

OBJECTIVE:

To provide a framework for understanding and evaluating business unit models, plans and proposals. Digital works in three or four different businesses with different business models. Each business has hardware, software and service components that must be understood in context. The businesses are:

- 0 Commodity products
- 0 VAX/VMS Systems
- 0 Enterprise Integrated Systems
- 0 Traditional Services

5/5

CC

DSMC

Steve Whitney  
(Cover only)  
This is the evolving  
Digital model.  
We need bring  
Steve Whitney  
to DSMC

In general, the level of value-add increases from commodity to VAX/VMS to Enterprise Integration. It should be recognized that there are levels of value-added functionality within each of the business models.

to DSMC  
to  
Discuss.  
Rus J.

DEFINITIONS:

COMMODITY: This is Hardware, Software and Service businesses focused on low cost, high performance products where delivery tends to be through indirect channels. We have several commodity businesses. Examples of these include the Small Business Systems Group, PC and PCI, RISC workstations, UNIX, and Ethernet. Each one of these has to be the lowest price, give the best service, and have the most advantageous and simplest way of selling. In general, Engineering can be outsourced and products do not require a high degree of engineering effort. Speed and flexibility in all aspects of the business is high priority. The cost structure should be exceedingly lean with little overhead.

VAX/VMS: This is a higher functionality business which must be priced appropriately for the level of added functionality. It includes pre-configured systems which may also require some moderate level integration or customization. Solutions tend to be provided by Value Added Resellers, CSO's, SCMP's etc. The direct sales force is the dominant mode of distribution supplemented by the OEM channel. This has been Digital's traditional systems business.

ENTERPRISE INTEGRATION: Here we work with the customer's senior management in our vertical markets to provide a complete solution to a major business problem or a unique solution to a specific business problem. Skill sets in business analysis, consulting, work flow analysis, process engineering, systems design and analysis are critical. Consultive selling at the highest level, with long sales cycles, tight partnerships with customers and subcontractors and pricing to match genuine value added are essential. Direct selling focus and skills dominate the distribution approach.

TRADITIONAL SERVICES: It is critical to keep in mind that the traditional service businesses span all three basic business models. The delivery vehicles, sales tools and cost structures for services will vary with the business model with which they are most closely aligned. These businesses will be measured with operational and financial metrics benchmarked against their best-in-class competitors for functional excellence.

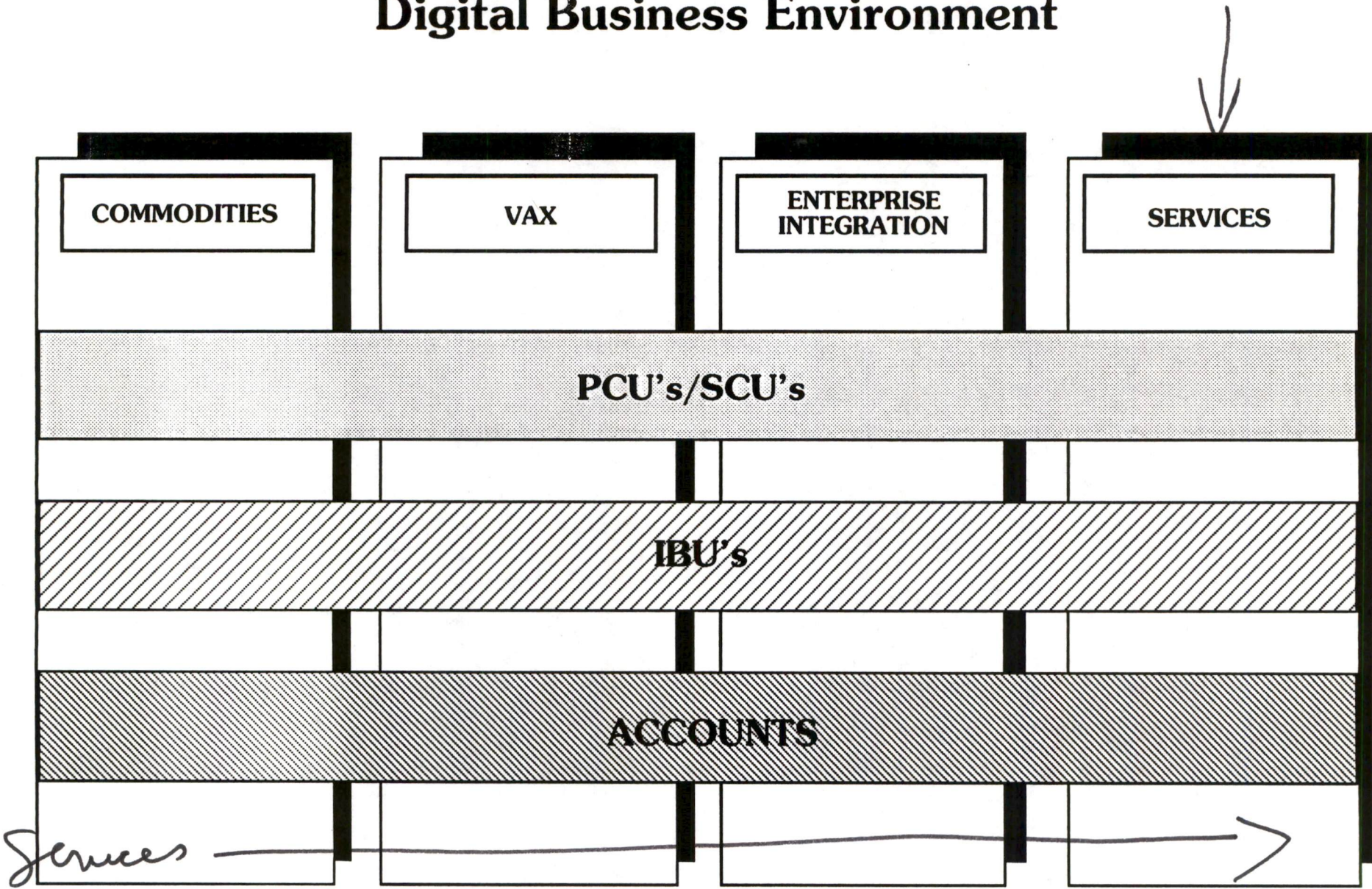
# Competitive Business Models

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# **Business Overview**

# Digital Business Environment



*Services* →

*Services are tracked both wrap - vertically as a separate investment model, horizontally to support the other B models.*

# Digital Business Environment

*Systems  
Integration*

## COMMODITIES

UNIX Systems  
UNIX Software  
Personal Computer  
PC Integration  
Terminals  
Ethernet  
Storage  
Maintenance

## VAX

VAX Systems  
VAX Software  
Solutions  
Maintenance

## ENTERPRISE INTEGRATION

Banking  
Insurance  
Retail  
Education  
Healthcare  
Government  
Science  
Professional Services

## SERVICES

Traditional Customer Services  
Maintenance  
Customer Training  
Special Systems

*Incomplete*

# NMS Business Unit Structure

## COMMODITIES

### HARDWARE

INT Intel/SCO  
 PC Personal Computers  
 DSG Disks & Subsystems Group  
 TOP Tapes & Optical Products  
 PTG Process Technology  
 ESD Electronic Storage Devices  
 VIPS Video Image & Printers  
 PCI PC Integration  
 RSC RISC Business  
 LENAC Low-End Networks  
 & Communications

### SOFTWARE

OSG Open Systems Software Gp  
 ISV PC Applications

### SERVICE

DTS Desktop Services

*much more*

## VAX

### HARDWARE

ISB Information Systems Business  
 FTS Fault-Tolerant Systems  
 MSB Mid-Range Systems Business  
 ESB Entry Systems Business  
 WST VAX Workstations Business  
 FT Fault-tolerant  
 MEM Memories  
 SCI Semiconductors

### SOFTWARE

VMS VMS  
 ONS Open Network Systems  
 NTS NAS Transaction Services  
 NSS NAS Security Services  
 NUF NAS User Frameworks  
 NCE NAS Concurrent Eng.  
 NLT NAS Languages & Tools  
 NPC NAS Presentation/Comm.  
 NIS NAS Information Services  
 NDC NAS Distributed Computing  
 NTS NAS Transaction Services  
 CBN Corporate Backbone Ntwk.  
 LAA Local Area Access  
 LAN Local Area Network  
 CLS Clusters  
 Image/Voice  
 OOS Other Software

### SERVICE

HPS Hardware Product Services  
 SPS Software Product Services  
 DAS Digital Assisted Services  
 NDS Non-Digital Systems Svcs.

*and more*

## ENTERPRISE INTEGRATION

### APPLICATIONS

Healthcare  
 Science/Environmental  
 Banking & Investment  
 Insurance  
 Media  
 Telecommunications  
 Utilities  
 Wholesale/Retail  
 Travel  
 Engineering  
 Education  
 State & Local Government  
 U.S. Federal Government  
 Small Business  
 Professional Services  
 CIM M&PD  
 Sales & Distribution  
 Industrial Research  
 Component Business Group  
 Finance & Accounting  
 Office  
 Electronic Publishing  
 Application Development  
 Data Center Management  
 Imaging  
 Multi-Vendor Integration  
 Corporate Information Systems  
 Departmental Information Systems  
 Software Development  
 CALS/CE

### SERVICE

DCSS Digital Customized Support  
 NWSS Network & Site Services  
 FMS Facilities Management Svcs.  
 DCS Digital Consulting Services  
 SI Systems Integration/Projects  
 CSS Computer Special Systems  
 SM Security Management  
 CT Customer Training  
 RCS Recovery Services

*all services here*

## SERVICES

DTS Desktop Services  
 HPS Hardware Product Services  
 SPS Software Product Services  
 DAS Digital Assisted Services  
 NDS Non-Digital Systems Svcs.  
 RCS Recovery Services  
 SM Security Management

CSS Computer Special Systems

CT Customer Training

*incomplete  
uses "old"  
businesses.*

Source: FY92 New Management System Submissions

# Competition

## COMMODITIES

### HARDWARE

Sun  
Compaq  
Dell  
3 Com  
Conner  
Seagate

### SOFTWARE

Lotus  
Microsoft

## VAX

### HARDWARE

Amdahl  
Silicon Graphics  
Stratus

### SOFTWARE

Oracle  
Novell  
ASK

## ENTERPRISE INTEGRATION

Computer Sciences  
Corp.  
EDS

*AA IBM*  
*cap Gemini*

## SERVICES

*Sorbus*  
~~Bell Atlantic~~  
Grumman

# Financial Overview



# Competitive Business Models

*Systems Integration*  
*afine*

COMMODITIES	
Revenue	100%
Cost of Sales	70
Sales, Gen & Admin.	15
Research & Devlpmt.	7
Operating Income	8
Revenue/Employee (\$K)	\$139
ROA	8%
Inventory Turns	5.5x
DSO	55
PP&E Turns	7.9x
Operating Asset Turns	2.3x
Asset Turns	1.5
ROOA	11.5%
Leverage	2.2
ROE	17%
Optg. Assets/Empl(\$K)	\$ 54
Revenue Growth	47%
Optg. Profit/Empl(\$K)	\$ 13

VAX	
Revenue	100%
Cost of Sales	38
Sales, Gen & Admin.	35
Research & Devlpmt.	11
Operating Income	16
Revenue/Employee (\$K)	\$160
ROA	13%
Inventory Turns	3.6x
DSO	101
PP&E Turns	8.1x
Operating Asset Turns	2.0x
Asset Turns	1.3x
ROOA	20%
Leverage	1.5
ROE	20%
Optg. Assets/Empl(\$K)	\$104
Revenue Growth	19%
Optg. Profit/Empl(\$K)	\$ 30

ENTERPRISE INTEGRATION	
Revenue	100%
Cost of Sales	?? <u>78</u>
Sales, Gen & Admin.	11
Research & Devlpmt.	NO <u>N/A</u>
Operating Income	11
Revenue/Employee (\$K)	\$ <u>97</u>
ROA	12%
Inventory Turns	54x
DSO	45
PP&E Turns	5.4x
Operating Asset Turns	3.0x
Asset Turns	1.5
ROOA	24%
Leverage	2.3
ROE	28%
Optg. Assets/Empl(\$K)	\$ 32
Revenue Growth	13%
Optg. Profit/Empl(\$K)	\$ 11

SERVICES	
Revenue	100%
Cost of Sales	71
Sales, Gen & Admin.	14
Research & Devlpmt.	N/A
Operating Income	? <u>15</u>
Revenue/Employee (\$K)	\$ 108
ROA	12%
Inventory Turns	42x
DSO	50
PP&E Turns	4.5x
Operating Asset Turns	2.2x
Asset Turns	1.3
ROOA	24%
Leverage	2.6
ROE	30%
Optg. Assets/Empl(\$K)	\$ 72
Revenue Growth	9%
Optg. Profit/Empl(\$K)	\$ 18

## DIGITAL FY90 RESULTS\*

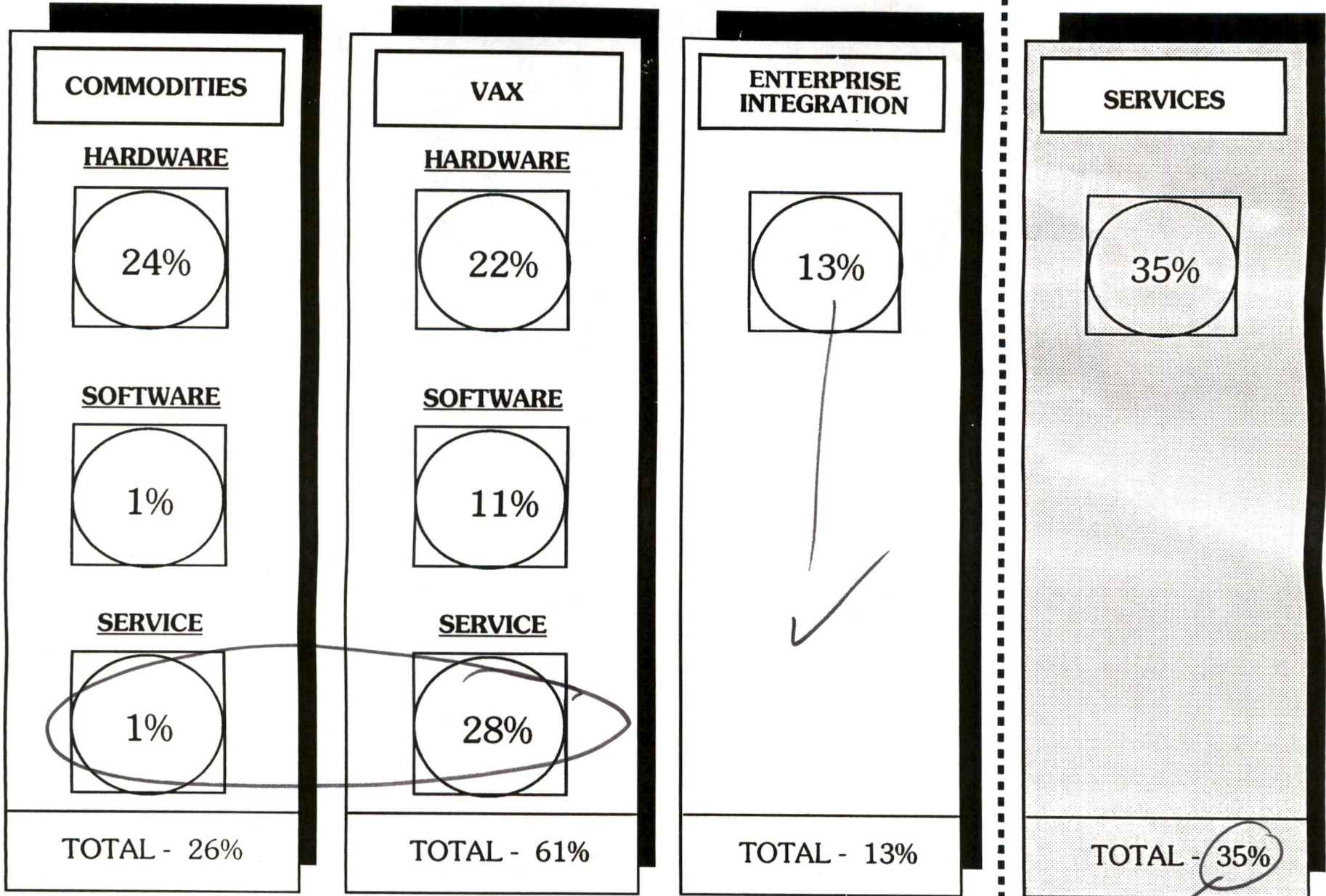
	<u>FY90 Actual</u>	<u>Comp. Business Model</u>	<u>Digital Business Model</u>	<u>Alternative Digital Business Model</u>
Revenue	100%	100%	100%	100%
Cost of Sales	53	57		
Sales, General & Admin.	31	23		
Research & Development	12	7		
Operating Profit	4	12	17.5	10.0
Net Income	<u>4%</u>	<u>8%</u>	<u>12.0%</u>	7.5%
Asset Turns	<u>1.2x</u>	<u>1.4x</u>	<u>1.3x</u>	2.1
ROA	4.7%	11.0%	16.0%	16.0%
Leverage**	1.4	<u>1.9</u>	<u>1.4</u>	1.4
ROE	6.5%	21.2%	22.0%	22.0%

\* Excludes Restructuring

\*\* Leverage = Average Assets/Average Equity

*need more debt*

# Digital Business Environment -FY90



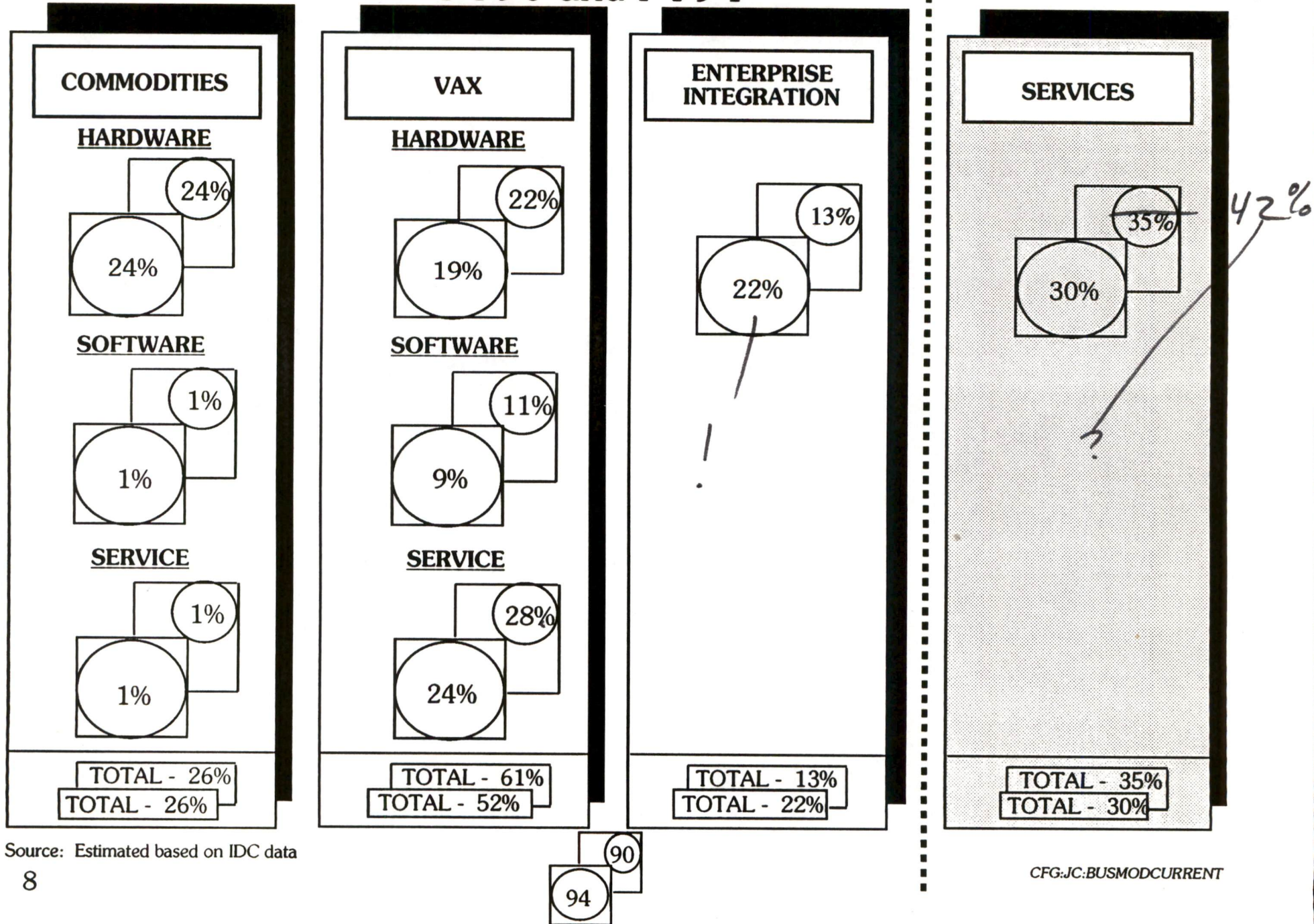
Source: FY90 Product Financial Performance Reporting and Service Reports

CFG:JC-BUSMOD-CURRENT

*now 41%*

# Digital Business Environment

## Revenue Mix FY90 and FY94



Source: Estimated based on IDC data

# Backup

# FY90 Revenue

## COMMODITIES

### HARDWARE

LED	\$ 460 M
MLDS	1184
TOPS	484
Video	325
PC	83
Hardcopy	364
RISC	<u>309</u>

\$ 3209 M

### SOFTWARE

TOPS	\$ 4 M
Hardcopy	4
OSG	<u>75</u>

\$ 83 M

### SERVICE

DTS	\$ 6 M
-----	--------

**TOTAL \$ 3298 M**  
26%

## VAX

### HARDWARE

CPU	\$ 1352 M
NAC	823
Cluster	115
Memories	983
CSS	<u>(402)</u>

\$ 2871 M

### SOFTWARE

SSEM	\$ 905 M
DBS	33
SDT	256
TP/AP	109
NAC	274
CSS	<u>(198)</u>

\$ 1379 M

### SERVICE

HPS	\$ 2637 M
SPS	837
DAS	<u>204</u>

\$ 3678 M

**TOTAL \$ 7928 M**  
61%

## ENTERPRISE INTEGRATION

PSS	\$ 559 M
-----	----------

DCSS	\$ 32 M
NWSS	245
RCS	<u>32</u>

\$ 309 M

CSS	\$ 600 M
-----	----------

FMS	\$ 12 M
-----	---------

ES	\$ 237 M
----	----------

**TOTAL \$ 1717 M**  
13%

## SERVICES

CSS	\$ 600 M
-----	----------

HPS	\$ 2637 M
SPS	837
DAS	204
DTS	<u>6</u>

\$ 3684 M

FMS	\$ 12 M
-----	---------

ES	\$ 237 M
----	----------

**TOTAL \$ 4533 M**  
35%

Source: FY90 Product Financial Performance Reporting and Service Reports

FY91 5.8B

CFG:JC-BUSMOD-CURRENT

FY92 6.8

# DIGITAL BUSINESS MODELS

SI

## COMMODITIES

### TYPICAL PRODUCTS

PC  
MAC  
Lotus 1-2-3

### CUSTOMERS VALUE

Meet the standards  
High performance/low cost  
Easy to buy and support

### PURCHASE CRITERIA

Software availability  
Price/Performance  
Support/delivery

### PURCHASING SOURCES

Local/National distributors  
Retail outlets  
In-company stores

### PRICING MODEL

"Commodity" driven  
Multi-tier pricing

## VAX

### TYPICAL PRODUCTS

Office Vision  
AS/400  
ManMan

### CUSTOMERS VALUE

Integrated Hardware, Software  
systems that solve business  
problems  
Enterprise-wide information  
systems that solve business  
problems

### PURCHASE CRITERIA

Meets business need  
Total cost of ownership

### PURCHASING SOURCES

Application houses  
Computer vendors  
OEM's

### PRICING MODEL

Market driven  
Solution level

## ENTERPRISE INTEGRATION SERVICES

### TYPICAL PRODUCTS

U.S. Air Traffic Control system  
SABRE reservation system

### CUSTOMERS VALUE

Guaranteed business solutions  
Single point of responsibility  
Platform independence  
"Cradle to Grave" Svc

### PURCHASE CRITERIA

Long term partnership commitment  
Shared risk

### PURCHASING SOURCES

Systems integrators  
Consulting companies

### PRICING MODEL

Value driven  
Related to risk level

?

# DIGITAL BUSINESS MODELS

## COMMODITIES

### DECISION MAKERS

Individual end users in small/  
medium enterprises  
Department heads in Fortune 500

### SUCCESSFUL SUPPLIERS

Dell	Seagate
Compaq	Lotus
3Com	MicroSoft

### CORE COMPETENCIES

Low cost/high volume manufacturing  
Time-to-market profit  
Distribution channel ownership

### MARKET SUCCESS CRITERIA

High quality, low price  
Very fast time-to-market  
Distribution dominance  
Shrink wrapped software

### MARKET SIZE

Very large  
Growing slowly - 9%

## VAX

### DECISION MAKERS

Functions, divisions, managers  
in Fortune 500

### SUCCESSFUL SUPPLIERS

Amdahl	Stratus
Sun	Oracle
Silicon Graphics	Novell
ASK	

### CORE COMPETENCIES

Meets business need  
Total cost of ownership

### MARKET SUCCESS CRITERIA

Strong customer-vendor  
relationship  
Third party partnership for specific  
solutions

### MARKET SIZE

Large, low growth - 6% and mature  
Value shifting from hardware to  
software and SVC

## ENTERPRISE INTEGRATION SERVICES

### DECISION MAKERS

Senior IS and functional  
management

### SUCCESSFUL SUPPLIERS

Andersen Consulting  
EDS  
Computer Sciences

*IBM*

### CORE COMPETENCIES

Long term partnership commitment  
Shared risk

### MARKET SUCCESS CRITERIA

Project management expertise  
Strong account management  
Industry knowledge  
Strategic alliances

### MARKET SIZE

Small and growing rapidly - ~~25%~~

*20%*

*Dec 2 30%*



# Competitive Business Model

## Mix Assumptions

### COMMODITIES

#### HARDWARE - 96%

Sun	19%
Compaq	3
Dell	10
3 Com	7
Conner	17
Seagate	<u>44</u>
	100%

#### SOFTWARE - 4%

Lotus	50%
Microsoft	<u>50</u>
	100%

### VAX

#### HARDWARE - 60%

Amdahl	9%
Stratus	48
Silicon	
Graphics	<u>43</u>
	100%

#### SOFTWARE - 40%

Novell	50%
Oracle	40
ASK	<u>10</u>
	100%

### ENTERPRISE INTEGRATION

Computer	10%
Sciences	
EDS	<u>90</u>
	100%

### SERVICES

Computer	20%
Sciences	
EDS	40
Bell Atlantic	<u>40</u>
	100%

??

## DIGITAL RESULTS vs. COMPOSITE MODEL

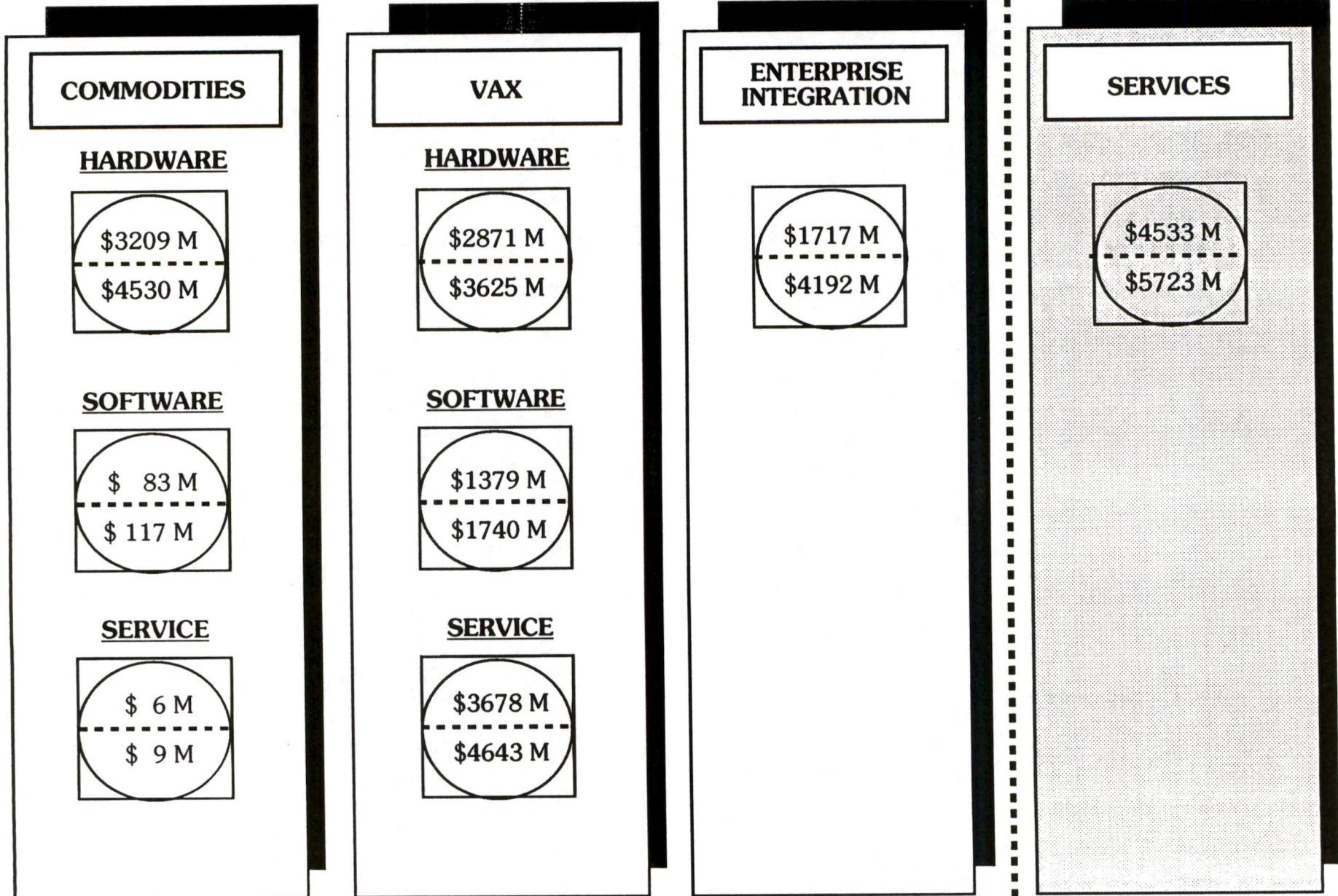
(\$ Millions)

	FY90			LATEST 4 QUARTERS (Q490, Q191, Q291, Q391)		
	<u>Actual*</u>	<u>Model</u>	<u>B/(W) Model</u>	<u>Actual*</u>	<u>Model</u>	<u>B/(W) Model</u>
Revenue	\$12,942	\$ —	\$ —	\$13,331	\$ —	\$ —
Cost of Sales	6794	7403	609	7073	7625	552
Sales, Gen & Admin.	3971	3003	(968)	4247	3093	(1154)
Research & Devlpmt.	1614	958	(656)	1617	986	(631)
Operating Profit	563	1579	(1016)	394	1626	(1232)
Net Income	526	1015	(489)	337	1045	(708)
Average Assets	\$11,161	\$9,245	\$(1,916)	\$11,690	\$9,522	\$(2,168)
Asset Turns	1.2x	1.4x	(.2)x	1.1x	1.4x	(.3)x
ROA	4.7%	11.1%	(6.4)%	2.9%	11.1%	(8.2)%
Leverage	1.4	1.9	.5	1.4	1.9	.5
ROE	6.5%	21.2%	(14.7)%	4.0%	21.2%	(17.2)%

\* Excludes Restructuring Charge

# Digital Business Environment

## FY90 vs. FY94 - Most Likely



Source: FY90 Product Financial Performance, FY94 Case from International Data Corporation (IDC)

FY90  
-----  
FY94

CFG:JC-BUSMOD-CURRENT

## NOR Outlook Scenarios (\$ M) Four Year Growth

COMMODITIES		VAX		ENTERPRISE INTEGRATION		TOTAL	
<b><u>FY90</u></b>		<b><u>FY90</u></b>		<b><u>FY90</u></b>		<b><u>FY90</u></b>	
\$3,298		\$7,928		\$1,717		\$12,943	
<b><u>FY94</u></b>		<b><u>FY94</u></b>		<b><u>FY94</u></b>		<b><u>FY94</u></b>	
Most Likely	\$4,656	Most Likely	\$10,008	Most Likely	\$4,192	Most Likely	\$18,856
Moderate	\$5,570	Moderate	\$11,191	Moderate	\$6,227	Moderate	\$22,988
Aggressive	\$ 8,580	Aggressive	\$15,371	Aggressive	\$16,104	Aggressive	\$40,055

Note: Source of expected growth case is International Data Corp. (IDC )

**COMPETITOR PROFITABILITY MODELS**  
**Most Recent 3-Year Average**

**Hardware Vendors**

<b>% of Revenue</b>	<b>Amdahl</b>	<b>Compaq</b>	<b>Sun</b>	<b>Silicon Graphics</b>	<b>Stratus</b>	<b>Seagate</b>	<b>Conner</b>	<b>Dell*</b>	<b>3Com</b>
Latest Year Revenue	\$ 2101	\$ 3599	\$ 2466	\$ 420	\$ 404	\$ 2413	\$ 705	\$ 389	\$ 419
Revenue	100%	100%	100%	100%	100%	100%	100%	100%	100%
Cost of Sales	57	59	56	47	40	83	76	70	49
Sales, Gen. & Administrative	16	19	24	32	32	7	9	20	29
Research & Development	13	5	13	12	13	4	5	4	10
Operating Income	14	17	7	9	15	6	10	6	12
Inventory Turns	3.4	4.1	7.3	2.3	2.8	4.7	5.5	4.9	6.4
DSO	89	56	64	97	94	47	75	44	48
PP&E Turns	4.5	5.3	7.8	9.1	7.3	4.8	7.3	21.4	12.5
Operating Asset Turns	1.6	2.0	2.6	1.7	1.9	1.9	2.1	3.2	3.5
ROOA	15.1%	25.1%	11.8%	11.5%	18.7%	7.5%	14.2%	9.8%	25.4%
Asset Turns	1.1	1.6	1.5	1.2	1.4	1.3	1.5	2.8	1.8
ROA	10.5%	19.3%	6.9%	7.9%	14.5%	4.9%	10.4%	8.6%	13.5%
Leverage	2.0	1.6	2.0	1.6	1.4	2.6	2.3	2.1	1.2
ROE	20.6%	30.9%	13.6%	12.6%	20.4%	12.6%	24.3%	17.9%	16.7%
Operating Assets/Employee (\$K)	\$ 145	\$ 206	\$ 72	\$ 103	\$ 108	\$ 26	\$ 52	\$ 93	\$ 62
Revenue/Employee (\$K)	\$ 228	\$ 422	\$ 190	\$ 177	\$ 200	\$ 50	\$ 109	\$ 302	\$ 214
Revenue Growth	18%	32%	53%	66%	23%	38%	150%	56%	29%
Operating Profit/Employee (\$K)	\$ 33	\$ 74	\$ 14	\$ 16	\$ 30	\$ 3	\$ 11	\$ 17	\$ 25

\* Two year average

**COMPETITOR PROFITABILITY MODELS**  
**Most Recent 3-Year Average**  
**Software Vendors**

<b>% of Revenue</b>	<b><u>Lotus</u></b>	<b><u>ASK</u></b>	<b><u>Oracle</u></b>	<b><u>Microsoft*</u></b>	<b><u>Novell*</u></b>
Latest Year Revenue (\$ M)	\$ 556	\$ 208	\$ 971	\$ 1183	\$ 498
Revenue	100%	100%	100%	100%	100%
Cost of Sales	19	50	17	24	34
Sales, General & Administrative	48	35	53	31	35
Research & Development	16	8	9	14	10
Operating Income	17	7	21	31	21
Inventory Turns	5.9	18.9	N/A	5.6	6.4
DSO	52	96	169	50	65
PP&E Turns	5.5	20.0	6.2	4.3	8.3
Operating Asset Turns	2.8	3.1	1.6	2.4	2.8
ROOA	39.4%	16.9%	21.1%	54.3%	40.1%
Asset Turns	1.2	1.3	1.3	1.2	1.4
ROA	16.3%	6.8%	17.3%	27.4%	19.1%
Leverage	2.1	1.5	2.0	1.2	1.3
ROE	33.8%	10.0%	34.3%	33.0%	23.9
Operating Assets/Employee (\$K)*	\$ 69	\$ 122	\$ 85	\$ 62	\$ 58
Revenue/Employee (\$K)*	\$ 193	\$ 379	\$ 136	\$ 153	\$ 165
Revenue Growth	19%	21%	86%	42%	20%
Operating Profit/Employee (\$K)*	\$ 32	\$ 28	\$ 28	\$ 49	\$ 34

\* Per Employee figures based on most recent year

## COMPETITOR PROFITABILITY MODELS

### Most Recent 3-Year Average

#### Service Vendors

<u>% of Revenue</u>	<u>Bell Atlantic</u>	<u>Computer Sciences Corp.</u>	<u>EDS</u>	<u>Grumman</u>
Latest Year Revenue	\$11449	\$ 1500	\$ 6022	\$ 3506
Revenue	100%	100%	100%	100%
Cost of Sales	59	82	78	91
Sales, General & Administrative	19	10	11	6
Research & Development	N/A	N/A	N/A	N/A
Operating Income	22	8	11	3
Inventory Turns	45.7	N/A	60.0	3.9
DSO	40	91	40	68
PP&E Turns	1.2	10.6	4.8	6.6
Operating Asset Turns	1.0	2.9	3.0	1.8
ROOA	11.2%	11.9%	24.7%	3.2%
Asset Turns	0.8	1.7	1.4	1.5
ROA	9.2%	7.1%	11.7%	2.8%
Leverage	3.1	2.0	2.3	1.8
ROE	28.2%	14.5%	27.1%	5.0%
Operating Assets/Employee (\$K)	\$ 135	\$ 23	\$ 33	\$ 63
Revenue/Employee (\$K)	\$ 136	\$ 66	\$ 100	\$ 111
Revenue Growth	5%	14%	13%	3%
Operating Profit/Employee (\$K)	\$ 30	\$ 6	\$ 11	\$ 4

*total telephone co!!!*

*SB = GM*

*IBM / AA*

\* Research & Development included in Cost of Sales

## COMPETITOR PROFITABILITY MODELS

### Most Recent 3- Year Average As Reported

#### Total Solution Vendors

<u>% of Revenue</u>	<u>Digital</u>	<u>IBM</u>	<u>Hewlett Packard</u>
Latest Year Revenue (\$M)	\$12,943	\$69,018	\$13,233
Revenue	100%	100%	100%
Cost of Sales	50	44	51
Sales, Gen. & Admin.	29	32	28
Research & Developmt.	(12)	10	11
Operating Income	9	<u>14</u>	10
Inventory Turns	4.1 ✓	<u>3.0</u>	3.7
DSO	81	<u>104</u> !!	70
PP&E Turns	4.1	<u>2.5</u> !!	4.2
Operating Asset Turns	1.7	1.2 !!	1.5
ROOA	(11.3%)	9.7%	10.1%
Asset Turns	1.2	0.8	1.2
ROA	(8.2%)	6.7%	8.1%
Leverage	1.4	1.9 ✓	1.7
ROE	11.3%	12.6%	14.0%
Operating Assets/Employee (\$K)	\$ 59.1	\$ 139	\$ 74
Revenue/Employee (\$K)	<u>\$ 100.9</u>	<u>\$ 168</u>	\$ 130
Revenue Growth	6%	8%	16%
Operating Profit/Employee (\$K)	\$ 8.1	\$ 23	\$ 13



*full  
competition*

## **Section 2 HP Competitive Fingertip Guide**

1. Digital Strengths
2. HP Strategies and Strengths
3. HP Weaknesses
4. ALPHA -AXP vs HP-PA
5. DEC OSF/1 vs HP/UX
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## DIGITAL vs HEWLETT-PACKARD

Competitive Sales Team  
1-800-DEC-ISIT

December, 1993

This document is for DIGITAL INTERNAL USE ONLY and is designed specifically for use by Hotline Consultants in assisting Digital's sales force. It is a compilation of HP competitive information from many internal and external sources.

SECTION	1	DIGITAL STRENGTHS
SECTION	2	HP STRATEGIES AND STRENGTHS
SECTION	3	HP WEAKNESSES
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## SECTION 1

### DIGITAL STRENGTHS

**ALPHA** ALPHA-AXP is the industry's leading architecture. Don't complain because every application in the world hasn't ported to it yet, sell the vision--industry leading performance with full 64-bit addressing. Not only is it revolutionary technology, it's the future of computers. We have it today.

The ALPHA platform will support three operating systems--OpenVMS, OSF/1, and Windows NT. Our customers will be free to choose the operating environment that's right for them--not because it's the only offering that the vendor has.

Digital's ALPHA-ready VAX systems have leadership TPC-A benchmark results. The new ALPHA workstations already have price/performance leadership and mainframe-class DEC10000 has the highest SPEC performance in the industry. ALPHA-AXP performance begins where HP-PA ends.

**OSF/1** OSF/1 is a vendor-neutral UNIX operating system. HP-UX is a UNIX variant which HP alone produced. It is a hybrid of the Berkeley and System V kernels. OSF software is being developed by members of the industry with open input from all vendors. It will be based on modern microkernel technology and fully competitive with any UNIX operating system on the market.

**OpenVMS** OpenVMS is the most robust commercial operating system in the computer industry. It is the only non-UNIX operating system to become XPG3 branded. Our clustering technology and software is second to none. It is the only operating system which offers continuous high-availability distributed processing. Digital also offers industry leading multivendor service and support.

**Investment Protection** Digital maintains one of the strongest balance sheets in the industry with over \$1 billion in cash reserves. Digital is undertaking a major restructuring in order to serve our customers better. Remember, other vendors in the industry are feeling the pinch too.

## SECTION 2

### HP'S STRATEGY AND STRENGTHS

HP's product strategy has been simple and successful. Its three main elements are (1) provide leading systems performance, (2) lead the drive to Open Systems with UNIX and PA-RISC, (3) offer superior customer service. Replace PA-RISC with ALPHA-AXP and we are well positioned to win in all three areas. When you add that the customer has a CHOICE of several different operating systems we have a clear advantage.

Expect HP to continue to...

increase system raw performance and price/performance.

leverage UNIX as the operating system of the future with strong relationships with leading 3rd party solution providers such as Oracle and Tivoli.

attempt to convince the customer that 64-bit addressing isn't needed today. They will position the PA-RISC architecture, with its thousands of applications, as a more realistic option than ALPHA.

do a full court press against Digital the next few months while ALPHA and OSF/1 are porting applications. They'll be highly visible in every major account.

disparage OpenVMS and NAS as proprietary and undermine Digital's commitment to UNIX.

question Digital's viability by suggesting that Digital's recent quarterly losses will be a long-term trend and imply a lack of investment protection for the customer.

effectively use positive statements from industry consultants and the media to validate their vision.

actively seek new relationships with Value Added Resellers and Independent Software Vendors to position the sale with an HP solution.

offer competitive trade-ins for Digital equipment.

## SECTION 3

### HP WEAKNESSES

- 64-bit Processing HP's architecture is still 32-bit technology. Though they claim some 64-bit processing, they clearly do not have full 64-bit addressing. Gartner Group considers only ALPHA and the MIPS R4000 chip to be full 64-bit architectures today.
- UNIX Strategy HP's operating system strategy could be a liability. HP is putting all its eggs in a UNIX basket. What if the market changes and Windows NT is successful? Where does it leave HP-UX users?
- Distributed Computing HP does not have as many large networked distributed computing reference sites as Digital. We have the advantage in complex projects and enterprise-wide, especially global, business management and consultancy. To obtain comparably functional systems, HP often has to include various add-on line items.
- MPE/iX When selling HP-UX in commercial markets, HP tries to claim that VMS is dead. At the same time they are still actively selling MPE-based systems (even though OpenVMS is far superior to both MPE and HP-UX in nearly every category of Gartner's Enterprise System Platform report.) Per HP, MPE is for the installed base, HP-UX for growth (Computer World, 11/2/92).
- PC Integration The HP 3000/900 only supports MS/DOS PC clients. Current Macintosh use is limited to terminal emulation (future plans are to support Macintosh through PACER.) HP-UX systems are also limited to MS/DOS. Native NetWare is not available yet.
- High Availability There are limitations on HP SwitchOver/UX. The product is only supported on certain HP9000 systems. Those that support it must be of the same category and have identical I/O configurations. Downtime to a failed primary system can be as much as 15 minutes before the standby reboots. During this period the applications on the primary system cannot be accessed. In progress transactions will be lost. Since there is only one standby system, multiple failures to primary systems will greatly impact availability of mission critical applications.

## SECTION 4

### ALPHA-AXP vs HP-PA

A common HP tactic is to downplay the need for 64-bit addressing and the ALPHA-AXP chip. They do this by pointing out that initial SPEC performance was less than anticipated, and that technically ALPHA-AXP is no better than their own HP 7100. If there is any question who has the world's fastest computer chip, refer to the Guinness Book of World Records as proof.

Some facts to keep in mind...

A 64-bit architecture means faster computational speed as well as nearly unlimited memory addressing. HP will claim that few businesses need 64-bits today and they can support that point with references to trade articles. The performance enhancement alone makes 64-bits beneficial to the customer right now! Use trade articles that show the speed advantage of 64-bit systems.

ALPHA uses a 400MHz external clock, a 200 MHz internal clock and internal cache. The HP 7100 at 96 MHz is less than half the clock speed.

Digital has experience with RISC architectures. ALPHA is the third Digital RISC design. The first two were MicroTitan and MicroPrism. The latter ran at the same clock speed as the HP 7100 two years earlier!

HP may claim ALPHA has an untested new systems design. Does it have balanced CPU, graphics and I/O? The DEC 3000 has a 200 MB/sec. memory bandwidth, 100 MB/sec. I/O bandwidth. The DEC 4000 has 300 MB/sec. memory and 185 MB/sec. I/O. And the DEC 7000 has 750 MB/sec. memory and 400 MB/sec I/O!

HP may claim more experience because they are implementing the seventh generation of PA-RISC. After seven generations they are about even with ALPHA's first-time performance. ALPHA can only get better. HP-PA is constrained by 32-bit technology.

HP has claimed that they've had 64-bit architecture since 1986 because HP-PA RISC supports a segmented addressing scheme. Using their logic so did we with our VAX microprocessors because they had 64-bit floating point data paths. PA-RISC has 32-bit addresses and some segment extenders which the software can't use. You need 64-bit addressing to be a true 64-bit architecture.

## SECTION 5

### DEC OSF/1 vs HP-UX

#### Competing with DEC OSF/1 V2.0

Brenda Lee-Kang  
DTN: 381-6053  
E-mail: xirtlu::kang  
M/S: ZK03-2/X07

##### Unified

- The leadership UNIX with support for industry standards: POSIX, XPG, IEEE, FIPS, etc and all UNIX standards: System V (SVID2 & SVID3), BSD, and OSF/1. No other UNIX vendor can match this today.

##### Modern

- Modern 64-bit UNIX operating environment.

##### Complete

- A modern UNIX implementation supported with hundreds of applications providing a robust production environment for technical and commercial computing.

The purpose of this article is to describe Digital's competitive strengths to assist in competing with our major competitors, Solaris 2 from Sun, HP-UX from Hewlett-Packard, AIX from IBM, IRIX from Silicon Graphics, and System V Release 4.2 (SVR4.2) from UNIX Systems Laboratories (bought out by Novell).

#### The Digital UNIX Advantage

##### Unified

Customers never have to choose which UNIX environment they want, because with DEC OSF/1, they get OSF/1, BSD, and System V (with DEC System V Environment). And with the recently announced Common Interface Specification for UNIX-based operating systems, Digital is well-positioned to offer one of the most complete offerings of these APIs with near 100% support TODAY.

##### Modern

DEC OSF/1 is modern UNIX implementation designed from the onset to take advantage of the latest technologies, including leading edge price/performance ALPHA AXP systems.

DEC OSF/1 on ALPHA AXP is the industry's first 64-bit operating environment. The benefits of 64-bit systems are:

- Improved scalar arithmetic precision and performance
- Increased memory addressing space
- Increased maximum file size

If your customer does not feel that 64-bits is needed today, emphasize that they most likely will require systems with greater than 32-bit capacity soon, if not already, as applications become more sophisticated, taking advantage of advanced software technologies, demanding advanced systems architecture (like ALPHA AXP) to handle the system resources required. Remind customers how some people thought they would never need 32-bit systems when those were first introduced. With DEC OSF/1, they get both a modern kernel and 64-bit system, and they don't have to worry about migrating to 64-bit architecture later or to a modern UNIX kernel.

Complete

Digital offers a state-of-the-art UNIX environment supported by hundreds of applications addressing a wide range of computing needs:

- A robust DEC OSF/1 production environment with:
  - 64-bit file support for virtually unlimited file size for supporting large, mainframe-class files and databases
  - Data integrity and availability, fast system restarts, on-line storage management tools with POLYCENTER AdvFS and POLYCENTER AdvFS Utilities
  - Failover capability with DECsafe Available Server ensuring data availability and integrity
  - Hierarchical storage system with Storage Server 100 providing high capacity, cost effective storage while ensuring data accessibility
- For technical and commercial environments, Digital's distributed computing products for connectivity and network/system management in a heterogeneous environment.
  - Complete support for network protocols and tools: TCP/IP, X.25, DECnet/OSI, SNA tools
  - Under POLYCENTER Netview framework, DEC FullSail and POLYCENTER Networker Save and Restore provide integrated, distributed, and heterogeneous system management
- Digital's leadership distributed client/server development/deployment software and tools:
  - Distributed computing software
    - ObjectBroker, DEC MessageQ, and DCE
    - Tuxedo, ACMSxp, VIS/tp for proven, leadership TP monitors
    - 3rd party databases
- For realtime requirements
  - DEC OSF/1 V2.0 leadership realtime extensions are based on POSIX 1003.4 Draft 11
- Digital offers customers the most open, modular, and cross-vendor approach to service in the industry. Digital is the only computer vendor to support a complete range of products and applications from other vendors: IBM, COMPAQ, Apple, HP, Novell, and many others. In fact, Digital currently services 14,000 products from 1,000 vendors -- including 80% of the most commonly used applications in business today. IBM and HP do a good job at servicing their own equipment, but not those from other vendors. Sun does a poor job of servicing even its own products.



## Competing Against Hewlett-Packard

- HP claims HP-UX is based on System V Release 3.2 with some (not all) BSD enhancements, plus a good deal of proprietary code. Our researchers have determined that HP-UX is actually BSD-based with System V added. Either way, HP-UX is an old, monolithic proprietary UNIX kernel. Compare HP-UX to Digital's modern UNIX implementation:

DEC OSF/1: SVR4, BSD, OSF/1

Also note that HP-UX is on its ninth major release with maybe only one more release before expiring, another sign of an operating system on it's "last leg".

- HP-UX currently lacks a product that can provide a log-based file system (also referred to as a Journal File System). A log-based file system eliminates the need for UNIX file system checks (*fsck*) performed on *every* partition on *every* disk *everytime* the system restarts after a system failure. UNIX utility, *fsck*, can take as long as 30 minutes or more, depending upon the amount of disk space (the more disk space, the more *fsck*'s required, the longer it takes.) In addition, *fsck* does not guarantee complete recovery of data that may have been lost during the system failure. Data integrity is an issue with traditional UNIX systems like HP-UX (one of the reasons why, historically, UNIX was not a practical operating system for commercial/production environments). DEC OSF/1 includes POLYCENTER Advanced File System (AdvFS) product providing a log-based file system that ensures data availability and integrity. With POLYCENTER AdvFS, system restarts takes only about three minutes (no *fsck*'s required). Customers concerned with system downtime (and what customer isn't?) can feel secure in knowing that with POLYCENTER AdvFS, downtime is not an issue. Combined with DECsafe Available Server (failover software), failovers can happen immediately. HP CANNOT claim this.

SUGGESTED CUSTOMER DEMO: Place a DEC OSF/1 ALPHA AXP system with POLYCENTER AdvFS turned on next to any HP-UX PA-RISC system (with lots of disk space). Simulate a power outage by unplugging both systems. Then turn both systems back on and see how long it takes for them to come back up. The DEC OSF/1 system should come up in no time. Let the customer wait and wait for the HP-UX system to come up. (See section on IBM on Journal File System. The information on POLYCENTER AdvFS Utilities applies here also.) [Note that HP is planning to offer log-based file system from Veritas sometime in 1994. If your customer should ask about Veritas, refer to Sales Update March 15, 1993 for comparison of Veritas and POLYCENTER AdvFS and POLYCENTER AdvFS Utilities.]

- HP workstations are not 100% binary compatible with their servers. Some server functionality are not available on their workstations (high availability, LVM), and some workstations features that are not available on their servers (memory mapped files, OSF AES compliance). Applications using memory mapped files will not run on server systems, and those that are written to OSF AES are not guaranteed to run on server systems. Workstations cannot be used interchangeably as servers without difficulty, especially if LVM is used, as HP workstations don't support LVM.

- HP's SMP has been limited to its high end server, 890. More recently, HP has released more SMP servers in their 800 product line. It appears that there are no SPECrates for these new servers which leads to the query of whether HP is trying to hide something - Perhaps these SMP servers are not scaling well?
- HP customers can expect to face at least one migration if not two. One to a modern UNIX kernel and one to 64-bit architecture. HP agrees that they will have to move to 64-bits in the future, but have yet to announce their plans. They recognize that once they make an announcement, they are liable to lose new business, as the threat of a major migration is a deterrent for new purchases; Why should a customer purchase a system only to have to go through a migration in the next two or three years? HP has been especially quiet about these things for this very reason. With DEC OSF/1, customers don't have to worry about future migrations.
- All the major UNIX competitors are working on modern kernels and 64-bit systems. IBM has PowerPC, initially a 32-bit system, later 64-bits. Their modern kernel will be WorkPlace OS due out later this year. Sun is starting to promote 64-bit UltraSPARC with SpringOS in the works. Digital is in the lead with 64-bit ALPHA AXP systems today with DEC OSF/1 and is the only UNIX vendor to offer both 64-bit systems and modern UNIX implementation today. When will HP make the move? How long will HP continue to force their customers to stay with their prehistoric UNIX implementation when Digital has already made the leap and others are working on it?

For Additional Information:

- Competitive material can be obtained from:  
xirtlu::/public/competition
- To get on distribution list for current competition news and announcements, send mail to kang@decvax.dec.com.

UNIX Software Competition Information:

At-Your-Fingertips: UNIX Competition (Up-to-date UNIX software competition information)  
xirtlu::/public/competition/finger\_compete.ps

UNIX Competition Guide (text file providing information on how to obtain the latest Guide)  
xirtlu::/public/competition/guide\_instruct.txt

HP information:

HP-UX V9.0 - xirtlu::/public/competition/hp/hp\_uxV9\_oct92.ps

HP Sales Guide

xirtlu::/public/competition/hp/hp\_salesguide.ps

## SECTION 6

### GENERAL SELLING TACTICS

- Avoid simple performance comparisons with HP systems unless there is a clear advantage. Use price/performance for workstation positioning and total cost when selling client/server solutions. Broaden the playing field to include systems integration, multi-vendor services, and application availability.
- Leverage Digital's advantage in serving the enterprise. Show the multivendor and client/server superiority of OpenVMS using the Gartner Enterprise Server Platform report.
- Negate HP's claims of being the one and only UNIX standards leader. Show that Digital is fully committed to UNIX by being first to deliver an OSF/1 product. Don't overlook our contributions to Motif and DCE.
- Sell the vision of 64-bit computing. Express it as a normal progression of engineering technology--the 60's were 8-bit, the 70's were 16-bit, the 80's 32-bit, and the 90's and beyond will incorporate 64-bit computing.
- Prepare professional presentations. HP will. Use tools like Product Navigator. HP likes to use market data and reports by industry analysts to establish themselves as the industry leader.

## SECTION 7

### HP's PRODUCT PLATFORMS

Product line	Description
HP3000/900	RISC (HP-PA) machines using the MPE operating system. Sold as a commercial OLTP machine and competes directly with VAX.
HP9000/800	RISC (HP-PA) machines running Unix (HP-UX). It is sold as a commercial machine and general purpose file server.
HP9000/700	RISC (HP-PA) based High powered workstations. Aimed at the mid to top end of the market, they run HP-UX. They are also sold as servers to workstations where compute power is required
HP9000/400	Motorola based workstations. Volume products at the low to mid range of the market. They run either HP-UX or Domain from Apollo.
HP9000/300	Motorola based workstations. They are the HP predecessor to the 9000/400's. Still sold, as they are rackmountable and can be used by HP's instrument customers. It runs HP-UX or special BASIC and PASCAL operating systems
DNX5XX	Motorola based workstations. The Apollo predecessor to the HP9000/400. Run's only the Domain operating system.
DN10000	Apollo RISC (PRISM) machine. It is a multiprocessor machine sold as a compute intensive server. It can only run the Domain operating system.
HP1000	Real Time machine running HP's RTE operating system. Sold to OEMS and in embedded systems.
Vectra	HP's own IBM compatible PC range.

## SECTION 8

## HP 9000/700 SERIES SYSTEMS

MODEL	MHz	MAX MEMORY	MAX DISK	MIPS	PERFORMANCE		
					SPECint92	SPECfp92	SPECmark
Desktop							
715	33	192MB	69GB	41	24.2	45	45.9
715	50	192MB	69GB	62	36	72	69
715	75	192MB	69GB		61	113	
725	50	256MB	69GB	62	36	72	69
725	75	256MB	69GB		61	113	
735	99	400MB	125GB	124	80	150	147
Deskside							
755	99	768MB	297GB	124	80	150	147

## WORKSTATION COMPARISON CHART

HP MODEL	SPECint92	\$	ALPHA	SPECint92	\$
715/33	24.2	10K	3000/300	66	12K
715/50	36	14K	3000/300	66	12K
715/75	61	18K	3000/300	66	12K
			3000/400	75	18.8K
725/50	36	20.5K	3000/300	66	12K
			3000/400	75	18.8K
725/75	61	21K	3000/300	66	12K
			3000/400	75	18.8K
735	80	37.4K	3000/400	75	18.8K
755	80	59K	3000/600	114	21.4K

## HP WORKSTATIONS AND SERVERS VERSUS ALPHA AXP SYSTEMS

### A1. ENTRY DESKTOP

	AXP3000-300L	HP715/33
SPECint 92	45.9	24
SPECfp 92	63.6	45
ENTRY \$	\$4,995	\$5,695
\$/SPECint 92	109	237
\$/SPECfp 92	79	127

### A2. LOW-END DESKTOP

	AXP3000-300	HP715/75
SPECint 92	67	61
SPECfp 92	91.5	113
Configured	\$12,995	17,995
	19" Col,32,1GB	19" Col,32,525MB
\$/SPECint 92	194	295
\$/SPECfp 92	142	159

### B. MID-RANGE DESKTOP

	AXP3000-600	HP725/75	HP735
SPECint 92	114	61	80
SPECfp 92	162.1	113	150
Configured	\$21,465	20,995	37,395
	19" Col,32,1GB	19" Col,32,525MB	
\$/SPECint 92	188	344	467
\$/SPECfp 92	132	186	248

### C. MID-RANGE DESKSIDE WORKSTATION

	AXP3000-800	HP755
SPECint 92	130	80
SPECfp 92	184	150
Configured	\$36,000	52,000
		(64MB)
\$/SPECint 92	277	650
\$/SPECfp 92	196	347

## SECTION 9

### HP 9000 MODEL 700 SAMPLE PRICING

#### HP 9000 MODEL 705

- 19" grayscale, 16 MB RAM, diskless \$6,180

#### HP 9000 MODEL 710

- 19" grayscale, 16 MB RAM, diskless \$9,860

#### HP 9000 MODEL 715/33

- 19" grayscale, 16MB RAM, diskless \$5,590
- 17" color, 16 MB RAM, 525 MB disk \$7,700
- 19" color, 16 MB RAM, 525 MB disk \$8,200
- 19" color, 32 MB RAM, 525 MB disk \$9,800

#### HP 9000 MODEL 715/50

- 19" grayscale, 16 MB RAM, 525 MB disk \$11,490
- 19" color, 16 MB RAM, 525 MB disk \$13,390

#### HP 9000 MODEL 715/75

- 19" grayscale, 32 Mb RAM, 525 MB disk \$15,395
- 19" color, 32 MB RAM, 525 MB disk \$17,995

#### HP 9000 MODEL 720

- 19" grayscale, 16 MB RAM, 420 MB disk \$14,965

#### HP 9000 MODEL 725/50

- 19" grayscale, 32 MB RAM, 525 MB disk \$16,845
- 19" color, 32 MB RAM, 525 MB disk \$19,445

#### HP 9000 MODEL 725/75

- 19" grayscale, 32 MB RAM, 525 MB disk \$18,395
- 19" color, 32 MB RAM, 525 MB disk \$20,995



HP 9000 MODEL 730

- 19" grayscale, 32 MB RAM, 420 MB disk \$24,450

HP 9000 MODEL 735

- 19" grayscale, 32 MB RAM, 525 MB disk \$34,690
- 19" color, 32 MB RAM, 525 MB disk \$37,290

HP 9000 MODEL 750

- 19" color CRX (8pl), 64 MB RAM, 1.3 GB disk \$52,890

HP 9000 MODEL 755

- 19" color CRX (8pl), 64 MB RAM, 2 GB disk \$37,290

OPTIONS:

- \$100/MB RAM
- 525 MB DISK-- \$2,200
- replace 525 MB with 1 GB-- \$1,650
- 1 Gb disk--\$3,850
- CDROM--\$1,050
- Powershade 3D software--\$2,100
- add CRX-24 board--\$4,000
- add CRX-24Z board--\$9,000
- add CRX-48Z board--\$14,000

SECTION 10:

HP GRAPHICS

Graphics

Graphics has always been an HP strength. Digital should not be intimidated by HP's reputation. HP's unique strengths are only relevant at the low volume, high cost end of the 3D market. It is always very difficult to compare graphics performance by such measures as vectors and polygons per second as vendors do it differently.

HP Graphics

What HP announced

=====  
From a graphics hardware point of view, HP announced only 1 new product: the HP CRX48Z. This product represents the new high end of their graphics product line, replacing the TurboVRX T4. A comparison of their old and new lineups:

	Old	New
Entry level 2D/ wireframe 3D	CRX/GRX	CRX/GRX
True color 2D	CRX24	CRX24
Entry level 3D	CRX24Z	CRX24Z
Mid-range 3D	TurboVRX T4	CRX48Z

HP is now supporting the CRX24Z on lower cost members of the family, starting with the 715/33, which allows them to be more price competitive in low end 3D applications.

## Analysis

The CRX48Z addresses a major flaw in HP's products: true color double buffering. Until the CRX48Z, they could not offer a competitively priced true color double buffered solution (the Turbo VTX T4 was their only solution and it was tremendously overpriced and had sub-par performance).

Note that Digital has been shipping 3D graphics accelerators with full 24-bit double buffering since 1990 with the PXG and PXG Turbo and we will shipping the "+" versions of these products on ALPHA AXP workstations in Q3FY93.

The performance that HP is quoting for the CRX48Z is HIGHLY MISLEADING. HP is quoting 600K triangles and 1.9M 3D vectors/sec on the CRX48Z in their press releases.

In HP's performance brief, they fully describe how they measured the 600K triangles: 50 pixel triangles in strips, CONSTANT COLOR, random orientation, transformed, clip checked and Z-buffered. In other words, THESE ARE NOT SHADED TRIANGLES!!!

Any comparisons of the HP CRX48Z to any Digital 3D product, current or future, based on their 600K triangle number is TOTALLY APPLES TO ORANGES.

In fact, HP even admits in their performance summary that it is not clear how any application would use constant color 3D triangle strips.

The real gouraud shaded triangle performance is probably closer to 200K which puts it in the same performance class as the low end PixelVision which we expect will be approximately 200K.

There is also a rather dramatic drop from unlit tristrip performance to lit quads: 600K->150K on the 735 CRX48Z and 600K->80K for the 715/50 CRX48Z. This is due to the fact that HP does most of their geometry calculations on the host.

The vector performance looks legitimate. PV-mid should come close to this number, but it looks as though HP might have a lead here.

### GPC PLB comparisons:

The table below shows how the HP platforms stack up relative to the PXG+/24/Z on a DECstation 5000 Model 133 (numbers in parentheses are relative to that configuration).

	cyl_head	head	shuttle
DS5000/133 PXG+	16.7(1.0x)	21.9(1.0x)	21.0(1.0x)
HP715/50 CRX48Z	39.6(2.4x)	66.7(3.0x)	28.3(1.3x)
HP735 CRX48Z	78.7(4.7x)	121.1(5.5x)	58.5(2.8x)

Our next generation products will be very competitive with this performance.

## Features:

The CRX48Z does not support any of the more advanced features such as texture mapping or stereo viewing, which makes sense because none of their APIs can support these features. In his analysis of the HP graphics announcement, Ted Krum from D.H. Brown states: "As competitors rush to complete their OpenGL implementations by next spring, HP may find itself in the minority lacking support for the features, of which texture mapping remains the most potentially important."

PixelVision and Kubota's Denali will both support more features in hardware than the CRX48Z.

## Graphics Summary

- Challenge HP's performance claims with your customers. PixelVision should provide more than competitive performance to the CRX48Z, with hardware support for more features such as texture mapping and stereo, all at competitive prices.
- Ask how important OpenGL is to your customers. HP's OpenGL strategy is to use a third party. Is that good enough?

SECTION 11  
HP9000-800 SERVERS VS. ALPHA AXP

HP9000 MODEL	PRICE	SPEC INT 92	\$/SPEC INT 92	SPEC RATE INT 92*	ALPHA AXP MODEL	PRICE	SPEC INT 92	\$/SPEC INT 92	SPEC RATE INT 92*
F10	8,7000	22.0	396	523	2000-300	9,675	70	138	
F20	13,500	34.1	396	816	2000-300	9,675	70	138	
F30	15,000	37.8	396	890	2000-300	9,675	70	138	
G30	17,000	37.8	450	890	3000-400	16,630	74.8	222	1,763
G40	22,000	50.5	436	1201	3000-600	21,190	114	186	2,490
G50	33,000	78.3	421	1854	3000-600	21,190	114	186	2,490
G60	50,000	82.8	604	1944	3000-600	21,190	114	186	2,490
G70	76,000	N/A	N/A	3757	4000-710	70,865	113	627	2,900
H20	26,500	34.1	771	816	3000-400	16,630	74.8	222	1,763
H30	34,500	37.8	913	890	3000-400	16,630	74.8	222	1,763
H40	44,500	50.5	881	1201	3000-600	21,190	114	186	2,490
H50	68,000	78.3	868	1854	3000-800	32,275	130	248	2,835
H60	83,000	82.8	1,002	1944	3000-800	32,275	130	248	2,835
H70	109,000	N/A	N/A	3757	4000-720	90,865	N/A	N/A	5,742e
I30	60,500	37.8	1,446	890	3000-400	16,630	74.8	222	1,763
I40	73,000	50.5	1,446	1201	3000-600	21,190	114	186	2,490
I50	93,000	78.3	1,118	1854	3000-800	32,275	130	248	2,835
I60	108,000	82.8	1,304	1944	3000-800	32,275	130	248	2,835
I70	129,500	N/A	N/A	3757	4000-720	90,865	N/A	N/A	5,742e

HIGH-END SERVERS  
HP/UX vs. DEC OSF1

HP-T500 MODEL	PRICE	SPEC RATE INT 92	\$/SPEC RATE INT 92	DEC AXP MODEL	PRICE	SPEC RATE INT 92	\$/SPEC RATE INT
T500-1	165,000	2,310	71	7000-610	140,500	3,061	46
T500-2	210,000	4,609	46	7000-620	167,500	6,060*	28
T500-3	255,000	6,826	37	7000-630	194,500	8,968*	22
T500-4	300,000	9,017	33	7000-630	194,500	8,968*	22
T500-5	345,000	11,211	31	7000-640	221,500	11,875*	19
T500-6	390,000	13,290	29	7000-650	248,500	14,629*	17
T500-7	435,000	15,253	29	7000-650	248,500	14,629*	17
T500-8	480,000	17,114**	28	7000-660	275,500	17,383*	16

NOTE: All HP T-500 and DEC7000 Systems are configured with 256MB memory.

\* DEC7000-610 (OSF1) SPECrate integer results are published by the SPEC Council. The multi-processor results are estimates. Digital will ship SMP for DEC OSF1 in July, 1994, with an early release available in March, 1994. The 7000-610 is SMP enabled and supports 6-way SMP now with OpenVMS. Digital will support 12 way SMP in 2H, 94.

For each SMP board upgrade, DEC7000 costs \$27,000; HP T-500 costs \$45,000.

\*\* The T-500 supports 8-way SMP with HP/UX 9.X. When HP 10.0 ships sometime in 1H, 94 CY, the T-500 will support up to 12-way SMP. HP has issued results for the T-500-12 at 23,717 SPECinteger for \$660,000.

HIGH-END SERVERS  
HP/UX vs. DEC OpenVMS

HP-T500 MODEL	PRICE	SPEC RATE INT 92	\$/SPEC RATE INT 92	DEC AXP MODEL	PRICE	SPEC RATE INT 92	\$/SPEC RATE INT
T500-1	165,000	2,310	71	7000-610	140,500	2,900	48
T500-2	210,000	4,609	46	7000-620	167,500	4,741	35
T500-3	255,000	6,826	37	7000-630	194,500	7,014	28
T500-4	300,000	9,017	33	7000-640	221,500	9,076	24
T500-5	345,000	11,211	31	7000-650	244,270	11,268	22
T500-6	390,000	13,290	29	7000-660	275,500	13,351	21
T500-7	435,000	15,253	29	7000-660	275,500	13,351	21
T500-8	480,000	17,114**	28	7000-660	275,500	13,351	21

NOTE: All HP T-500 and DEC7000 Systems are configured with 256MB memory

SECTION 12  
OLD HP 9000/800 SERIES SPECIFICATIONS

**NOTE:** HP revamped the server product line in December 1992. The product specifications for the new line follows those shown below. It is expected that these older models will still be sold but at drastically reduced prices.

Server Systems

MODEL	NOTES	MEMORY	DISC	TPC-A	PERF EST MIPS	PERF EST USERS	\$K
807S	PA-RISC 32MHz	8-64MB	11.0GB	30.4	34	16	12
817S	PA-RISC 48MHz	16-192MB	28.5GB	51.4	53	32	20
827S	PA-RISC 48MHz	16-384MB	101.3GB	51.8	53	64	25
837S	PA-RISC 48MHz	16-192MB	28.0GB	60	53	64	40
847S	PA-RISC 48MHz	32-384MB	101.3GB	60.1	53	96	48
857S	PA-RISC 48MHz	64-384MB	130.0GB	60.1	53	160	63
867S	PA-RISC 48MHz	64-384MB	101.3GB	74.9	71	200	63
877S	PA-RISC 48MHz	64-384MB	130.0GB	74.9	71	200	79.5
887S	PA-7100 MHz	64-768MB	144.0GB	184	(136)	1800	92
897S	PA-7100 MHz	64-768MB	144.0GB	184	(136)	1800	112

DataCentre Machines

MODEL	NOTES	MEMORY	DISC	PERF EST TPC-A	PERF EST MIPS (SPEC)	USERS	\$K
850S	PA-RISC	48-128MB	42GB	15	14 (9.2)	70	125
855S	PA-RISC	48-128MB	42GB	24	22 (13)	120	190
860S	PA-RISC	48-256MB	42GB	30	23 (14)	150	230
865S	PA-RISC	64-512MB	342GB	45	56 (36)	200	275
870S/100	PA-RISC	96-768MB	342GB	58	53 (36)	250	340
870S/200	PA-RISC	128-768MB	514GB	95	100 (70)	400	438
870S/300	PA-RISC	160-768MB	514GB	N/A	168	600	551
870S/400	PA-RISC	192-768MB	514GB	173	224	800	699
890S/1	60MHz	128MB-2GB	600GB		65(e)	1000	335
890S/2	60MHz	128MB-2GB	600GB		130(e)	1000	440
890S/3	60MHz	128MB-2GB	600GB		195(e)	1000	545
890S/4	60MHz	128MB-2GB	600GB	710	260(e)	1000	650

**NOTE:** Please use the benchmark numbers shown above for general positioning only. Call the Competitive Hotline at 1-800-DEC-ISIT for updated performance information on HP products. For the full Digital and Hewlett Packard TPC benchmark results, see Attachment C.

HP DISKS

HP has three ways to connect discs to the 9000/800's - HPIB, SCSI, HPFL or some combination. Disk capacity is severely restricted if the HPIB option is chosen. The maximum number of discs come with SCSI, but you can only do disc mirroring and high availability with HPFL. This confusing approach to disk connections means the customer has to make decisions about the future as well as the current needs.

SECTION 13  
HP 3000/900 SERIES SPECIFICATIONS

HP3000 (HP's OLTP machine)

HP3000 Product Detail

(prices are for base systems: Minimum memory, disk and MPE Operating System)

MODEL HP3000'S	NOTES	MEMORY	DISC. (MAX)	PERFORM ANCE TPC-A	PERFORM ANCE USERS	PRICE \$K
Entry Level Systems						
917LX	PA-RISC 32MHz	24-192MB	24GB	33	8	14.5
927LX	PA-RISC 32MHz	24-192MB	24GB	33	20	21
937LX	PA-RISC 32MHz	32-192MB	24GB	33	24	40
937RX	PA-RISC 32MHz	32-384MB	66GB	33	32	33.5
Mid Range Systems						
947LX	PA-RISC 32MHz	48-192MB	24GB		48	70
947RX	PA-RISC 32MHz	64-384MB	66GB		100	88
957LX	PA-RISC 48MHz	64-192MB	24GB	65.5	100	100
957RX	PA-RISC 48MHz	64-384MB	66GB		160	103.5
967LX	PA-RISC 48MHz	64-192MB	24GB	65.5	100	140
967RX	PA-RISC 48MHz	64-384MB	66GB		250	123.5
977	PA-RISC 48MHz	96-384MB	66GB	150.6	250	245
Data Centre Machines						
955	PA-RISC NMOS	64-192MB	85GB	27	225	340
960	PA-RISC NMOS	128-256MB	85GB	38.2	300	440
980/100	PA-RISC CMOS	192-512MB	85GB	60	850	6755
980/200	PA-RISC CMOS	256-1000MB	85GB	100	850	1050
980/300	PA-RISC CMOS					
980/400	PA-RISC CMOS					
990/100	60MHz	192-512MB	600GB		1000	440
990/200	60MHz	256-1GB	600GB		1000	645
990/300	60MHz	320/1GB	600GB		1000	785
990/400	60MHz	384-1GB	600GB		1000	925



## COMPETING WITH THE HP 3000/900

1. Promote High-Availability solutions, which guarantee security, reliability, and flexible growth at an applications level. This is offered by our proven VAXcluster technology, which is built into the VMS operating system (thus removing any coding and maintenance from the application programmer). Use the Gartner Group Mid-Range Enterprise Systems Evaluation results to show our advantage. I have attached the results for MPE and VMS at the end of this document.
2. Promote our Open Systems capability as industry leadership. We are the only vendor to receive XPG3 branding for a non-UNIX operating system. XPG3 branding (which is the execution of POSIX calls using the X/Open suite of tests) make it much easier to port applications, thus giving customers flexibility of platforms.
3. Promote ALPHA AXP, the first 64-bit systems architecture in the industry. How and when will HP catch up??
4. Promote ALPHA Ready VAX systems as an investment protection easy and inexpensive upgrade from VAX OpenVMS to ALPHA AXP Open VMS. Digital provides industry leading business practices (including the transfer of software licenses with no additional cost) which protect the customers investment.
5. Promote the idea that MPE is dead. HP's Roelandts said recently that HP MPE is for HP's installed base but HP/UX is for growth. (Computer World, 11/2/92).
6. Question HP's strategic direction , and promote the idea that Windows NT may supersede UNIX. If it does, HP will suddenly be poorly positioned. HP may be hot now with its HP/UX (UNIX), but they have all their eggs in one basket. The Gartner Enterprise Systems model shows that UNIX is weak in providing mission critical, production quality systems solutions. Although UNIX is growing now, it is not taking over the work (it only represents about \$16B in overall computer systems revenues), and NT is generating lots of excitement.

HP does not have anything like our PAL code for ALPHA. Therefore, even if they did end up supporting NT, it will take them extra time and effort to do so, and they would have to change their entire direction to implement an integrated NT software solution.

SECTION 14

COMPETING AGAINST HP PCs

Competitive Hotline  
1-800-DEC-ISIT  
September, 1993

Table of Contents:

HP Product Line Overview

HP PC models, specs, and prices

Digital PC models, specs, and prices

Positioning Digital vs. HP PC's

Spotlight on Pentium

Weapons

## HP Product Line Overview:

HP's desktop and floorstanding PC's and servers are called Vectra's.

Within the Vectra line, products are classified as follows:

"386N" models are positioned as LAN clients, and are desktop devices.

"486N" models are positioned as LAN clients or LAN servers, and are "slimline" (although not portable) desktop devices.

"486M" models are positioned as LAN clients or LAN servers, and are midsize desktops.

Models ending in "U" are positioned as workstations for graphics, CAD, and windows applications, and are desktop devices.

Models ending in "ST" are positioned as file servers, and are floorstanding.

"RTU/n" means "ready-to-use" server, configured for n users.

HP also sells portable PC's, called OmniBooks, which will not be covered within this document.

HP models, specs, and prices

STATIONS:

Model	Chip	Clock MHz	Memory min-max	Disk MB	Bundled O/S	
386/25N	386sx	25	4-32M	80	DOS, Windows	\$1,309
486/25N	486sx	25	4-48M	120	DOS, Windows	\$1,429
486/33N	486sx	33	4-48M	120	DOS, Windows	\$1,549
486/33N	486dx	33	4	120	DOS, Windows	\$1,729
486/66N	486dx2	66	4-48M	240	DOS, Windows	\$2,479
486s/25M	486sx	25	4-	120	DOS, Windows	\$1,519
486s/33M	486sx	33	4-	120	DOS, Windows	\$1,639
486/33M	486dx	33	4-	170M	DOS, Windows	\$1,909
486x/330M*	486sx	33	4-	170M	DOS, Windows	\$2,159
486/330M*	486dx	33	4-	170M	DOS, Windows	\$2,409
486/500M*	486dx2	50	8-	240M	DOS, Windows	\$3,219
486/660M*	486dx2	66	8-	240M	DOS, Windows	\$3,379
486/25U	486sx	25	4-64M	120M	DOS, Windows	\$2,489
486/33U	486dx	33	4-64M	120M	DOS, Windows	\$2,849
486/50U	486dx2	50	4-64M	240M	DOS, Windows	\$3,409
486/66U	486dx2	66	4-64M	240M	DOS, Windows	\$3,659

\* = includes Ethernet

Note: All stations are also available diskless.

Note: All models on this page come with a 1 year warranty.

SERVERS:

Model	Chip	Clock MHz	Memory min-max	Disk MB	Bundled O/S	
486/33ST	486dx	33	4-64M	240M	none	\$3,999
486/66ST	486dx2	66	4-64M	240M	none	\$4,899
486/33ST RTU/20	486dx	33	4-64M	240M	DOS,Netware	\$8,949
486/66ST RTU/50	486dx2	66	4-64M	240M	DOS,Netware	\$12,199
486/66ST RTU/100	486dx2	66	4-64M	240M	DOS,Netware	\$13,899

486/33ST RTU/20 is a 486/33ST "Ready-to-use" server, preconfigured and easy to install, to support 20 users.

486/66ST RTU/50 is a 486-66ST "Ready-to-use" server, preconfigured and easy to install, to support 50 users.

486/66ST RTU/100 is a 486/66ST "Ready-to-use" server, preconfigured and easy to install, to support 100 users.

NetServer 4s/33LE	486sx	33	4-	240M	none	\$2,649
NetServer 4/33LE	486dx	33	8-	530M	none	\$3,549
NetServer 4d/66LE	486dx2	66	8-	530M	none	\$4,049
NetServer 4/33LM	486dx	33	16-	530M	HP NetServer	\$4,849
NetServer 4d/66LM	486dx2	66	16-	530M	HP NetServer	\$5,499
NetServer 5/60LM	Pentium	60	16-	530M	HP NetServer	\$7,099

The difference between ST's and RTU's vs NetServers:

ST or RTU	NetServer
MS-DOS 5.0 preinstalled	No O/S preinstalled
NetWare 3.11 preinstalled	HP NetServer Assistant software
Ethernet adapter	SCSI ports and EISA busses
Not upgradable to Pentium	Upgradable to Pentium
One year warranty	Three year warranty

Note: All models except NetServers come with a 1 year warranty.  
NetServers come with a 3 year warranty.

Digital PC Models, Specs, and Prices:

- SL's = mono portables
- SLC's = color portables
- LPv's = desktop clients
- LPx's = desktop clients which are "Pentium-ready"
- MT's = floorstanding clients
- ST's = floorstanding servers

Portables

Model	Chip	Clock	Mono/ Color	Min Mem	Max Mem	80M Disk	120M Disk	200M Disk
325SL	386	25Mhz	mono	4M	20M	\$2099	\$2299	
325SLC	386	25Mhz	color	4M	20M		\$2899	
425SL	486	25Mhz	mono	4M	32M		\$2499	\$2699
425SLC	486	25Mhz	color	4M	32M		\$3999	\$4199

LP's (desktop clients)

All include DOS, Windows, keyboard, mouse, and 14" color monitor

Model	Chip	Clock	4M Mem & 170M Disk	8M Mem & 245M
LPv 425sx	486sx	25Mhz	\$1049	\$1421
LPv433dx	486dx	33Mhz	1399	1769
LPv450d2	486dx	50Mhz	1599	1969
LPx 433sx	486sx	33Mhz	1149	1519
LPx 433dx	486dx	33Mhz	1399	1719
LPx 450d2	486dx2	50Mhz	1599	1969
LPx 466d2	486dx2	66Mhz	1799	2169

MT's (floorstanding clients)

All include DOS, Windows, keyboard, mouse, and 14" color monitor

Model	Chip	Clock	Memory	127M	245M	426M	1G Disk
433dx	486dx	33Mhz	4-64M	\$2249	\$2449	\$3199	\$3599
450d2	486dx	50Mhz	4-64	2399	2599	3349	3749
466d2	486dx	66Mhz	4-64	2699	2899	3649	4049

ST's (floorstanding servers)

All include DOS, Windows, keyboard, mouse

Model	Chip	Clock	Memory	245M	426M	1G Disk
433ST	486dx	33Mhz	4-32M	\$2749	\$3449	\$3849
450ST	486dx	50Mhz	4-32	3149	3849	4249
452ST	486dx	50Mhz	4-32	2799	3499	3899
466ST	486dx	66Mhz	4-32	3199	3899	4299
560ST	Pentium	60Mhz	8-192		10195	11106

ALPHA PC's

Model	Chip	Clock	Memory	245M Disk
AXP PC	ALPHA	150Mhz	16-128M	\$6795

HP vs. Digital positioning:

	HP Model	HP Price	Digital Model	Digital Price
Clients:	386/25N	\$1,309	N/A	
	486/25N	1,429	LPv 425sx	\$1,049
	486s/33N	1,549	LPx 433sx	1,149
	486/33N	1,729	LPx 433dx	1,399
	486/66N	2,479	LPx 466d2	2,169
	486s/25M	1,519	LPx 425sx	1,049
	486s/33M	1,639	LPx 433sx	1,149
	486/33M	1,909	LPv 433dx	1,399
	486x/330M	2,159	LPx 433sx	1,149
	486/330M	2,409	LPv 433dx	1,399
	486/500M	3,219	LPx 450d2	1,969
	486/660M	3,379	LPx 466d2	2,169
	486/25U	2,489	LPv 425sx	1,049
	486/33U	2,849	LPv 433dx	1,399
	486/50U	3,409	LPx 450d2	1,969
	486/66U	3,659	LPx 466d2	2,169
	486 Servers:	486/33ST	3,999	DECpc 433ST
486/66ST		4,899	DECpc 466ST	3,199
	NetServer 4x/33LE	\$2,649	DECpc 433ST	\$3,742
	NetServer 4/33LE	3,549	DECpc 433ST	3,742
	NetServer 4d/66LE	4,049	DECpc 460ST	4,192
	NetServer 4/33LM	4,849	DECpc 433ST	4,328
	NetServer 4d/66LM	5,499	DECpc 433ST	4,328
	NetServer 5/60LM	7,099	DECpc 560ST	10,781

Note: All comparisons use the most similar, least expensive configurations possible for both HP and Digital.



Spotlight on Pentium:

	486dx2	Pentium	ALPHA PC
SpecInt'92	32	65	70*
SpecFP'92	16	56	105*

\*The ALPHA AXP PC runs NT at these performance levels. It will run DOS and Windows at equivalent performance levels as a 486dx.

Both Digital and HP have announced one Pentium model.

The HP model comes in 4 configurations:

HP NetServer 5/60 with

- 16M memory, diskless = \$6,049
- 16M memory, 530M disk = \$7,099
- 16M memory, 1G disk = \$7,649
- 16M memory, 2G array = \$12,549

All come bundled with HP Net Server Assistance software (server mgmt software, similar to OpenView).

NetWare can be installed optionally on NetServers.  
DOS can be installed optionally on NetServers.

Sample comparison:

DECpc 560ST w/16M memory, 1G disk, DOS = \$11,692

vs.

HP Netserver 5/60 LM w/16 M memory, 1G disk,  
and HP NetServer Assistant = \$7,649

How to compete? Consider bidding ALPHA AXP PC's against HP's Pentium. This will bring you into a better price/performance position against the HP Pentium. Or, contact Andy Kozak or Calvin Dowling, product managers for Digital's Pentium product.

Items available from the Competitive Team Weapons Center, 1-800-DEC-ISIT.

"Vectra Microcomputers"

Datapro, 3/93

Abstract: Description, specs, and prices for  
Vectras.

"HP Vectra PC's"

HP, 9/93

Abstract: Chapter from the HP price book,  
including prices for options.

## SECTION 15

### HP SERVICES

Author: BERTRAM MANDEL  
Date: 03-Nov-1993  
Posted-date: 02-Nov-1993  
Subject: I: HP Professional services division

Subj: SI COMPETITIVE FYI: GARTNER ON HP SYSTEMS INTEGRATION SERVICES

HP's goal is to become one of the leading services providers during the next several years. Although late entering, their Professional Services Division has several strengths: HP's 3,500 people committed to services, expert in networking (the backbone of client/server systems), and can provide customized education solutions based on client's needs analysis. HP's challenges: HP is still a technical company (most PSD employees are former systems engineers), HP is not good at visioning or helping clients develop business requirements, and HP is not capable of developing on-line transaction processing systems. Their rates, in many cases, are twice the industry average. HP field people cannot claim understanding beyond their own product lines, understanding from a business and application perspective is lacking, and the transition to solving clients business needs is slow. HP's services organization is difficult to understand externally and internally and there is little marketing of commercial success stories...Alan

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#### Hewlett-Packard's SI and Services Strategy

Section: - (Abstract and Definitions)

Hewlett-Packard is one of the last major hardware vendors formally to take the SI and services plunge. Entering the market this late leaves no room for error.

#### Definitions

Professional services providing services on a time and materials, or fixed-price, basis to include: consulting, software development, education and training, and outsourcing.

Outsourcing a contractual relationship with an outside vendor to assume responsibility for one or more IT functions. It is usually characterized by the transfer of assets, e.g., facilities, staff or hardware.

Systems integration (SI) a large (multimillion dollar), customized IS project with multiple components, e.g., hardware, professional services, software and communications, that addresses a significant problem for the organization.

Section: - (HP Announces Commitment to Professional Services)

In mid-1991, Hewlett-Packard Co. (HP) announced its commitment to professional services by creating a separate group with profit and loss responsibility (which HP calls its Professional Services Division PSD, in Mountain View, Calif.). The following 18 months were wisely spent assessing skills, retraining and hiring key project talent, creating methodologies and targeting market segments. In 1993, after refining its corporate services strategy and developing references in select markets to substantiate its capability claims, HP announced it was open for business. This is not to say that HP was not doing services work up to that time. A significant number of SI and consulting projects had been done in Europe prior to 1993, including Texaco, Schlumberger and the Barcelona, Spain Chamber of Commerce. However, it does say HP did not, until recently, formally recognize services as a key to success for corporate survival in a world of decreasing hardware prices and users demanding IT business solutions from their suppliers.

Section: - (Strengths)

HP's strategy has a number of significant strengths:

- 1) First and foremost, HP is committed to the services market. With 3,500 people delivering services, significant yearly financial investments in the business and a reasonable industry-people and project-manager hiring pace, HP will be a visible services player in the near future.
- 2) HP is an expert in networking the backbone of client/server (C/S) systems. Thus, HP accounts for networking issues better than many services competitors when planning and designing C/S architectures. It also can provide outsourcing services for remote enterprisewide local-area network (LAN) management.
- 3) HP educates. Many clients are asking for recommendations of vendors that can train an IS shop on C/S and open systems issues so internal IS can then develop its own applications. HP can provide customized education solutions based on a client's needs analysis. Few vendors other than HP (with the exceptions of American Management Systems and IBM's Skills Dynamics) have this service.

Section: - (Challenges)

HP's challenges for commercial services success include:

- 1) HP is still a technical company; the transition to solving clients business needs is slow. In services, HP generally competes in the upper-middle of the development life cycle (with IT architecture, pilots and proof-of-concept projects). HP is not good at visioning or helping clients develop business requirements (historically, there has been a leap from the client's problem to we have a box to solve that ), and is not capable (except in select regions) of developing on-line transaction processing systems.
- 2) To be a success in services, a vendor must: a) have competitive rates (HP's, in many cases, are twice the industry average); b) have a large percentage of employees on projects (HP, targeting a 70 percent consultant utilization rate, is far from its goal); c) hire people who are serious about SI and will look for the best solution, no matter whose hardware (HP field people cannot claim understanding beyond their product lines); and d) have people with an understanding from a business and application perspective that are good project managers (as previously mentioned, HP is on the right track, but is not there yet). Note: HP is not losing business due to the issues referred to in preceding points a and b because it is easily securing contracts from pent-up demand in its installed base. In the near future, however, HP needs to look to higher utilization rates and lower hourly rates to be truly competitive.

Section: - (Goals)

HP's goal is to become one of the leading services providers (judged by revenue and quality of service delivered) during the next several years. We believe this goal is ambitious since HP is late to market and must contend with capable services competitors, e.g., Andersen Consulting.

However, we do believe HP will:

- 1) continue to grow its services business with growth rates above the industry average of about 15 percent;
- 2) gain services credibility in regions of the world in addition to Europe;
- 3) and be a viable contender in HP's telecom, manufacturing, and banking/finance accounts. Even though today we would not recommend HP for all types of services engagements, we do believe that it should be considered as one vendor option in its target markets for offerings, e.g., open systems and C/S architecture consulting/planning, outsourcing of support for C/S systems, and C/S education and training. During the next three to five years, we believe HP's capabilities will be more robust and consistent across geographies. The company then should be considered for a wider breadth of projects.

Section: - (Examples of HP's Services Contracts)

Swedish Telecom Purpose ongoing projects in C/S architecture and SI (contract value of about \$100 million)

GTE Corp. Purpose open systems consulting and C/S architecture (ongoing)

Orient Overseas Container Lines Purpose C/S architecture and planning (contract value of more than \$10 million)

Section: - (HP's Professional Services)

Strategy

Target historical HP clients in finance, manufacturing and telecommunications

Stress C/S and open systems expertise

Target C/S and PC-LAN outsourcing opportunities (networked systems management)

Capitalize on computers, test equipment and services expertise (all from the same vendor) for developing customized hardware and software modifications easily

Capitalize on the trend in downsizing with a mainframe-alternative strategy and services offering

Focus on integrating off-the-shelf (or existing) applications vs. specifically developing the applications

## Strengths

Expertise in C/S consulting

Full-service provider capability

\$200 million telecom practice

Size of corporation and reputation of hardware products

Services references in Europe and the Pacific Rim

## Challenges

Late to market

HP's services organization is difficult to understand externally as well as internally, i.e., who should a user go to and how does a user find available resources?

Most PSD employees are former systems engineers (SEs) how many are qualified now to sell and deliver services? How many unqualified SEs can be retrained for the future? How many unqualified SEs should be dismissed?

Gain market awareness presently there is little marketing of commercial successes

Consistency of service across all regions, e.g., lack of project management and business expertise for large projects in the United States

HP's channel partner program is touted as one of the best in the industry, yet PSD directly competes with channel partners. How will HP resolve this?

See accompanying Research Note C-915-1015 for HP's education and training strategy

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SECTION 16

POSITIONING QUICK REFERENCE LINE-UP

"HP WORKSTATION LINE-UP"

MODEL	LINE-UP	STATUS/Comments
HP 9000-705	AXP 3000-300L DECsta 5000-50 DECsta 5000-150	EOL
HP 9000-710	AXP 3000-300L DECsta 5000-260	EOL
HP 9000-715/33	AXP 3000-300L DECsta 5000-50 DECsta 5000-150	1 EISA slot
HP 9000-715/50	AXP 3000-300L	1 EISA slot
HP 9000-715/75	AXP 3000-400	1 EISA slot
HP 9000-720	AXP 3000-300L AXP 3000-300	1 EISA slot
HP 9000-725/50	AXP 3000-400 AXP 3000-600	4 EISA slots
HP 9000-725/75	AXP 3000-400	1 EISA slot
HP 9000-730	AXP 3000-400	1 EISA slot
HP 9000-735	AXP 3000-500 AXP 3000-600	1 EISA slot
HP 9000-750	AXP 3000-400	4 EISA slots
HP 9000-755	AXP 3000-500X AXP 3000-800	4 EISA slots

NOTE: CRX-24, CRX-24Z & CRX-48Z utilize 1 EISA slot

"HP TECHNICAL SERVER LINE-UP"

MODEL	LINE-UP	STATUS/Comments
HP 9000-720	AXP 3000-300 AXP 3000-400S	1 EISA slot
HP 9000-725/50	AXP 3000-400S AXP 3000-600S	4 EISA slots
HP 9000-730	AXP 3000-400S AXP 3000-600S	1 EISA slot
HP 9000-735	AXP 3000-500S AXP 3000-800S	1 EISA slot
HP 9000-750	AXP 3000-500S AXP 3000-800S	4 EISA slots
HP 9000-755	AXP 3000-500S AXP 3000-800S	4 EISA slots



"HP COMMERCIAL SERVER LINE-UP"

MODEL	LINE-UP	STATUS/Comments
32 MHz		
HP 9000-F10	AXP 3000-300 AXP 2000-300	2 HP-PB slots, MEM-384MB, Disk 42GB
48 MHz		
HP 9000-F20	AXP 3000-300 AXP 2000-300	2 HP-PB slots, MEM-384MB, Disk-42GB
HP 9000-H20	AXP 3000-400S	4 HP-PB slots, MEM-512MB, Disk-100GB
HP 9000-F30	AXP 3000-300 AXP 2000-300	2 HP-PB slots, MEM-384MB, Disk-42GB
HP 9000-G30	AXP 3000-400S	4 HP-PB slots, MEM-512MB, Disk-100GB
HP 9000-H30	AXP 3000-500S	8 HP-PB slots, MEM-768MB, Disk-186GB
HP 9000-I30	AXP 4000-610	12 HP-PB slots, MEM-768MB, Disk-228GB
64 MHz		
HP 9000-G40	AXP 3000-400S	4 HP-PB slots, MEM-512MB, Disk-100GB
HP 9000-H40	AXP 3000-500S	8 HP-PB slots, MEM-768MB, Disk-186GB
HP 9000-I40	AXP 4000-610 AXP 4000-710	12 HP-PB slots, MEM-768MB, Disk-228GB
96MHz		
HP 9000-G50	AXP 3000-500S	4 HP-PB slots, MEM-512MB, Disk-100GB
HP 9000-H50	AXP 3000-500S	8 HP-PB slots, MEM-768MB, Disk-186GB
HP 9000-I50	AXP 4000-610 AXP 4000-710	12 HP-PB slots, MEM-768MB, Disk-228GB
HP 9000-G60	AXP 4000-610 AXP 4000-710	4 HP-PB slots, MEM-512MB, Disk-100GB 2MB Cache, TPC-A 40% > 50's

HP 9000-H60	AXP 3000-500S AXP 4000-610	8 HP-PB slots, MEM-768MB, Disk-186GB 2MB Cache, TPC-A 40% > 50's
HP 9000-I60	AXP 4000-620 AXP 4000-710	12 HP-PB slots, MEM-768MB, Disk-228GB 2MB Cache, TPC-A 40% > 50's
HP 9000-G70	AXP 4000-710 AXP 4000-720	4 HP-PB slots, MEM-512MB, Disk-100GB Model 70 - 2 CPU's, TPC-A 45% > 60's
HP 9000-H70	AXP 4000-710 AXP 4000-720	8 HP-PB slots, MEM-768MB, Disk-186GB Model 70 - 2 CPU's, TPC-A 45% > 60's
HP 9000-I70	AXP 4000-710 AXP 4000-720	12 HP-PB slots, MEM-768MB, Disk-228GB Model 70 - 2 CPU's, TPC-A 45% > 60's

"HP COMMERCIAL SERVER LINE-UP"

MODEL #: 890S/1 890S/2 890S/3 890S/4

PRICE:

(Server) \$165K \$230K \$295K \$360K  
 (MF Alt) \$319K \$442K \$546K \$669K

MIPS (est.): 65e 130e 195e 260e

TPC-A: 120e 185e 275e 578-AB  
 710-O7

SPEC\_RATE\_int: 1215 2253 3306 4301

SPEC\_RATE\_fp: 1180 2360 3529 4685

LINE-UP: VAX 7000/610 VAX 7000/620 VAX 7000/630 VAX 7000/640  
 AXP 4000/610 AXP 4000/610 AXP 4000/710 AXP 7000/620  
 AXP 7000/610 AXP 10K/620  
 AXP 10K/610

MODEL	INTERNAL SCSI	MAX DISK	MAX MEMORY
890s/1-4	none	1 TB	2.0 GB
VAX 7000	24.0 GB	10 TB	3.5 GB
VAX 10000	24.0 GB	10 TB	3.5 GB
AXP 4000	25.6 GB	1 TB	2.0 GB
AXP 7000	56.0 GB	10 TB	14.0 GB
AXP 10000	112.0 GB	10 TB	112.0 GB

## KNOCK-OFFS

### General:

- PA-RISC is 32 bit and 6 years old.  
ALPHA is new and 64 bit.
- PA-RISC only supports HP-UX O/S.  
ALPHA supports OSF/OpenVMS/NT.
- HP-UX is proprietary.  
OSF/1 is open.
- HP-UX is compliant with SVR3 API's.  
OSF/1 is compliant with SVR4 API's.
- HP is having difficulty implementing user-based licensing.  
Digital already offers it.
- HP's workstation "clusters" are basically a LAN with FDDI.  
Digital's Workstation "Farms" have better performance with GIGAswitch.
- HP-UX does not support disk striping.  
OSF/1 and Open VMS do.
- HP Salesperson on HP.
- HP Users gripes.
- HP product delays try User's patience.

### 9000-700:

- 700's are weak servers and do not offer SMP.
- HP uses EISA bus, sustained I/O of 30 MB/sec (ALPHA - 90MB/s).
- 735 has only 1 EISA slot, could be a problem in high graphics and/or networking applications.
- 755/735 are cached-as workload increases, they may run out of cache then ALPHA will overtake them in performance.
- HP/UX migration (called transition) to a micro-kernel technology base will force HP customers into 2 migrations..

- HP cannot ship 735 or 755 with reasonable lead times....
- HP 735 / 755 cache out & performance drops drastically.
- HP 715 thrown out of Breed's.
- HP/UX --- kernel migration eminent....
- Workstation "Farms" or "clustering" -- HP no good.

9000-800:

- F, G, H, and I Servers use "HP PRECISION" bus with a peak rate of 32MB/sec and a sustained of 21 MB/sec. Disk interface to the system is SCSI-2 interface rated at only 10 MB/sec.
- DECsystem 5000-240 (Genroco/IPI) beat a HP 827S.
- AXP win over HP 800 Servers.
- TPC-A on HP 800 I50 suspect (ADABAS db).

General:

#2733 5/11/93	Ex-HP Salesperson on HP.
#2731 5/21/93	14 week lead times.
#2515 4/28/93	HP admits "MFG" process issues.
Hardcpy 4/12/93	CW: HP User's Gripes.
Hardcpy 3/29/93	CW: HP product delay's try User's patience.
#2093 3/29/93	HP/UX migration necessary.
#1823 3/11/93	HP kernel migration.
#1272 2/04/93	13 Points to fight HP.

Workstations:

#3123 5/28/93	HP 715 thrown out of Breed's.
#2539 4/29/93	Countering HP / Farms.
#2510 4/28/93	Delivery issues on HP-725/735/755.
#1732 3/9/93	AXP 3000/500 wins over HP730.
#1547 2/26/93	Workstation Farms / Clustering.
#1399 2/18/93	AXP win over HP 735/755.

Servers:

#2954 5/21/93	AXP win over HP 800 Servers (clustering an issue).
#2681 5/07/93	HP's upset --- AXP @ 302 TPC-A.
#2313 4/13/93	HP Precision "BUS" used on NEW Servers.
#1234 2/02/93	DECsystem 5000-240 (Genroco/IPI) beat HP 827S.
#547 12/10/92	TPC-A on HP 800 I50 suspect (ADABAS db).

MPE:

Hardcpy 4/12/93	CW: MPE causing backup problems.
#1379 2/12/93	Knock-offs against HP's failover & clustering.
# 615 12/16/93	Combating HP/MPE.

# Hewlett-Packard in Europe

*file  
competition*

# HEWLETT-PACKARD in EUROPE

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## 1. Hewlett-Packard financial results

### 1.1 World-wide/Europe

In the fiscal year 1993 (ending 31st October 1993), Hewlett-Packard made strong gains across all markets, worldwide revenue totalled \$20.3bn with 24% growth over the previous year, placing HP as the number 2 IT vendor in the United-States. HP IT business at \$15.6bn grew 28% outperforming HP's other sectors, and now accounts for 76% of HP's total revenues.

Total revenue in Europe for HP stood at \$7.17bn, up 18% over the previous year. This growth has been slower than HP growth in other parts of the world (24% worldwide), and the decline of European currencies vis a vis the dollar had a negative impact on the consolidated results. Nonetheless, in FY93 HP's European IT Business is estimated at \$5.47bn, up 21%. HP in Europe ranks 5th in IT revenue.

Hewlett-Packard (Fiscal year end - Oct. 31)	Europe - FY 1993	Worldwide - FY 1993
<b>Total revenue</b>	<b>\$7.17bn</b>	<b>\$20.3bn</b>
1993/92 growth	18%	23.8%
Employees	20200	96200
Sales and Support employees (1992)	12700	
R&D/Mfg employees (1992)	7000	
HQ population	500	
Revenue/employee	\$355k	\$211k
<b>HP IT business</b>	<b>\$5.47bn</b>	<b>\$15.6bn</b>
1993/92 growth	21%	28%

This report focuses on HP's IT business.

Peripherals, 80% of which are printers, account for 38% of HP's IT business and makes handsome profit contributions because, according to HP, high volume production enables them to have a high profit margin due to extremely low operating expenses, compared with other HP products.

HP dominates the printer business accounting for 60% of world market share in the laser-jet segment, and even more in the ink-jet segment according to analysts.

PC's are reported to have been profitable for the first time in 1993.

In the past few years HP profits on workstations sales fell, however Gary Eichorn, VP Workstations, (ex Digital) was targeting a return to profitability by 1993 year end. HP ranks 2nd after Sun.

It is not known whether the multi-user systems business is profitable for HP; it is anticipated that small systems (\$100k - \$1m) are likely to have shown a profit, given the massive increase of revenues in 1993.

HP's cost of sales has been rising as well as inventories and both represent a major challenge for HP. On a worldwide basis, 1993 Q4 cost of sales represented 61.4% of net revenue, and inventories rose 41% to \$3.7bn

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## 1.2 HP vs Digital - Europe

HP's growth in Europe in 1993 can be attributed to strong gains in three sectors:

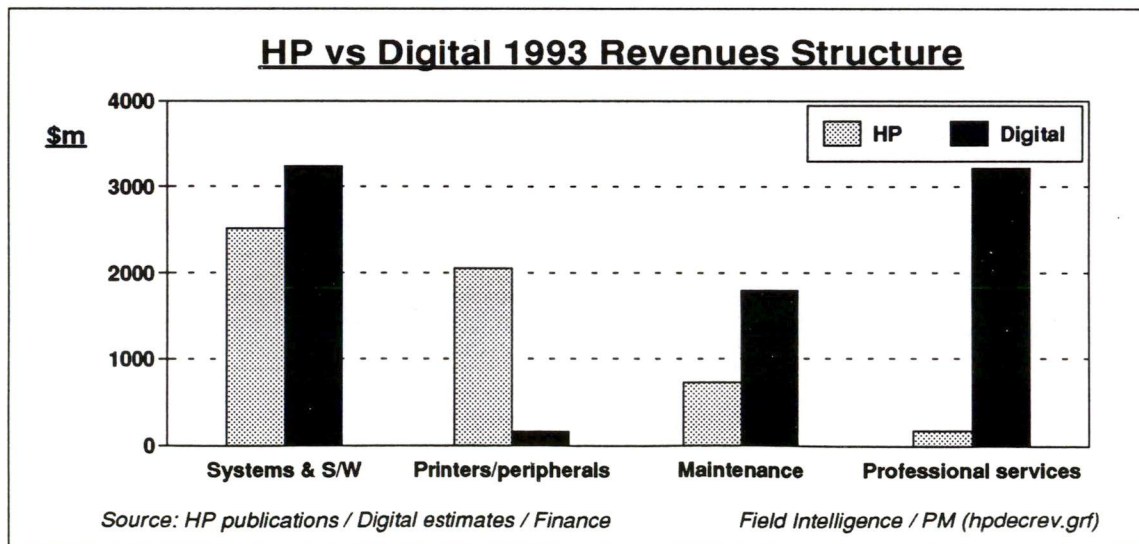
- Printers
- Workstations
- High end Unix systems.

Compared with Digital, HP has a much more focused product range, and a limited services business. HP's service business is 81% derived from customer services/maintenance (\$731m). Professional services accounts for only 19% (\$173m) and these resources are dedicated to supporting HP's Global accounts.

HP's total business in Europe is less profitable than HP globally, and European profitability while still healthy has been declining.

IT BUSINESS - EUROPE	Hewlett-Packard - FY 1993 (Fiscal year end - October 31)	Digital - FY 1993 (Fiscal year end - June 30)
Total revenue	\$7.17bn	\$6.97bn
Revenue/employee	\$355k	\$234k
<b>IT Business</b>	<b>\$5.5bn</b>	<b>\$6.9bn</b>
Systems/SW + others	\$2.5b - 46% of IT business	\$3.4bn - 49% of business
Printers & Peripherals	\$2.1b - 38% "	\$0.2bn - 3% "
Professional services	\$0.2m - 3% "	\$1.5bn - 22% "
Maintenance services	\$0.7m - 13% "	\$1.8bn - 26% "

The following chart highlights the considerable importance of printers/peripherals to HP, but also the company's strategy not to be a vendor of professional services.



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## 1.3 HP country results overview

HP Europe Country results 1993	UK Pds m	FR FF m	SP Pts m	BE/LUX BF m	IT Lira bn	HL FL m	CH SF m	GY DM m
<b>TOTAL BUSINESS (a)</b>	1020	11300	57265	7800	1020	650	411	6500
<b>Y/Y GROWTH</b>	43.1%	27.0%	25.3%	5.5%	47.8%	11.9%	10.2%	20.0%
Domestic	696	6000	37190	7566	495	514	n/p	n/p
Exports	324	5300	20074	234	525	1	n/p	n/p
EMPLOYEES	n/p	700	1011	439	n/p	700	473	6290
REVENUE/EMPLOYEE	n/p	16	57	17768	n/p	929	0.87	1.03

<b>Digital NOR</b> (Quarters adjusted to HP FY93)	2040	4586	26700	8378	123	846	643	2242
--	------	------	-------	------	-----	-----	-----	------

Note: Digital NOR must be compared to HP domestic business

HP IT BUSINESS - (a)	530	7119	49826	7550	496	515	340	3055
<b>Y/Y GROWTH</b>	41.4%	27.0%	27.8%	8.0%	4.4%	3.0%	n/p	n/p
<b>IT Mix % (b)</b>								
Systems/SW + others	50%	60%	62.0%	44.0%	71%	35.0%	65.0%	32.40%
Printers	50%	41%	38.0%	56.0%	28%	66.0%	35.0%	67.60%
Printers - revenue	264	2883	19133	4198	141	337	120	2065
Systems - revenue	266	4236	30693	3352	353	178	220	990
<b>Systems breakdown (c)</b>								
Medium	58	246	2525	245	33	21	15	115
Small	108	911	11027	705	142	59	37	340
Workstations	100	888	6075	1373	165	97	168	535
PC's	n/a	2191	11066	1030	13	n/a	n/a	n/a

Source: (a) HP published results + IDC and country estimates, (b) IDC - HP IT estimated mix, (c) based on IDC HP 1992 systems breakdown

HP's has outperformed the market growth in all countries, both in the computer systems and in the peripherals business.

### HP Country business facts in 1993

**HP UK** outperformed all other countries in the first 9 months of 1993 with 121% growth in sales of Unix products and a 68% growth in sales of workstations, compared to a year ago. The UK computer division (CPO) grew 50%. Respectively laser printers grew 53%, ink-jet 85% and PC's which represent a small portion of the business grew 78%.

New customers accounted for 60% of the growth according to HP.

**HP France** 1993 growth is mainly attributed to a 40% rise in laser printers sales and a 50% rise in ink-jet printers sales.

**HP Sweden** doubled its volume of workstations units sold in 1993 and claims a considerable breakthrough in the Public sector with Unix systems.

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## HP UK major wins in 1993

- **Parcel Force and Post Office** - Unix systems supply for Pds 25m each.
- **Prudential Assurance** - contract with Sybase UK Ltd to use SQL server on HP 9000 systems at 180 UK branches. The deal is in the order of Pds 10m initially up to Pds 20m.
- **TNT** - Servers supply for Pds 9m.
- **Sainsbury, BT and DHL** - Unix systems supply for respectively Pds 6m, Pds 4m, Pds 3m..
- **The Body Shop** (cosmetic company) HP was selected out of eight suppliers among which Digital and IBM. HP 9000 Unix systems will run Oracle software to handle planning and production, materials requirements and warehousing as well as accounting and sales orders from franchisees. The deal amounts to Pds 3m.

# HEWLETT-PACKARD in EUROPE

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## 2. Strategy/Directions

- Hewlett Packard is fundamentally different from Digital, namely:
  - HP views itself as a product company; the key products are IT products;
  - HP is not in the professional services business; partners provide the application software and services which are needed to transform HP products into "solutions".
- The key objective for HP is to generate high volume business in the product segments in which they compete. This has been accomplished in the printer segment, and is a challenge in the PC, workstation and multi-user system segments which HP is taking up with alacrity.
- HP's dominant position in the UNIX world will undoubtedly stimulate growth for the company in the medium- and small-scale M/U segments, and in workstations. Although HP-UX may not be fully 1170 compliant the company has an enviable UNIX and hence "open" reputation - an image which they are also likely to nurture through their IT services partnerships (see below). Some may claim that the PA-Risc architecture on which HP-UX runs may shortly be "maxed out", with a potential incompatibility of HP-UX on its (64 bit) successor, but the strong growth of HP's PA-Risc based UNIX hardware sales suggests that the marketplace is still relatively unconcerned.
- HP is now also targeting the mainframe segment with its new T-500 high-end server range, of which some 400 systems have reportedly been installed.
- HP is clearly striving to become a significant player in the PC markets - both on the corporate, SOHO and recreational levels. Their preoccupation with brand image is not new, but the extent of their efforts in terms of prime-time communication is impressive.
- One of the critical success factors for increasing volume notably in servers and workstations is the expansion of HP's channel capacity. Informed sources relate that today there is no plan in place to manage the installed base sales through channels, nor is there a plan in place for high volume workstation sales through channels.
- Analysts question whether HP's CSO organization, responsible for systems and workstations, will be able to expand channels sufficiently with their current organization. The current VAR channels, primarily used for value-added system sales to mid-sized organizations, do not have the required capacity.
- Telecoms penetration through partners. HP is credited with having targeted the telecoms sector five years ago. However, in the first three years HP found it difficult to make inroads on IBM's and Digital's hold on this sector. When Ruth Cox (ex VP for strategic business direction at the Dutch PTT), was hired as a strategic planner into HP about eighteen months ago, she made HP aware of the full business opportunity in telecoms and put forward a plan to focus HP's efforts on providing systems for intelligent networks on the grounds that this was an area which the PTT's recognised a need for greater computing expertise than they had available, and where they recognised the needs to look beyond their traditional local DP suppliers for partners.
- HP formed the Telecommunications Systems Business Unit in October 1992, and in the interim has built strong relationships with British Telecom, Deutsche Telekom, Dutch PTT Telecom, L.M. Ericsson, France Telecom, and Nokia, as well as with telecommunications companies elsewhere in the world. In the same period alliances have been forged with Nokia, Ericsson and Italtel. TSBU now accounts for 15% to 20% of HP's total business worldwide. TSBU business grew by 50% worldwide last year, and the European portion of the worldwide last year, and the European portion of the worldwide business is 42%. European revenues have not been released but are estimated to be in excess of \$1 billion. 800 people in Europe are now dedicated to HP's telecom business.

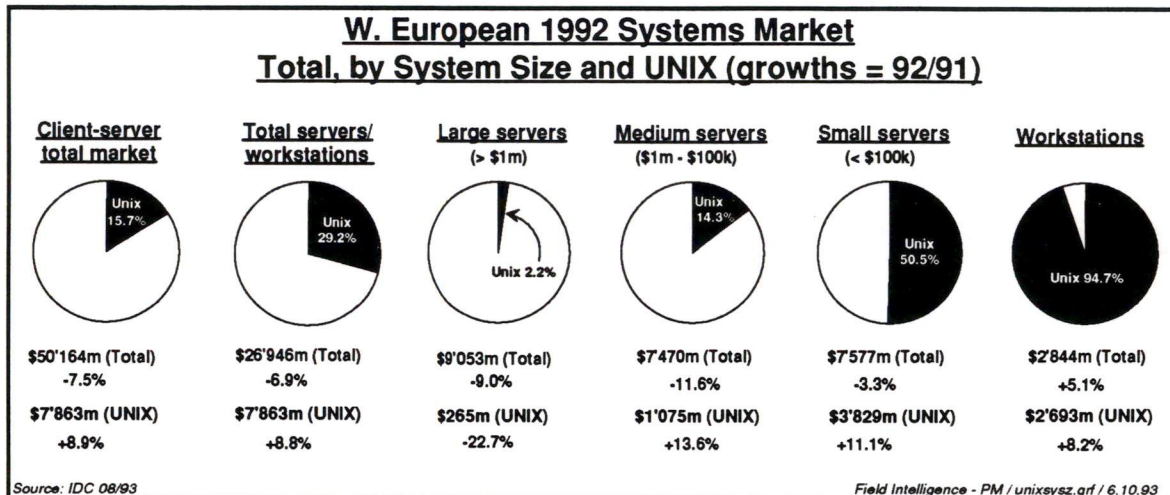
# HEWLETT-PACKARD in EUROPE

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## 3. 1992 European IT Market Situation

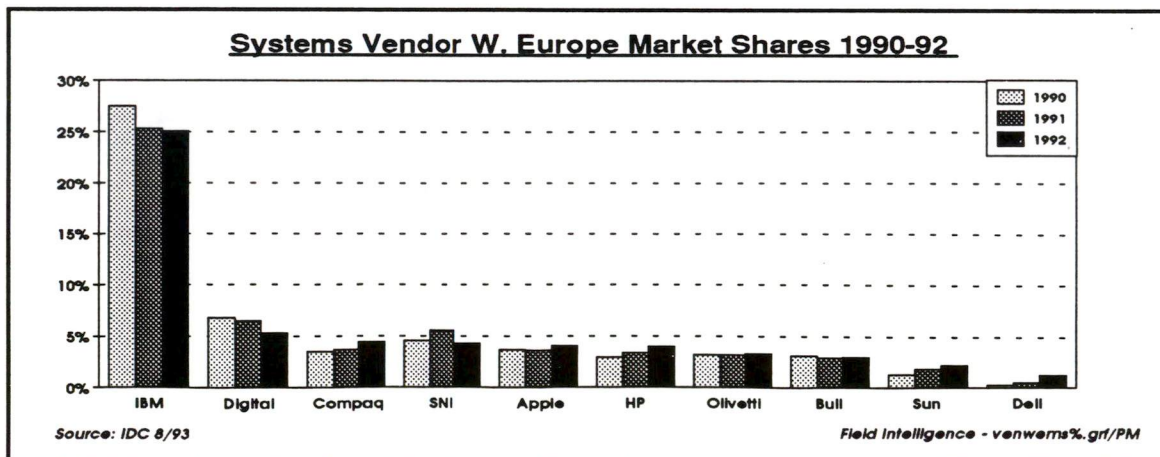
### 3.1 Systems market background ("Systems" = multi- & single-user computers)

- Overall W. European systems market stands at ca \$50bn, and is declining at around -7% pa. M/U servers declines are expected to slow, stabilised by their UNIX components.
- Large- and Medium-scale server revenues are declining somewhat faster (down 9-12%),
- Small-scale server revenues slower (down 3%)
- Workstations revenues are increasing (+5%).
- PC revenues are roughly stable at \$23.2bn.
- UNIX systems account for about 15% of the total W. European systems market (including PCs), or some 30% of multi-user servers plus workstations. While overall revenues for servers are declining, their UNIX sectors increased (except large-scale servers). As noted above, workstation revenues (virtually all UNIX) showed healthy growth.



### 3.2 HP competitive position

- HP held 3.9% share of the 1992 systems market, was 7th largest systems vendor in W. Europe.
- HP is the only major M/U systems vendor to demonstrate overall share growth over 1990-92.

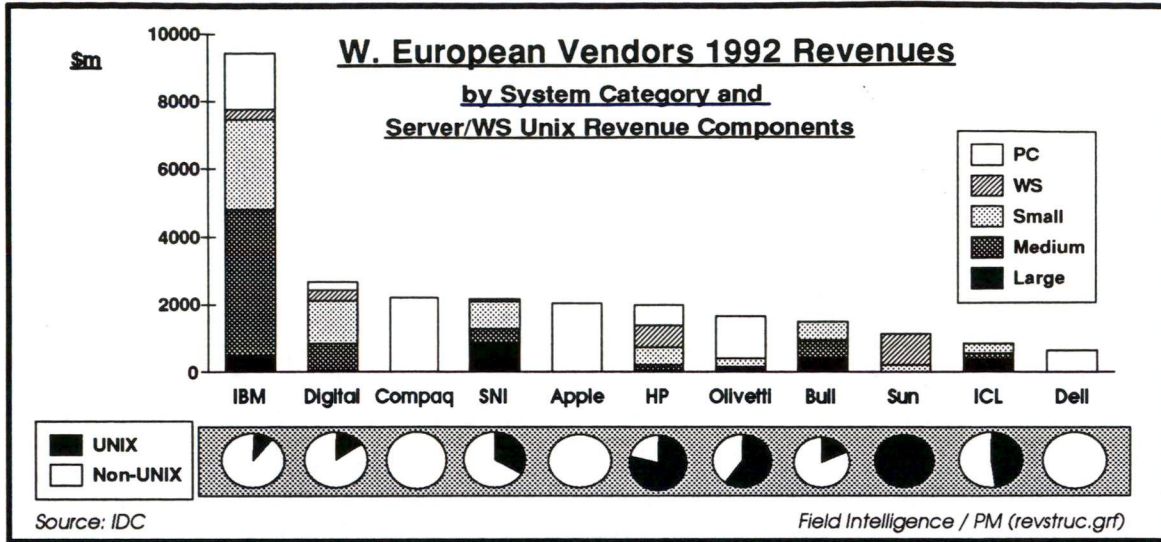


- Large-scale - HP does not compete.
- Medium-scale - HP 2.8% share stable, 6th position (after IBM, Digital 11% declining), Tandem, Bull and SNI).
- Small-scale - HP 6.8% share growing fast, 5th place after IBM, Digital (17% stable), SNI and Bull.
- Workstations - HP 23% share stable, 2nd place after Sun (Digital 11.4%, 3rd place, declining fast).
- Unix overall - HP 13.7% share, 2nd place slightly after Sun (Digital 4.5%, 6th place)

# HEWLETT-PACKARD in EUROPE

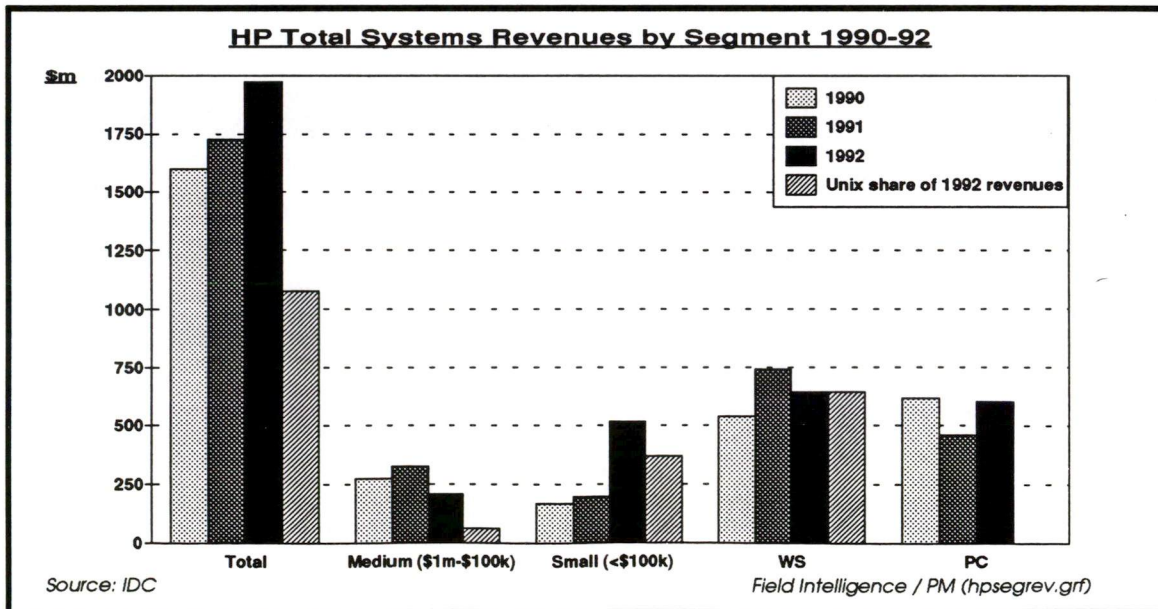
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## HP competitive position (cont.)



- Based on all systems revenues HP with \$1.97bn takes 6th place after IBM (by far the leader), then Digital, Compaq, SNI and Apple.
- HP's business is fairly evenly spread with \$500-600m each in small-scale systems, workstations and PC's, and another \$200m in medium-scale systems.
- Most (79%) of HP's non-PC systems business is in UNIX (WS 100%, Small 70%, Medium 30%) which given the UNIX growth trend explains HP's strong market position and potential for growth.

### 3.3 HP total systems revenue structure by segments



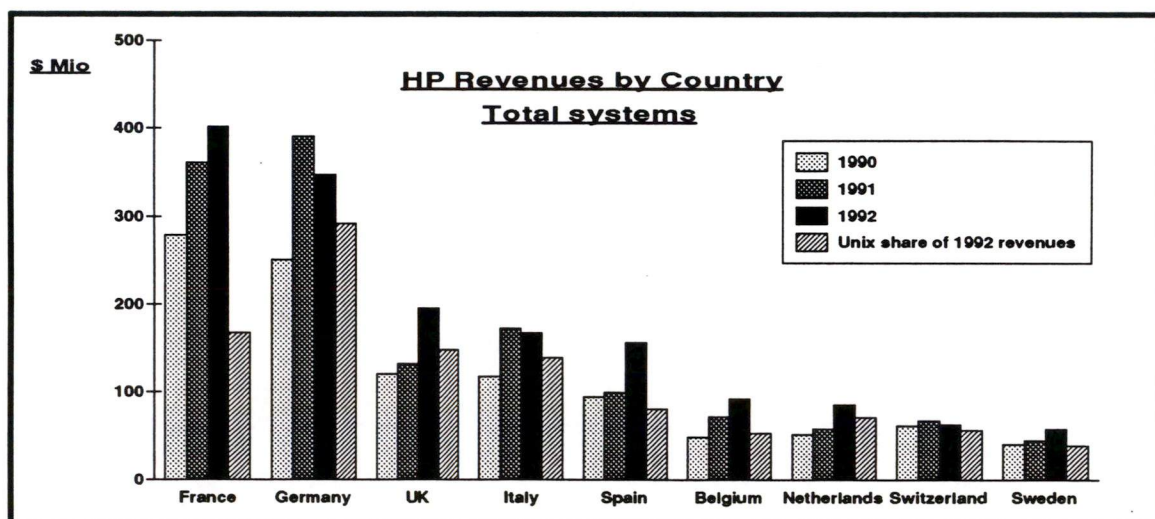
- HP's total systems revenues stood at \$1.97bn in 1992, having grown at 11% since 1990.
- The highest revenue earner was workstations (\$644m), then PC's (\$602m), small-scale (\$517m) and finally medium-scale (\$208m).
- Growth was strong in small-scale, and probably also in PC's and workstations (although the data doesn't show it yet clearly).
- UNIX was instrumental in the growth pattern of small-scale and workstations.
- Preliminary estimates for 1993 show medium-scale revenues up 17%, small-scale revenues up 45%.

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- Notably in the small-scale segment HP is set to expand, given the high (11%) growth rate of this segment's significant (51% - \$3.8bn) UNIX sector. However as the large-scale server segment declines (-9% pa), this may be expected to benefit the medium-scale segment where HP, with 30% of its revenues already deriving from UNIX, is well placed to pick up business. Although the data is not yet available HP's PC business can be expected to show solid progress.
- Looking at workstations (HP's highest revenue producing segment) from a country perspective, Germany is way out front with \$188m, followed by France, UK and Italy with ca \$70-80m each. Although at a lower level (\$63m) Switzerland is important because 75% of HP's Swiss revenues are in workstations, and are growing fast. The situation is similar in the Netherlands at a slightly lower level.
- Given HP's recent entry on the PC scene, the country revenue data is not complete. HP achieves almost as much revenue from PC's as workstations, primarily in France (\$195m) and Spain (\$55m). Growth is exponential.
- In small-scale Germany is once again the leading market for HP (\$120m), then France/UK (\$80m), then Spain/Italy (\$55m). Revenues in all these markets (as well as the remaining smaller ones) are growing extremely fast (100% + pa), certainly an effect of down-sizing and UNIX growth.
- In the least important medium-scale segment HP revenues are declining to around \$200m in total. Germany and the UK are the leaders with around \$40m, with France, Italy and the rest following.

## 3.4 HP total systems revenue structure by countries



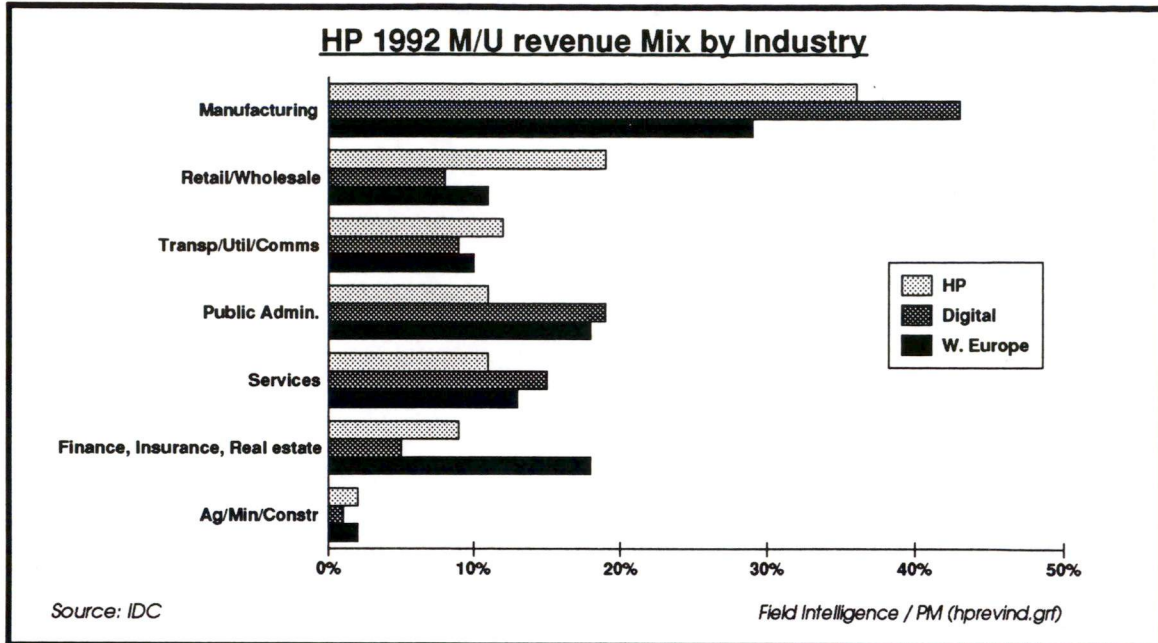
- HP's lead market is France, where in 1992 despite falling medium-scale and workstation revenues, sales of small-scale systems doubled and those of PC's increased by 30%. PC's account for 50% of total French systems revenues, workstations and small-scale systems for 20% each.
- Germany showed an almost identical pattern to that of France, except that HP's PC sales in that market were minimal. Hence a high UNIX share of the business, but a decline in the overall level of revenues. Workstations account for some 50% of revenues, and small-scale for 35%.
- The UK also showed strong growth in small-scale systems, and managed not to lose revenue levels in medium and workstations which made up for HP's insignificant PC sales in that market. Workstations and small-scale systems account for 40% each of total revenues.
- In Spain HP small-scale revenues more than doubled while PC's increased 75%. Medium-scale and workstations remained stable. PC's and small-scale now account for 35% of revenues each, and workstations for 20%.



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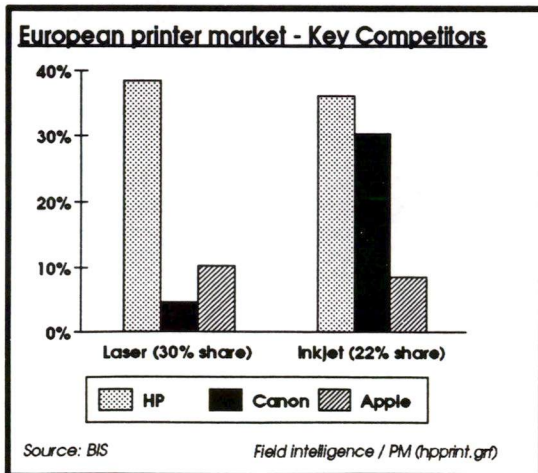
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## HP multi-user systems revenue structure by industries



- HP's multi-user systems revenues are strongly concentrated in the manufacturing sector (as is the case for W. Europe as a whole, and for Digital).
- Their high revenue concentration in Retail/Wholesale exceeds that of Digital, but HP's penetration of Public Admin., Services and Finance/Insurance is below the market average.
- The Digital mix is shown as a comparison, although it should be noted that in absolute terms Digital's revenues match or considerably exceed those of HP in each of the areas.

### 3.6 HP printer business

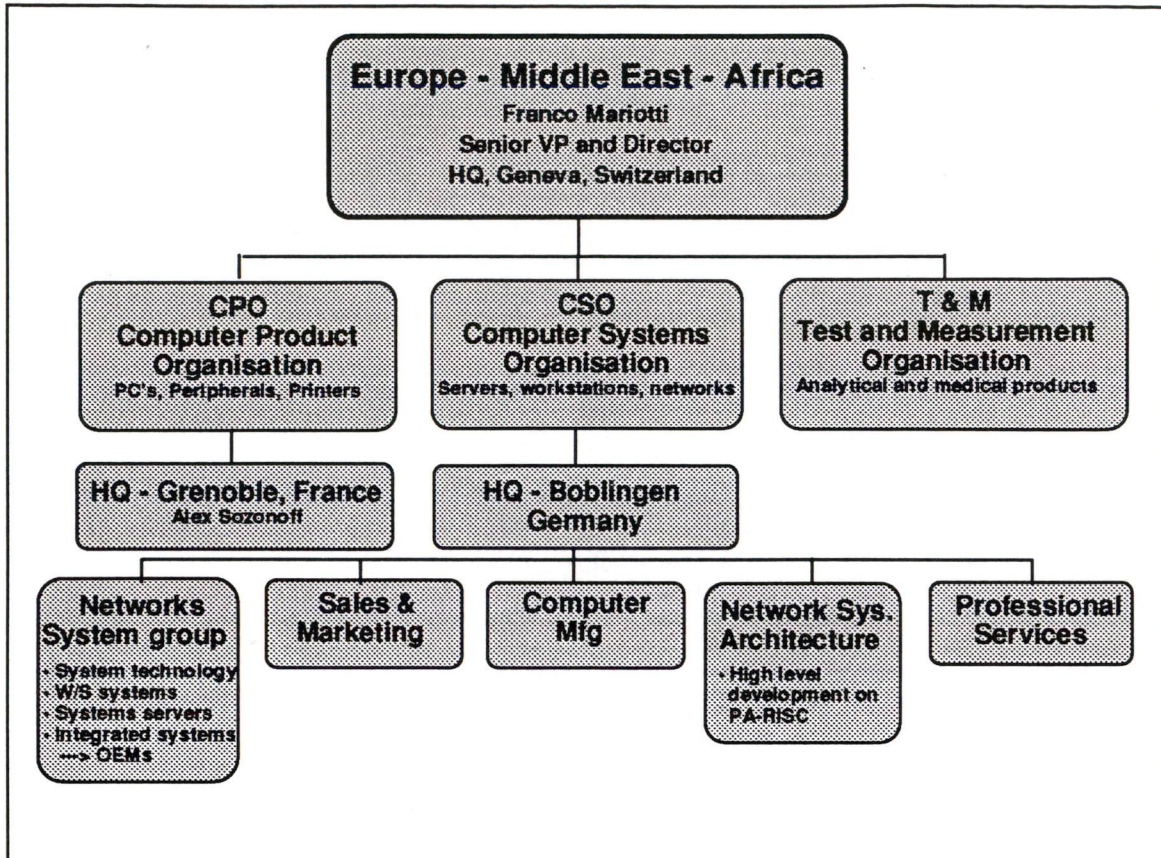


- In the laser printer market which accounts for some 30% of total printers (units), HP is the undisputed leader with 38% share.
- HP shares the ink-jet printer market (22% units) with Canon, but retains overall leadership with 36% share vs. 30% for Canon. Canon is the clear leader in France and the UK, HP elsewhere (except Italy where Olivetti leads with 22% vs. Canon 19% and HP 15%).
- Dot-matrix printers account for 48% of the market (units); HP is not present.
- Since HP have indicated that the next Laserjet model will be equipped with an HP rather than a Canon engine, Canon may be expected to take a more active role in the laser printer market
- Strategically for HP this will mean initially higher costs, but over time should bring economies of scale.

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## 4. HP European organisation and structure



HP organisational structures are known to be simple - the country structures are likely to mirror the Corporate organisation.

EMEA Director, Franco Mariotti, has held this position for at least six years.

CPO Director, Alex Sozonoff, was previously responsible for all European sales (CSO and CPO).

Juergen Kahlmann is the CSO Director in Boeblingen.

### 4.1 HP Engineering

HP has 12 engineering centers in Europe based in Spain(1), Italy(1) France(3), Germany(3) and UK(4) .

UK - Bristol	Laboratories for fundamental research and advanced Telecom research
Italy - Pisa	Science centre
France - Grenoble	PCs
Spain - Barcelona	Research and Development for printers and plotters

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## 4.2 HP Manufacturing

Several HP's European manufacturing sites have worldwide charters. PC worldwide production has been consolidated into just two manufacturing sites - Grenoble and Singapore - from ten previously.

Country	Main activities	Charter	Comments
<b>Germany</b> Boeblingen	<ul style="list-style-type: none"> <li>• Workstations, Systems fabrication and distribution, mechanical design</li> </ul>	<ul style="list-style-type: none"> <li>• Europe HQ of Computer Systems Operations (CPO)</li> </ul>	
<b>UK</b> Berkshire  S-Queensferry  Bristol	<ul style="list-style-type: none"> <li>• Disk drives</li> <li>• Telecom and Microwaves division.</li> <li>• Computer</li> <li>• Peripherals division</li> </ul>	<ul style="list-style-type: none"> <li>• W/W Charter for new disk drive production</li> </ul>	<ul style="list-style-type: none"> <li>• HP plants have secured the ISO 9002 Mfg standard</li> </ul>
<b>France</b> Grenoble/Eybens L'Ile d'Abeau Villefontaine        Lyon	<ul style="list-style-type: none"> <li>• PCs,</li> <li>• High-end systems, networking products</li> <li>• Terminals,</li> <li>• Telecom</li> <li>• HW and SW Communications</li> <li>• Mid-range systems</li> <li>• Test Measurement and Medical</li> </ul>	<ul style="list-style-type: none"> <li>• W/W HQ of PC operations</li> <li>• W/W Telecom. Systems BU Intelligent Networks (mobile + fixed)</li> <li>• Telecom Network Mgmt (TMO) Euro business dev. team</li> </ul>	<ul style="list-style-type: none"> <li>• 1993 PC production: was 100'000 units/month, and moved to 3 shift system as of December 1993</li> <li>• 1993 CPO production was 1/3 PCs, 2/3 printers /peripherals, disks and services</li> <li>• TMO charter is to develop OSS and BSS (business opportunities, manage strategic alliances with equipment vendors and services providers and support dedicated W/W sales force (1)</li> </ul>
<b>Spain</b> Barcelona	<ul style="list-style-type: none"> <li>• Production of wide format plotters and ink-jet printers and peripherals</li> </ul>	<ul style="list-style-type: none"> <li>• Worldwide charter for ink-jet and plotters</li> </ul>	
<b>Holland</b> Amersfoot	<ul style="list-style-type: none"> <li>• Distribution center and postponement manufacturing of laserjet printers (configuration and assembly operations)</li> </ul>		
<b>Italy</b> Bergamo	<ul style="list-style-type: none"> <li>• Laserjet printers Manufacturing plant</li> </ul>		HP plant employs 200 person in total.

(1) OSS : Operations support systems - BSS: Business support systems

Field Intelligence @GEO

Digital restricted distribution

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(E.Thomas - C. Charras, P. March)

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## 5. Marketing / Sales / Channels of distribution

HP has European marketing centers in France, Germany, Holland and Switzerland.

Previously HP suffered from supply problems following the successful launch of certain products. Today, HP manufactures and stockpiles products prior to launch in order to ensure fast delivery, and aims for an average 24 hours delivery for CPO products sold through distributors. The low end workstations and other products launched in January 1994 are known to be stocked in quantity in HP's European centralised distribution sites, located in Germany, France and Holland. However the resulting increased inventories represent a concern.

HP EHQ is slightly larger than at Digital, with larger excentralized groups with European or global headquarter functions - primarily in France and Germany (refer to above HP manufacturing chart).

### 5.1 Marketing

Account management for the Global accounts is centralized in Geneva. Among the support that this office provides to the Global accounts is opportunity identification and lead qualification. The Computer Systems Organization drives marketing out of Boeblingen, while the Computer Products Organization runs marketing out of Grenoble.

#### Marketing - Influencing the influencers

HP is considered to have the best consultants and analysts relations programs in the industry. Consultant and analyst events are held regularly, about once every two weeks. The senior corporate managers are present at all major briefings and are accompanied by their European or local counterparts (depending on whether the event is pan-European or local). Clear, concise material with relevant details is made available pro-actively and regularly to consultants and analysts, making it easy for them to speak knowledgeably about HP's products.

Analysts feedback when asked to compare HP's program with Digital, is that HP's is superior with clear and crisp messages, and ready access to informed managers(i.e. product managers as well as senior corporate representatives). It is clearly a central part of HP's marketing through partners philosophy. The same analysts perceive Digital's analyst programs to be handled as add-ons to press communications with spotty access to informed managers.

### 5.2 HP European centres of expertise

Telecommunications	France - Grenoble  UK Bristol	Europe Telecom Industry Marketing and Regional project center  Telecommunication Networks and customer network center
CPG	Belgium - Brussels	Packaged goods industry
Automotive	Germany - Boeblingen	
Electrical/ Electronic Eng.	France Grenoble/Ile d'Abeau	
Financial services	UK - London	
Pharmaceutical/Chemical	Germany - Mannheim	

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## 5.3 Software expertise

Generic solutions - list as appeared in HP marketing material from November 1993 - note that all "solutions" come from partners.

QAD - Brussels	ASK - UK
Ross Systems - Brussels	Baan - England
SAP - Boeblingen	Cincom - UK
Software AG - Boeblingen	Coda - UK
Lawson - UK	Datalogic - UK
Hilco - Brussels	SQL: Brussels
D&B - UK	Oracle: Boeblingen
	Datalogic - UK

Application tuning and other HP software-engineering related activities are driven out of HP's software engineering in the USA.

## 5.4 Sales

HP sales organization has separate divisions for CSO and CPO in each country.

In 1989, the sales structure was reorganized, cutting out several tiers of management. Since that date, the CSO and CPO managers in each country, have only one layer of management beneath them, consisting of a marketing manager and, typically, seven or eight sales managers organised by industry or regions. As typical examples of HP Sales organisation, UK is broken into three sales regions, and France into four. The individuals appointed to these roles in 1989 are for the most part still on the job, providing an unusual degree of continuity in this industry.

In 1993 HP France outsourced their customer payments, involving collection, accounts processing and customer database updating.

The CSO and CPO country managers negotiate their sales quotas directly with their respective sales managers in Geneva headquarters. The role of the HP country manager has been described by former HP employees as one of "hotel keeper".

### 5.4.1 CSO sales

HP's direct sales account for 30% of the CSO business.

The direct sales force is limited to Global accounts and named accounts (see below). The HP selling model relies on close relationships with partners.

These partnerships work because HP has a clear and well executed channel strategy, which avoids channel conflict and leverages partners more fully than any other major vendor in Europe.

The strategy, stated simply, is that the HP direct sales force sells technology and products, but not consultancy, systems integration, application software, or training - all of which is the partner's business. HP sales reps refer customers to partners, with the assurance that this is done because the partners are able to provide better service than HP. Contrast this with Digital's business, where Digital's various business units compete with VARs for professional and multi-vendor customer services, and where more aggressive marketing campaigns are making VARs more aware of this than they previously were.

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HP sales representatives are not specialised by product, but on the other hand, the CSO product line is relatively narrow and sales reps focus on consultative selling and business solutions.

HP sales reps turn to partners for systems engineering or technical sales support. The small inhouse systems engineering staff is fee based, and even then is only available in support of high volume business, primarily in the Global accounts (see table below). In practice, this means that the sales rep teams up with the appropriate partner. For this to work, and it does work, the partner needs to be trained in the latest HP products and technologies and have access to HP's own engineering staff where necessary. HP provides this training to their partners. The partner thus brings to the table not only the application software and the value added services, but a significant technical knowledge of direct relevance to the implementation of the proposed business solution.

At HP any order can be credited a maximum of twice: once to the account manager, and once to the VAR account manager who dealt with the customer. In Digital's proposed sales crediting model, an order can be credited up to eight times.

HP has dedicated sales force targeted solely on new third party recruitment.

HP efforts to move customers to telesales drew heavy fire. HP has introduced the concept of the integrated sales team to address customers' concerns. It includes a direct sales person, a telesales person and a direct sales marketing organisation.

Most of HP's sales training is externally sourced. HP sales force receives an average two weeks training per year.

## 5.4.2 HP account management

HP CSO has two categories of accounts addressed through direct sales:

- Global accounts, also named "Red" accounts,
- "Blue" accounts equivalent to named accounts

### HP "Red" accounts

<b>3M</b>	<b>Abbott Labs</b>	<b>Asea Brown Boveri</b>	<b>AT&amp;T</b>
<b>Bank of Amer. Nat'l Trust</b>	<b>Bankers Trust NY Corp.</b>	<b>Barclay's Bank</b>	<b>Bayer AG</b>
BC Cellular	Bell Atlantic	Bell Canada	Bellcore
<b>BellSouth Cellular</b>	BNR	<b>Boeing</b>	<b>Bristol Myers Squibb</b>
<b>British Telecom</b>	<b>Cable and Wireless</b>	Caterpillar	Cheeseboro-Pond's
<b>Chevron</b>	<b>Ciba-Geigy AG</b>	Citibank	<b>Citicorp</b>
<b>Corning Inc.</b>	Kredeitbank (Belgium)	<b>US Dept. of Defense</b>	<b>US Dept. of Energy</b>
<b>Dow</b>	<b>Dupont</b>	<b>Eastman Kodak Inc.</b>	Edmonton Tel.
<b>EDS/ General Motors</b>	<b>Eli Lilly &amp; Co.</b>	<b>European Space Agency</b>	<b>Ford Motor Co.</b>
Foxboro	Fuji Bank	<b>General Electric Co.</b>	General Mills
<b>GTE</b>	<b>Hughes Aircraft Co.</b>	Hydro Mississauga	<b>Intel Corp.</b>
<b>Johnson &amp; Johnson</b>	Kraft General Foods	Levi Strauss	<b>Lockheed Corp.</b>
Manitoba Tel	<b>MCI</b>	<b>Mobil Oil</b>	<b>Monsanto</b>
<b>NASA</b>	Nesbitt Thomson	<b>Nestle</b>	<b>Northern Telecom</b>
Norwegian Telecom	<b>NTT</b>	NTT Japan	NWT Tel.
Nynex	PacBell	Pepsico	<b>Pfizer</b>
<b>Philip Morris</b>	Philips	Procter & Gamble	Prudential
<b>Raytheon</b>	<b>Renault</b>	RJR Nabisco	Rochester Tel.
<b>Siemens</b>	<b>Siemens Telecom</b>	Sony	Spalding Sports
Sprint	Swedish Telecom	Telecom Australia	Telecom Finland
Telecom Malaysia	Texaco	<b>Unilever</b>	<b>UBS</b>
<b>U.S. West</b>	Walmart	<b>Warner-Lambert</b>	

Note HP "Red" accounts *in bold* are also Digital Global accounts

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HP "Red" accounts:

- Are of strategic importance,
- Have a dedicated account team with an experienced sales representative,
- Represent also in the short-term a high dollar value/potential,
- Target IBM with their "mainframe alternative" program (downsizing focus),
- Are a "Win at all cost",
- Have a "Red" resources team which includes HP Management, Partners, HP Consultants and Direct Sales/Support.

## **HP "Blue" accounts**

- Are established HP customers,
- Each sales rep has several accounts,
- Have experienced sales reps with low turnover
- Sales rep's role is:
  - To sell products
  - Direct business to appropriate channels (partners, distributors, telesales, VARs),
  - To maintain a close relationship with the customer.
- Compensation:
  - Currently where sales are achieved through third-parties, both the sales rep and the third-party receive commission .
  - Given the increasing capability of third-parties, sales reps can now refer customers directly to them without significant investment of their own time. In such cases HP aims to reduce the sales rep's commission.
  - Sales commissions are now treated as cost elements in sales managers' SG&A in an attempt to better balance the sales rep commission with regards to his/her selling efforts, and thus reduce selling costs.

## **Sales tactics**

"Red" accounts sales reps are experienced and know how to call at multiple levels of the account (e.g. VP, CEO, technical, senior managers in the business units); they have access to in-house technical resources.

"Blue" accounts reps receive little management attention, and cannot normally draw on in-house resources (SE).

For both groups however, sales tactics are similar:

- Sell jointly with partners such as CGS, EDS or Andersen Consulting for consulting,
- Establish management relationships through consultants like the Cambridge Technology group,
- Look for new application opportunities at the business unit level,
- Make "seed units" available to "red" accounts,
- Make "free training" in Unix available to the customer,
- Offer the customer a HP-UX migration to MPE and vice-versa,
- Leverage their customer references and wins (by industry) heavily,
- Reference analyst, press, and consultant reports extensively,
- Position Digital and IBM as "old, proprietary, costly and financially unstable".
- Offer the customer an IBM-MVS to MPE migration (Boeblingen Migration Centre)

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## 5.5 Channels of Distribution

### Corporate/Local channels marketing role

Channel strategies are developed at HP Corporate, and implemented locally with only minor adjustments. Consistency is viewed as one of HP's greatest strengths by Customers, Partners, Allies and Consultants.

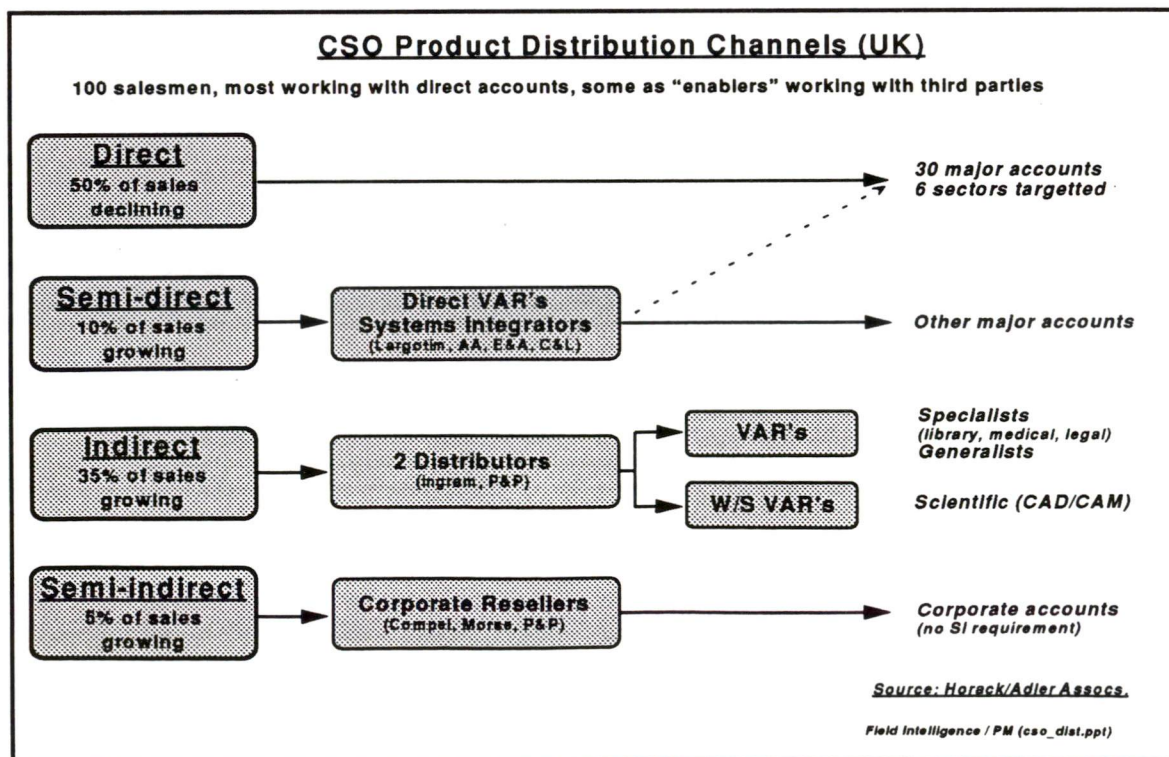
Channels marketing is also largely Corporate driven, with HP's European subsidiaries efforts primarily devoted to logistics and relationship building. For example, product launches are handled as follows: Corporate prepares VAR kits which include Corporate product presentations, pricing data, product overview, self-paced training, technical data, competitive selling guides, and details on support infrastructure, with names and phone numbers of people to contact. The local HP subsidiary organizes the local launch for a pre-assigned date, the Corporate team of presenters arrives to present the products, their local counterparts are there to comment on the local interpretation and to identify themselves as the baton carriers from that moment on.

The VARs have HP advertisements in the press on the same day as product announcements, suggesting careful preparation and a mutual understanding of dependency between the VARs and HP. Contrast this with the fact that in April 1993, a large percentage of Digital's VARs had not received information on Alpha.

### 5.5.1 CSO distribution channels

HP's CSO achieves 50/50 direct/indirect sales. HP is aiming at reducing the direct sales component to 25% within the next 3 years. Low-end workstations will be pushed through indirect channels. HP's desire to change the direct/indirect ratio is driven by the rising cost of direct sales, the benefit of having third party distribution which offers a much larger effective sales force, a closer contact to a wider range of potential customers and an increased emphasis on business applications.

The chart below reflects the HP UK CSO distribution organisation, however it is believed to be typical of European country organisations. It consists of 4 main channels.





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- HP criteria for appointing VARs call for a certain volume of business with potential for future growth. HP sales force is also available to help direct VARs in their marketing efforts.
- HP wholesalers supply indirect VARs and through them a multitude of end-users. Indirect VARs are either:
  - Traditional VARs - sell specialist solutions (e.g. Library systems), or wide range of solutions,
  - Workstation VARs - sell CAD/CAM and scientific applications,
  - Transaction Processing VARs - spot market opportunities and develop the application with the help of HP. However HP does not drive the process.

## **5.5.2 HP CPO strategy is moving towards pan-European distribution**

HP's CPO (PC's, Printers/Peripherals) sells through directly-controlled trade partners (Corporate resellers, large retailers and wholesalers), and around 1500 indirect dealers/resellers supplied by several wholesalers (45 across Europe - between 2 to 6 by country).

In the past few years HP reduced its directly-controlled partners from 2800 to 600 (some 30 in the UK and 25 in Germany). The UK CPO organisation chart below is a typical example of HP CPO channel structure.

60% of HP's IT business goes through wholesale (HP claims that in the next 3 years their indirect channels sales will increase from 60% today, to 80%). Among these wholesalers 30% are already operating on a pan-European level, and this percentage is expected to increase to 50% within the next five years.

HP longer term objectives is to develop alliances with pan-European wholesalers, like Computer 2000 and Merisel who will set the European ground rules.

HP undertook close collaboration with Computer 2000 to develop a future model for pan-European cost effective relationship. The scope of the relationship could consist of:

- one single order point in Europe
- two or three strategically located distribution hubs
- central invoicing and a single billing currency

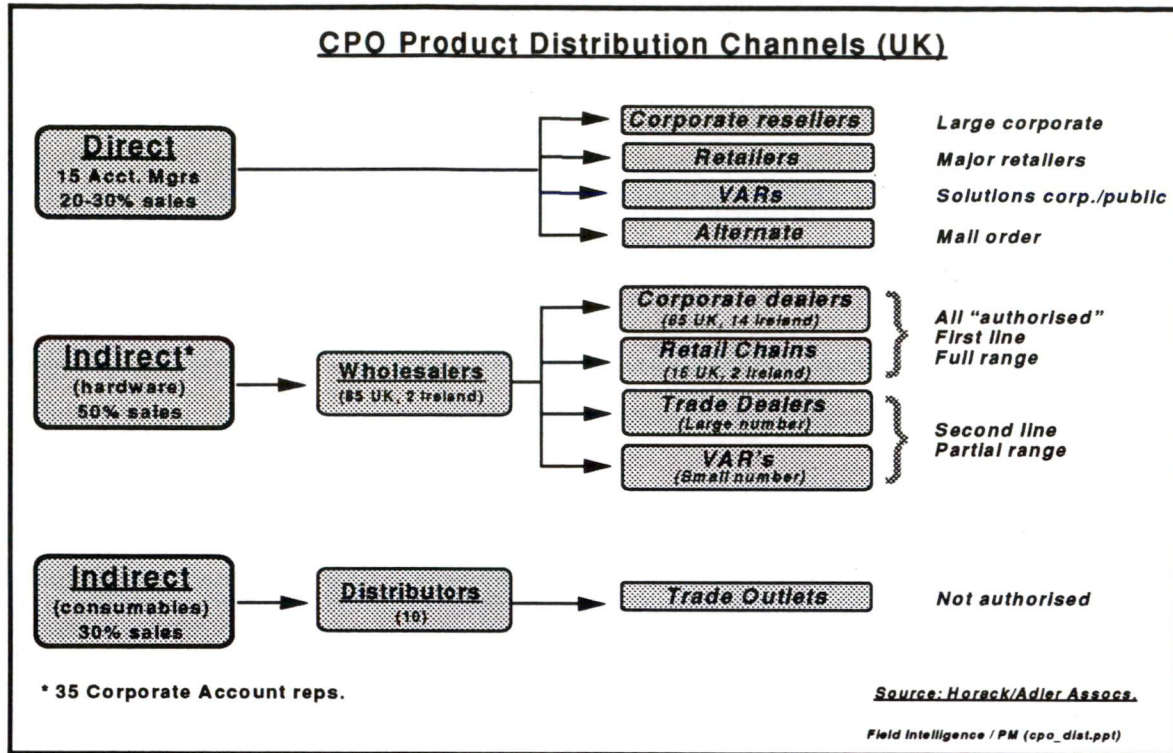
HP ordering systems is the weakest link in the whole chain, according to Alex Sozonoff, CPO Manager Europe. The current HP ordering systems were designed to handle local relationships in the local currency, and any deviation from it results in complications and high administrative costs. HP is working on developing systems that will aim at a pan-European network able to take an order in any country, deliver somewhere else and bill in a third currency. However this is not yet in place and HP reckons it will take considerable time for developing the necessary processes and systems. Two to three years are foreseen for laying the foundations of the new pan-European structure and up to five years for full implementation.

HP Italy signed an agreement with Advance, a financial business, for improving and monitoring the financial performance of HP distributors.

The chart below represents the UK CPO distribution channels structure - it is fairly typical for the other European countries.

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## CPO pricing policies

At HP pricing is flexible to some extent, however both HP and its distributors ensure that the products sold in different outlets do not vary widely in price.

The key to HP pricing policy is control. HP does not offer discounts to distributors that would encourage either price-cutting or wide price disparities.

## 5.5.3 HP and Total Quality Control

Hundreds of HP managers have received a formal training in Total Quality Control techniques and TQC teams have sprung up to manage processes in all areas of the company.

Samples of achieved measurable improvements:

- Faster response to customer enquiries
- More accurate contracts for SW deals and reduced re-work tolerances for customer engineers
- One TQC team concentrated on reducing the time of receipt-to-despatch turnaround of trade parts from an overseas factory by streamlining the method of processing custom documentation. It resulted in cutting warehousing time from 24 hours to two hours and a consequent annual saving \$660k.

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## 6. Alliances/Partnerships

HP chooses its partners carefully and avoids alienating them - as an example, three years ago HP decided to leave the applications business to avoid conflict with its partners.

In the last 12 months HP has concluded about 30 alliances worldwide mainly in the sector of networking solutions and integration, but also with ISVs and systems integrators. In Europe they concluded around 20 alliances, details below.

<b>Most recent alliances - Europe</b>		
<b>Focus</b>	<b>Company</b>	<b>Scope</b>
Systems Integration	Datalogic	HP-UX is the preferred platform for the ISV.
"	QAD	ditto
"	Cap Gemini Sogeti	HP and CGS co-operating in systems integration requirement.
Database	Software AG	ditto
Preferred platform	EDS	Platform alliance.
"	Andersen Consulting	ditto
Media Industry	Collier Jackson	Newspaper industry solutions for Europe - Collier Jackson to provide installation and integration and customer support - HP to handle marketing side.
Networks Mgmt	Ericsson	Telecommunication joint venture (60:40) - HP to supply Operations systems and platform for telenetwork development.
Intelligent Networks	Nokia	Agreement aimed at developing intelligent networks targeted at Telecom operators, and offering cost effective Telecom services based on HP-UX. Nokia will handle the S.I. and customer delivery.
Office Com's	SNI	Europe wide field office communications. SNI professional SW solutions to be used on HP systems.
Mass storage	Colorado Memory Systems	
Facility Mgmt	Andersen Consulting (France)	Joint offering of FM for Client/Server environments. HP will contribute its expertise in Client/Server and Open systems, and will undertake the administration of the operating systems for each project. If French trial is successful HP will extend to Europe.
Distribution	Opensoft (France)	Wholesale distributor of HP 9000 servers aimed at computer service firms. HP owns 15% of Opensoft.
OEM disk storage	IBZ Digital Production AG (Germany)	OEM agreement where HP will supply optical-disk libraries and disk mechanisms.
Technical/Measurem't	BT & Dupont (UK)	Joint optoelectronics development venture - target market: long wave length for optoelectronic emitters and receivers.
Maintenance	Eurosystems (Germany)	German third party maintenance services with branches in Eastern Europe.
Mobile phone	ITALTEL (Italy)	HP provides home-location registers (HRL) and authentication centers for GSM mobile phone cellular.

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## Most recent alliances - worldwide

<u>Focus</u>	<u>Company</u>	<u>Focus</u>	<u>Company</u>
Windows - NT	Microsoft	Multimedia	Mediamagic
Office-mail	Lotus	Network services	Banyan
Office-mail suite	Wang	License Mgmt tool	Gradient's Nettles
CASE	Stratus	Mfg Product SW	ASK
UNIX CASE	EEsof	Unix Database SW	Informix
Object oriented	NeXt computer	Technology	Hitachi
	Taligent		Oki and Samsung
	IBM		Alcatel Fibre channel
Network integration	Comdisco	Network solutions	Kalpana
	Metrix		BGS
Network management	Computer Associates	Fault tolerant servers	Sequoia and Stratus
	Synoptics		
OEM storage	Apple	Massive parallel systems	Convex
Disk storage	Avatar Systems	Military products	Hugs
OEM - W/S - Servers	Control Data Corp.	W/S for US navy	Saic and Harris

## 7. Strengths and weaknesses

### Vis-a-vis IT business situation

- S: HP's European IT business is growing at 21%
- S: Profits - printers, PC's and probably also small-scale servers are profitable
- S: Heavy concentration of systems business in UNIX, the key growth area
- S: Business is concentrated in the very low end and peripherals markets, which are still growing
- S: Leader in printers and among the leaders in workstations.
- S: Significant level and even spread of IT business across PC's, WS's and small/medium servers
- S: Comparatively strong in Manufacturing, Retail/Wholesale and Telecoms industries
- W: HP's IT profitability in Europe is declining, lower than in the US
- W: WS's were previously not profitable; a return to profitability was targeted for 1993. Data nya.
- W: Low revenues in Professional Services indicates lost opportunity
- W: Comparatively weak in Public sector

### Internal organisation

- S: Consistency of channel strategy across markets
- S: High (60%) and increasing proportion of indirect sales
- W: Rising inventory levels
- W: Rising cost of sales
- W: Channels inadequate for high volume systems sales
- W: Internal ordering and distribution systems across countries/currencies weak.

### Vis-a-vis customers

- S: HP's sales and marketing messages are clear, consistent and well communicated
- S: HP's messages are limited - due to more focused business
- S: Thanks to TQC practice HP responds faster to customer enquiries,
- S: Fast delivery due to higher stock levels
- S: HP is consistently ranked highest in remedial service customer satisfaction services.
- S: HP stability, quality and safety in hardware and business strategy

### Vis-a-vis technology

- S: More focused product range
- W: Transition to 64bit to be managed



*To US team*

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I N T E R O F F I C E M E M O R A N D U M

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Date: 17-Nov-1993 04:58pm EST  
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TO: See Below

Subject: Hewlett-Packard Q4, FY93 Results Summary

Distribution:

TO: HENRY ANCONA @CORE  
TO: Fran Barton @OGO  
TO: STEVEN BEHRENS @MRO  
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*A - full Competition*

Hewlett-Packard announced fourth-quarter, fiscal year-1993 earnings today, November 17, 1993. H-P is now the second largest computer company in the U.S. Highlights and commentary follow.

Compared to the same period last year,

Revenue:

- \* Fourth-quarter net revenue increased 31.5% to \$5.7B. Equipment revenue grew 38.3%, while services revenue grew 12.1%.
- \* Fourth-quarter computer products, services and support revenue increased 40.2% over the year-ago quarter to \$4.4B or 77.8% of total revenue.
- \* Net revenue for fiscal year 1993 increased 23.8% over fiscal year 1992 to \$20.3B. Of the total revenue, \$15.5B were generated by equipment sales and \$4.8B by services rendered.
- \* Computer products, services and support revenue for fiscal year 1993 increased 29.5% over fiscal year 1992 to \$15.6B or 76.6% of total revenue.

	(Unaudited)			(Unaudited)		
	Q4 FY93	Q4 FY92	% Change	FY93	FY92	% Change
	-----	-----	-----	-----	-----	-----
Net Revenue (Mils):						
Computer products, svcs & support	4,424	3,155	40.2%	15,572	12,028	29.5%
Electron. test & measure instrument, systems & svcs.	616	601	2.5%	2,318	2,207	5.0%
Medical electronic equip. & svcs.	304	264	15.2%	1,149	1,010	13.8%
Analytical instrument. & service	186	178	4.5%	704	693	1.6%
Elec. compon.	157	126	24.6%	574	472	21.6%
	-----	-----		-----	-----	
Total	5,687	4,324	31.5%	20,317	16,410	23.8%

Orders:

- \* Compared to the same quarter last year, orders for computer products, services and support during the fourth quarter increased 33.5% to \$4.2B.
- \* U.S. orders for the quarter grew 28% over the year-ago quarter.
- \* International orders for the quarter grew 21% over the year-ago quarter. They were 49.3% of total orders, compared to 50.8% last quarter.
- \* Orders for computer products, services and support during fiscal year 1993 increased 29.4% to \$15.9B
- \* U.S. orders during fiscal year 1993 grew 23% over the same period last year.

\* International orders during fiscal year 1993 grew 25%. They were 54.5% of total orders, compared to 54.8% last year.

\* Hewlett-Packard reported that HP LaserJet and HP DeskJet printers had outstanding growth rates, while PCs and PC-LAN products achieved very strong order growth. Workstations, communications-test equipment and HP-UX multiuser systems recorded excellent order gains as well.

	(Unaudited)			(Unaudited)		
	Q4 FY93	Q4 FY92	% Change	FY93	FY92	% Change
Orders (\$Mils):						
Computer products, svcs. & support	4,238	3,174	33.5%	15,903	12,293	29.4%
Electron. test & measure instrument, systems & svcs.	619	621	-0.3%	2,335	2,257	3.5%
Medical electronic equip. & svcs.	294	273	7.7%	1,196	1,004	19.1%
Analytical instrument & service	196	185	5.9%	721	678	6.3%
Electron. compon.	154	166	-7.2%	617	529	16.6%
Total	5,501	4,419	24.5%	20,772	16,761	23.9%

Gross Margin:

\* Gross margin for the fourth quarter ended October 31, 1993 was 38.6% or \$2.2B, falling 2.4 points.

\* Gross margin for fiscal year 1993 was 40.3% or \$8.2B, falling 3.9 points.

Expenses:

\* SG&A expenses for the fourth quarter was down 5.5 points to \$1.2B or 21.6% of sales.

\* SG&A expenses for fiscal year 1993 was down 3.4 points to \$4.6B or 22.4% of sales.

\* At \$485M fourth-quarter R&E expenditures were 8.5% of sales, a drop of 1.7 points.

\* At \$1.8B fiscal year-1993 R&E expenditures were 8.7% of sales, a drop of 1.2 points.

\* Lewis E. Platt, H-P Chairman, President and CEO, comments, "As we've noted in past quarters, we're working to counteract upward pressure on cost of sales by reducing operating-expense ratios. While this quarter's growth in operating expenses was our highest this year, it was driven in part by our strong order and revenue increases. It's worth noting that revenue grew much more than operating expenses this



quarter."

Operating Income:

- \* Fourth-quarter operating income was \$477M or 8.4% of total revenue, climbing 4.8 points.
- \* Fiscal year-1993 operating income was \$1.9B or 9.2% of total revenue, a 0.7-point increase.

Net Income:

- \* Net income for the quarter was \$298M, a profit margin of 5.2%. This represents a 3.7-point increase.
- \* Net income for fiscal year 1993 was \$1.2B or 5.8% of sales. This is a 114.4% increase or a 2.4-point jump over last year. However, this year-over-year percentage increase is slightly skewed. H-P had taken a \$332M one-time, after-tax charge for retiree medical benefits during fiscal year 1992. Without this, net income for fiscal year 1993 increased at a lower, but still impressive, rate of 33.6% or 0.4 points over 1992.

Population:

- \* Fiscal year 1993 ending population was reported at 96,200. Revenue per employee for fiscal year 1993 based on this figure is \$211,195. Fiscal 1992 revenue per employee based on ending 1992 population of 90,900 was \$180,528.

Business Outlook:

- \* Platt discussed the outlook of fiscal year 1994: "We'll continue to roll out important new products across our businesses. In addition, we've seen a clear payoff from our efforts to reduce expense structures and improve the agility of our organizations. These efforts will remain a high priority, because we expect upward pressure on cost of sales to continue in 1994. We're also seeing mixed growth rates across our businesses, as well as a weak economic environment in parts of Europe and Asia.

Hewlett-Packard Company  
(\$ Mils except Earnings per Share)  
Q4 Results

	Current Quarter			12 Months Ending		
	(Unaudited)			(Unaudited)		
	Q4, FY93	Q4, FY92	% Change	Q4, FY93	Q4, FY92	% Change
Net Revenue:						
Equipment	4,430	3,203	38.3%	15,533	12,354	25.7%
Services	1,257	1,121	12.1%	4,784	4,056	17.9%
	<u>5,687</u>	<u>4,324</u>	31.5%	<u>20,317</u>	<u>16,410</u>	23.8%
Cost of Sales	3,494	2,554	36.8%	12,123	9,158	32.4%
Gross Margin \$	2,193	1,770	23.9%	8,194	7,252	13.0%
Gross Margin %	38.6%	40.9%	-2.4pts	40.3%	44.2%	-3.9pts
Expenses:						
SG&A	1,231	1,172	5.0%	4,554	4,228	7.7%
% of Revenue	21.6%	27.1%	-5.5pts	22.4%	25.8%	-3.4pts
R&E	485	443	9.5%	1,761	1,620	8.7%
% of Revenue	8.5%	10.2%	-1.7pts	8.7%	9.9%	-1.2pts
Total	1,716	1,615	6.3%	6,315	5,848	8.0%
Operating Income	477	155	207.7%	1,879	1,404	33.8%
% of Revenue	8.4%	3.6%	4.8pts	9.2%	8.6%	0.7pts
Interest Inc/(Exp)	(26)	(50)	NM	(96)	(79)	NM
Pre-tax earnings	451	105	329.5%	1,783	1,325	34.6%
% of Revenue	7.9%	2.4%	5.5pts	8.8%	8.1%	0.7pts
Income Tax	153	37	313.5%	606	444	36.5%
Tax Rate	33.9%	35.2%		34.0%	33.5%	
Transition Effect of Accounting Change					332	
Net Income	298	68	338.2%	1,177	549	114.4%
% of Revenue	5.2%	1.6%	3.7pts	5.8%	3.3%	2.4pts
Net Income without Acctg. Change	298	68	338.2%	1,177	881	
% of Revenue	5.2%	1.6%	3.7pts	5.8%	5.4%	0.4pts
Earnings per Share:						
EPS prior to Acctg. Change	\$1.18	\$0.28	321.4%	\$4.65	\$3.49	33.2%
EPS after Acctg. Change	\$1.18	\$0.28	321.4%	\$4.65	\$2.18	113.3%
Ave Shares	254M	251M		253M	253M	

Hewlett-Packard Company  
Consolidated Condensed Balance Sheet  
(\$ Mils)

	(Unaudited)		
	Q4 FY93	Q4 FY92	% Change
	-----	-----	-----
Assets			
Cash and Cash Equiv.	889	641	38.7%
Short-term Invest.	755	394	91.6%
Accts/Notes Recv.	4,208	3,497	20.3%
Inventories	3,691	2,605	41.7%
Other current	693	542	27.9%
	-----	-----	
Total current	10,236	7,679	33.3%
Net PP&E	4,180	3,649	14.6%
L-T Receivables & Other Assets	2,320	2,372	-2.2%
	-----	-----	
Total Assets	16,736	13,700	22.2%
Notes Payable	2,190	1,384	58.2%
Accounts Payable	2,708	2,307	17.4%
Emp. Comp./Benef.	1,048	913	14.8%
Taxes	922	490	88.2%
	-----	-----	
Total current	6,868	5,094	34.8%
LT Debt	667	425	56.9%
Other Liabilities	659	633	4.1%
Deferred Taxes	31	49	
Stockholders' Eq.	8,511	7,499	13.5%
	-----	-----	
Tot Liab & Equit	16,736	13,700	22.2%

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I N T E R O F F I C E   M E M O R A N D U M

Doc. No: 060988  
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Tel No: (508)493-1708

TO: See Below

Subject: Competitive Operational Results Summary

Attached below is the Competitive Operational Results Summary, updated for Hewlett-Packard, Dell, and Novell's July earnings announcement.

Mike King  
CCH/Competitive Analysis

Distribution:

TO: HENRY ANCONA @CORE  
TO: Fran Barton @OGO  
TO: STEVEN BEHRENS @MRO  
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*Self  
Competitors*

Competitive Operational Results Ranked by Net Income Percent  
As reported  
Latest Quarter Ended: June, 1993

Company	REF	\$M Revenue	Yr/Yr Growth	GM	Percent of Revenue			Net Income
					SG&A	R&D	Operating Income	
Intel		\$ 2024 M	63.0 %	64.5 %	13.0 %	11.1 %	40.5 %	27.1 %
Microsoft		1039	27.4	82.7	33.5	13.3	35.9	25.5
SGI		319	33.1	52.5	26.4	12.0	14.1	11.0
Stratus		124	5.7	57.5	29.1	15.7	12.7	10.9
3 Com	(2)	167	37.6	49.5	27.6	9.7	12.3	7.9
EDS	(3)	2075	2.9	24.6	11.9	0.0	12.7	7.3
CA		423	15.2	0.0	76.0	12.7	11.3	7.3
Compaq		1632	97.4	24.1	12.2	2.5	9.3	6.3
Sun		1261	29.6	42.2	24.1	9.5	8.6	6.0
HP	(1)	4961	22.8	40.2	22.6	9.0	8.6	5.5
Seagate		770	-1.3	18.5	7.0	5.2	6.3	4.3
CSC		608	0.5	20.4	15.1	0.0	5.3	3.0
Digital		3914	0.2	40.3	27.8	9.4	3.0	2.9
Apple		1862	7.0	32.5	39.7	9.4	-16.5	-10.1
					22.4 (A)		0.8 (A)	0.6 (A)
Dell	(1)	701	53.1	6.5	18.8	1.7	-14.0	-10.8
					8.8 (A)		-4.0 (A)	-3.1 (A)
Conner		491	-11.0	7.9	9.4	7.7	-9.2	-12.0
IBM		15519	-4.3	38.5	86.6	8.9	-56.9	-51.8
					28.9 (A)		0.7 (A)	-0.3 (A)
Novell	(1)	273	12.1	79.2	32.8	133.0	-86.6	-93.6
						15.5 (A)	30.9 (A)	22.7 (A)

Notes on last page are integral part of presentation.  
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Competitive Operational Results Ranked by Net Income Percent  
 As reported  
 Latest Quarter Ended: June, 1993

Company	ROA	ROE	Performance Metrics			Cash/ Assets	Avg. Cash (\$M)
			DSO	Inv. Turns	Debt/ Debt + Equity		
Intel	25.5 %	37.1 %	55 Days	5.4 x	8.9 %	34.2 %	\$ 2937 M
Microsoft	28.8	33.9	29	6.7	0.0	58.3	2146
SGI	15.8	23.5	89	4.1	5.2	18.1	161
Stratus	11.2	13.1	79	3.1	1.5	35.1	170
3 Com	15.2	21.6	45	5.4	1.0	30.6	107
EDS	9.8	18.6	54	N/R	20.2	8.8	541
CA	5.2	11.7	127	N/R	18.5	9.7	229
Compaq	11.8	18.5	56	4.6	0.0	10.9	376
Sun	10.7	18.3	53	11.0	15.4	38.7	1101
HP	7.1	13.2	64	3.7	21.1	10.6	1615
Seagate	6.6	13.1	42	6.4	22.1	31.3	632
CSC	4.9	10.3	80	N/R	30.2	11.8	174
Digital	4.1	9.4	69	5.2	17.5	15.0	1598
Apple	-16.3	-35.0	61	4.7	7.9	21.0	968
Dell	-30.3	-87.2	44	8.2	24.5	11.3	113
Conner	-13.0	-39.9	61	5.5	54.6	28.5	514
IBM	-37.4	-136.8	117	4.6	56.7	6.9	5930
Novell	-74.8	-88.1	100	43.9	0.1	55.2	754

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Competitive Operational Results Ranked by Net Income Percent

As reported

Four Quarters Ending: June, 1993

Percent of Revenue

Company	REF	\$M Revenue	Yr/Yr Growth	GM	SG&A	R&D	Operating Income	Net Income
Microsoft		\$ 3753 M	36.0 %	83.1 %	35.3 %	12.5 %	35.3 %	25.4 %
Intel		7436	50.1	61.7	14.9	11.8	35.0	24.0
CA		1897	19.4	100.0	67.4	11.3	21.3	13.5
Stratus		497	6.3	58.0	29.2	15.9	12.9	10.9
SGI		1091	33.1	52.5	28.5	12.5	11.5	8.7
EDS (3)		8342	6.6	21.3	12.6	0.0	8.7	7.8
Seagate		3044	5.9	22.1	7.8	5.1	9.3	6.4
Compaq		5733	79.6	25.2	7.3 (A)	2.5	9.8 (A)	6.9 (A)
3 Com (2)		607	48.6	47.8	14.4	10.4	8.3	6.0
HP (1)		18954	19.1	41.0	13.1 (A)	9.1	9.6 (A)	5.9
Sun		4309	20.1	41.6	27.7	10.3	9.6	5.9
CSC		2483	9.8	20.6	23.7	0.0	8.2	5.0
Apple		7604	11.4	38.6	23.4 (A)	8.9	8.8 (A)	5.5 (A)
Dell (1)		2563	91.5	15.9	25.6	1.7	5.6	3.9
Conner		2295	27.2	16.4	14.7	5.4	5.9	3.2
Digital		14371	3.2	39.9	26.6	10.6	3.1	2.4
Novell (1)		1074	24.8	80.5	22.3 (A)	43.5	7.3	-3.2
IBM		62839	-5.8	40.7	14.2	14.3 (A)	37.2 (A)	26.4 (A)
					10.6 (A)	10.0	-31.7	-26.4
					7.9 (A)		1.1 (A)	-0.5 (A)

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Competitive Operational Results Ranked by Net Income Percent  
 As reported  
 Four Quarters Ending: June, 1993

Company	REF	Performance Metrics						Avg. Cash (\$M)
		ROA	ROE	DSO Days	Inv. Turns	Debt/ Debt + Equity	Cash/ Assets	
Microsoft		29.6 %	35.1 %	29	5.9 x	0.0 %	56.4 %	\$ 1817 M
Intel		21.9	25.9	55	5.5	8.9	34.1	2653
CA		11.4	25.1	127	N/R	17.8	9.9	224
Stratus		12.0	14.1	79	2.9	1.5	34.8	158
SGI		11.2	16.7	89	3.7	5.8	19.1	163
EDS	(3)	10.8	21.0	54	N/R	21.4	7.7	462
Seagate		10.2	20.5	42	6.8	24.1	29.4	567
Compaq		10.6	16.3	56	5.3	1.7	18.5	600
3 Com	(2)	10.9	15.8	45	1.4	2.0	29.6	98
HP	(1)	6.6	11.8	64	3.8	19.6	10.6	1508
Sun		6.1	10.6	53	11.3	19.1	42.1	1161
CSC		5.6	11.9	80	N/R	32.0	9.9	141
Apple		4.1	8.8	61	5.3	10.5	26.2	1166
Dell	(1)	-0.6	-1.6	44	9.1	16.1	16.3	137
Conner		-1.7	-4.6	61	7.3	51.5	40.9	743
Digital		-2.3	-5.1	69	5.1	17.5	15.0	1490
Novell	(1)	-2.9	-3.4	100	21.9	0.1	52.2	626
IBM		-18.9	-58.8	117	4.0	51.2	5.8	5066

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Company	REF	Population Metrics		
		Avg. Pop.	Rev./ Empl.	Pop. Date
Microsoft		\$ 9.9 K	\$ 279 K	6-92
Intel		24.6	232	12-92
CA		7.2	252	3-93
Stratus		2.6	187	12-92
SGI		3.5	250	6-92
EDS	(3)	70.5	117	12-91
Seagate		43.0	67	6-92
Compaq		11.4	360	12-92
3 Com	(2)	1.8	229	5-92
HP	(1)	90.8	181	10-92
Sun		12.6	285	6-92
CSC		24.7	86	3-92
Apple		14.5	485	9-92
Dell	(1)	3.0	310	1-92
Conner		10.1	222	12-92
Digital		98.9	145	6-93
Novell	(1)	3.3	275	10-92
IBM		354.0	182	12-92

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Competitive Operational Results  
Footnotes  
August 1993

Companies with quarters ending other than June 1993 are noted as follows:

- (1) Quarter Ended July 1993.
- (2) Quarter Ended May 1993.
- (3) EDS June 1993 SG&A estimated from average of prior 5 quarters

Abbreviated Company names and their primary business are:

CA - Computer Associates (Software)  
CSC - Computer Science Corporation (Professional Services)  
EDS - Electronic Data Systems (Professional Services)  
SGI - Silicon Graphics Incorporated (Workstations)

\*\* Competitors population and Revenue/Employee figures are for the most recent fiscal year-end period avail  
Updated figures will become available upon publication of annual reports.  
Digital Population reported is number of Regular Employees..

Data is as reported.

Performance Metrics use 2-point averages in calculations, except for:  
Digital's Debt/Debt + