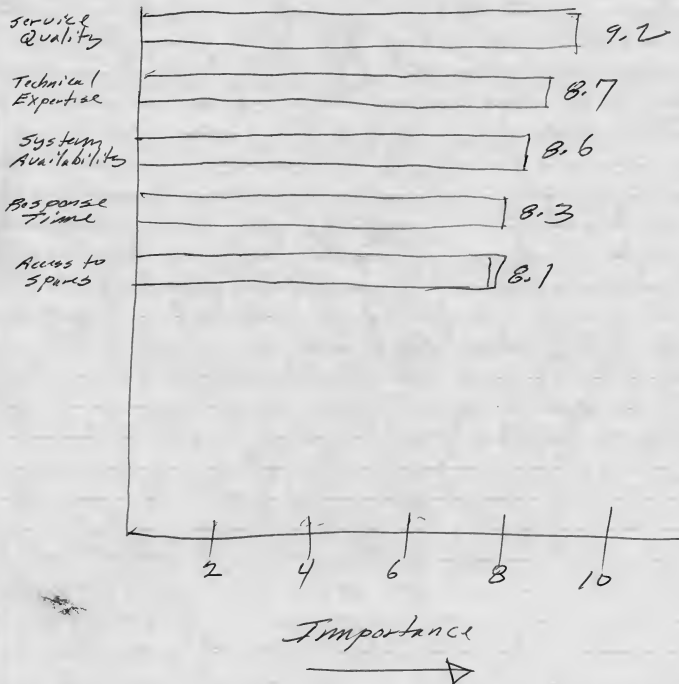
Third Party Maintainers

Criteria	Importance
Service Quality	9.2
Technical Expertise	8.7
System Availability	8.6
Response Time	8.3
Access to Spares	8.1

Importance

SERVICE VENDOR SELECTION CRITERIA
Third Party Maintainers

	Importance
Price	7.8
Vendor Reputation	7.6
Contract Flexibility	6.0
Ability to Service other Products	5.9
Software Support	4.5

Importance
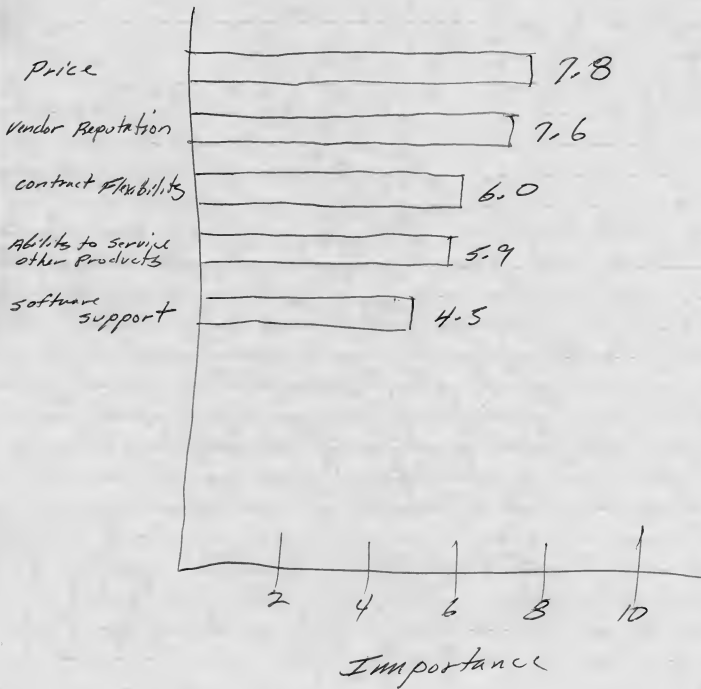
TPM Contract Coverage—
All Users

Service Coverage	Sample (Percent)	
Days of Coverage	_88_	_89_
Monday—Friday	71	64
Monday—Saturday	4	2
Monday—Sunday	25	34

INPUT

NOTES:

FPRB-52a

INPUT

44

TPM Contract Coverage— All Users

Service Coverage	Sample (Percent)	
Hours of Coverage	*88* *89*	
1—9 Hours	62	*53*
10—16 Hours	9	*12*
17—24 Hours	29	*35*

INPUT

NOTES:

FPRB-52b

INPUT

TPM System Availability Analysis—All Users

Component	Require	Receive	Percent Satisfied
System Availability (Percent)	94.4	95.9	67
Response Time (Hrs)	5.0	3.9	91
Repair Time (Hrs)	7.8	6.1	81

Percent Satisfied axis: 0 25 50 75 100

INPUT

NOTES:

FPRB-53

INPUT
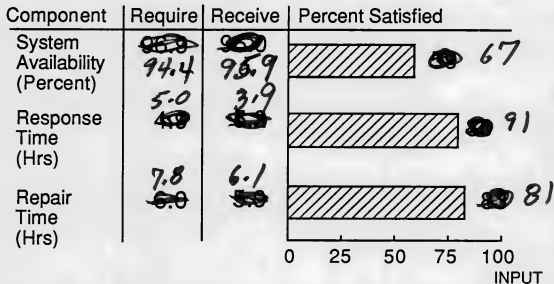
46

TPM
System Availability Satisfaction
At Each Requirement Level
All Users.

System Availability
Requirement Level (Percent)

─□─ Percent of Sample at Requirement Level
─◆─ Percent of Users Satisfied at the Requirement Level

47
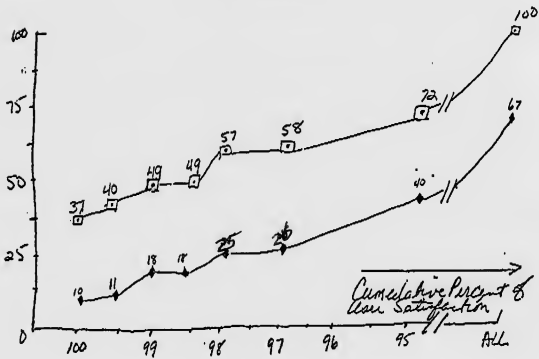
TPM System Interruption Analysis—All Users

System Interruptions (per Month)	~~220~~ 1.2
	Percent
Hardware Caused	~~69~~ 66
System Software Caused	~~10~~ 9
Applications Software Caused	~~8~~ 5
Other (i.e., User Caused)	~~21~~ 20

NOTES:

FPRB-55

TPM Hardware Maintenance Required vs. Received, All Users

48
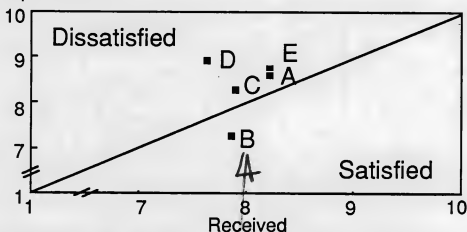
A=Hardware Engineer Skill C=Spare Parts Availability
B=Hardware Phone Support Staff D=Overall Hardware
and Hardware Dispatch Maintenance

INPUT

NOTES: Replot

		Required	Received
A	Hardware Eng Skill	8.7	8.1
B	Hardware Remote Support	4.1	7.0
C.	Spare parts Availability	8.7	8.1
D.	Overall HW Maintenance	9.0	8.5

FPRB-56
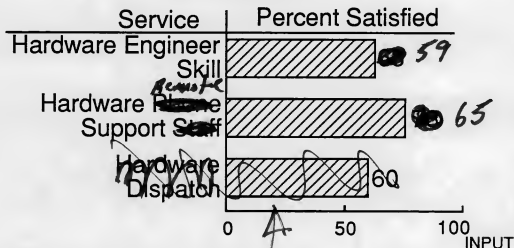
INPUT

INPUT

TPM Hardware Maintenance
Satisfaction—
All Users

Service	Percent Satisfied

Spare Parts Availability — 58

Overall Hardware Maintenance — 62

0   50   100

INPUT

NOTES:

INPUT

51

TPM Versus Manufacturer System Availability Performance

Vendor Type	(Percent) Req.	Rec.	Percent Satisfied
TPM	97.3	94.0	85
MFR	97.8	97.9	67
TPM	94.7	95.5	62
MFR	97.4	97.3	59

0   20   40   60   80   100
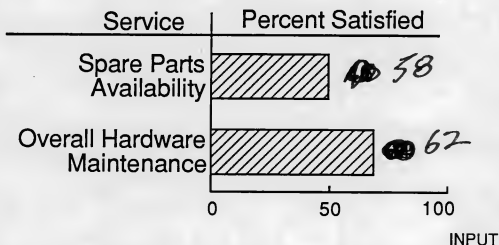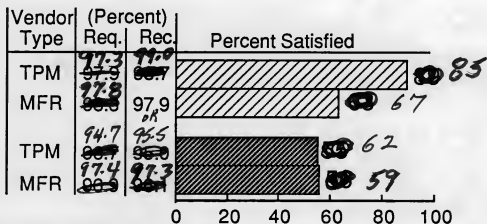
▨ Large System
▨ Mid-Range System

□ PC/WS

INPUT

NOTES:

TPM   92.5   96.4   77%

MFC   94.0   95.7   73%

INPUT

User Satisfaction With Hardware Maintenance—
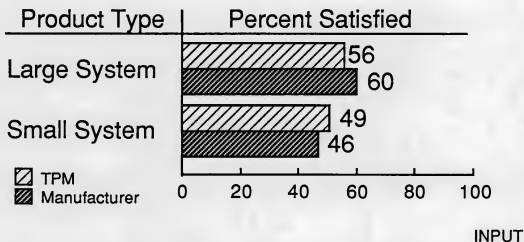TPM Versus Manufacturer

Product Type	Percent Satisfied
Large System	TPM: 78, Manufacturer: 76
Small Systems	TPM: 65, Manufacturer: 54

☐ TPM
☐ Manufacturer

INPUT

NOTES:

PC/ws   68 %
         59
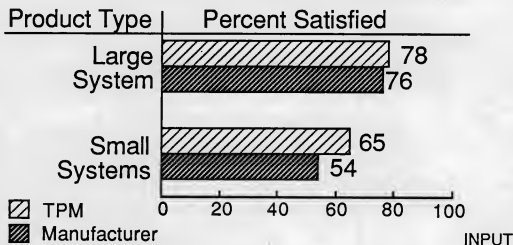
FPRB-59

INPUT

User Satisfaction with Parts Availability
TPM Versus Manufacturer

NOTES:

PC/WS

67%
73%

FPRB-60

INPUT

USER SURVEYS

PC/ Workstations

INPUT

SERVICE VENDOR Selection CRITERIA
PC/Workstation

55
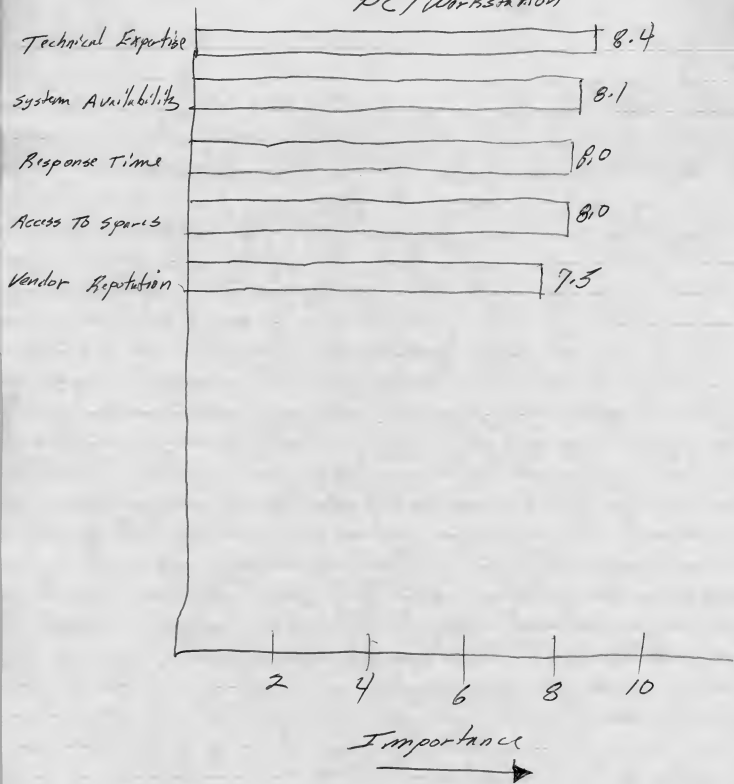
Criteria	Importance
Technical Expertise	8.4
System Availability	8.1
Response Time	8.0
Access To Spares	8.0
Vendor Reputation	7.5

Importance

SERVICE VENDOR Selection CRITERIA
PC/Workstation

56

Price — 6.9
Service Quality — 6.6
Contract Flexibility — 6.5
Software Support — 5.9
Ability to service Other Products — 5.4

Importance
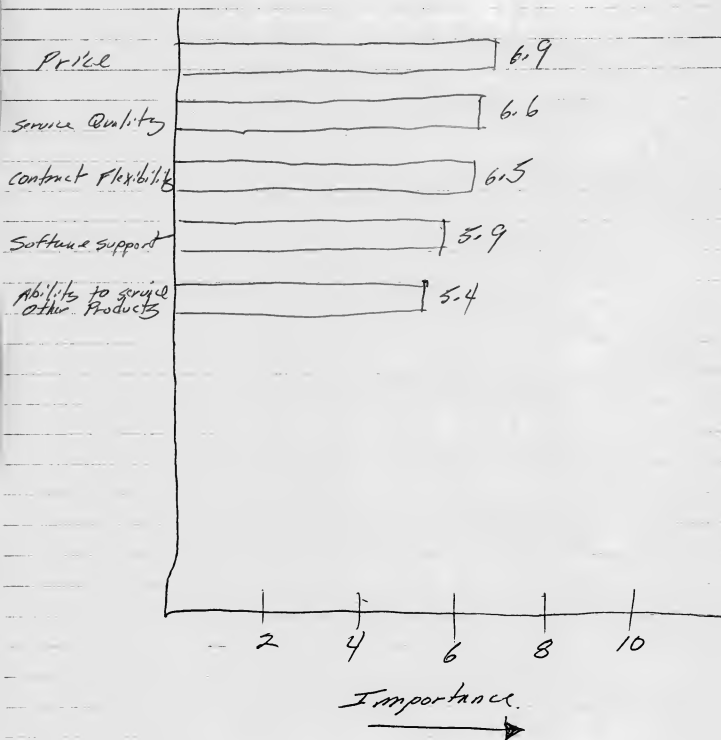
Service CONTRACT COVERAGE

PC/workstations

	1989		1988	
	PER CENT OF SAMPLE	SE	PERCENT OF SAMPLE	SE
DAYS COVERED				
MONDAY – FRIDAY	76			
MONDAY – SATURDAY	1			
MONDAY – SUNDAY	23			
HOURS COVERED				
1 – 9 HOURS	75			
10 – 16	4			
16 – 24	21			

Service Contract Coverage

PC/Workstations

	1989 PERCENT OF SAMPLE	1988 PERCENT OF SAMPLE	SE
DAYS COVERED			
MONDAY - FRIDAY	76		
MONDAY - SATURDAY	1		
MONDAY - SUNDAY	23		
HOURS COVERED			
1 - 9 HOURS	75		
10 - 16	4		
16 - 24	21		

58

2

System Availability Analysis
PC / Workstations

Performance criteria	Received	Percent Satisfied
System Availability %	95.0	71
On-site Response Time (Hrs)	9.4	62
Onsite Repair Time (Hrs)	7.0	69
Depot Turnaround Time (Days)	3.8	71

PC/workstations

System Availability Performance Analysis

	MFC	Dealers	TPM
System Availability (%)	95.7	95.0	94.5
Response Time (Hrs)	11.3	11.1	7.1
Repair Time (Hrs)	6.9	3.9	8.9
Depot Turnaround (days)	4.6	2.2	3.3

PC / Workstations
Satisfaction Levels
% Satisfied

	MFC	Dealer	TPM
System Avail	73	61	74
Response Time	53	76	61
Repair Time	67	72	68
HW Maint overall	59	73	68

62

PC Workstations
System Availability Satisfaction
At Each Requirement Level
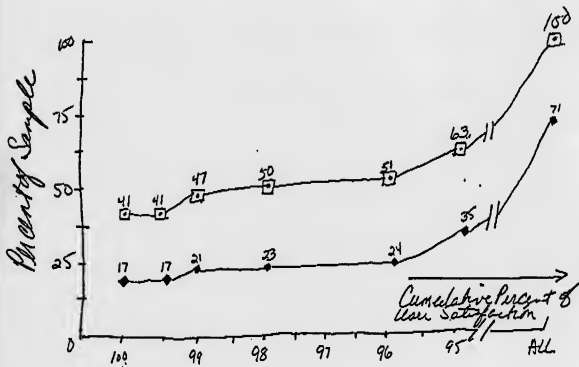
System Availability
Requirement Level (Percent)

-□- Percent of Sample at Requirement Level
-●- Percent of Users Satisfied at the Requirement Level

SYSTEM INTERRUPTION ANALYSIS

~~ ~~ PC/Workstations

	1989		1988	
	MEAN	SE	MEAN	SE
SYSTEM INTERRUPTIONS PER MONTH	1.3	0.2		
HARDWARE - CAUSED	77	2.9		
SYSTEM SOFTWARE - CAUSED	8	1.8		
APPLICATION SOFTWARE - CAUSED	5	1.4		
OTHER - CAUSED	10	2.1		

63

3

EXHIBIT —

64

HARDWARE MAINTENANCE
Key Service Requirements
REQUIRED VERSUS RECEIVED

PC/Work Stations

Requirement (y-axis, 1–10)
Received (x-axis, 1–10)

Dissatisfied

Satisfied

A •• B
•D
• C

Legend
it bottom
of chart
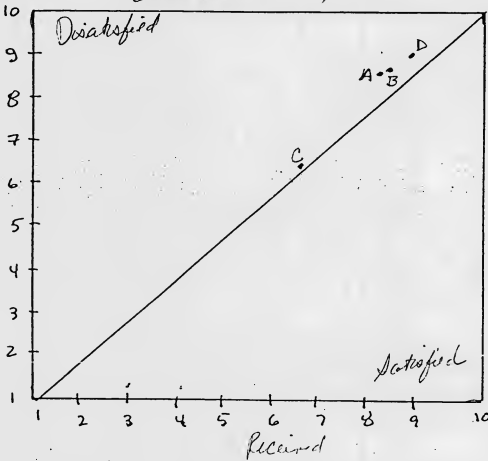
KEY	SERVICE	REQUIRED		RECEIVED	
		MEAN	SE	MEAN	SE
A	HW ENGINEER SKILL	8.5	0.1	7.9	0.1
B	HW REMOTE Spare SUPPORT Parts	8.6	0.1	8.0	0.2
C	SPARE PARTS HotLine Support	6.4	0.3	6.5	0.7
D	HW MAINTENANCE OVERALL	8.9	0.1	8.2	0.1

Use
To Plot Histogram

6

PC/Workstation USER Satisfaction
with High Priority Services

Dissatisfied	Satisfied
Most users satisfied ~~SEB 400~~	

```
100        50         0         50        100
```
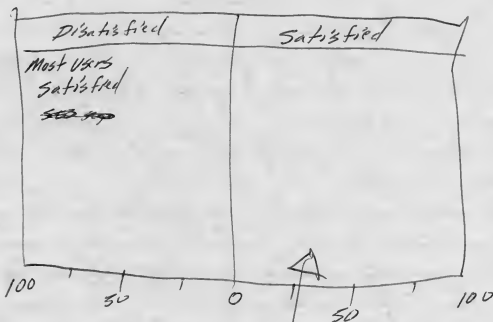
Operational Training   70   Satisfied
~~the support level~~
Hotline Support   69   ))
HW Maint overall   66   ))
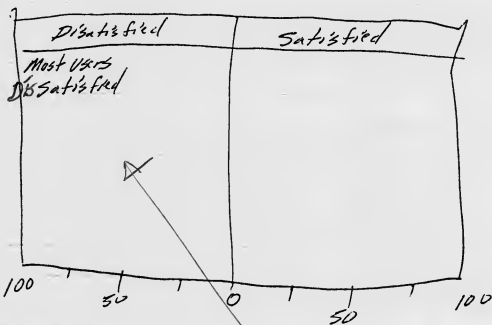Spares Availability   65   ))

PC / workstation USER Satisfaction
with High Priority Services

Disatisfied	Satisfied
Most Users Satisfied	

100   50   0   50   100
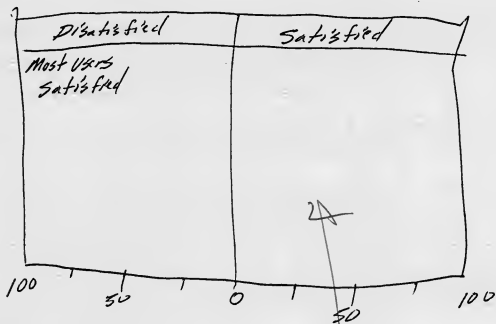
HW Engineer Skill   64   Satisfied

SW Remote support. 52   Satisfied

PC/Workstation USER Satisfaction
with High Priority Services

Dissatisfied	Satisfied
Most Users Dissatisfied	

100   50   0   50   100

SW Documentation 52% Dissatisfied

SW Engineer Skill 51% Dissatisfied

SW Support overall 51% Dissatisfied

Systems Availability Performance
PC/Workstations

Vendor	System Avail. Received	Percent Satisfied 50 100
Apollo (HP)	96.2	80%
Tandy	94.4	75%
IBM	93.7	73%
ALTOS	93.0	70%

INPUT

Notes:

Systems Availability Performance
PC/Workstations

Vendor	System Avail. Received	Percent Satisfied 50 100
Compaq	97.0	68%
Apple	94.6	68%
SUN	96.0	60%

INPUT

Notes: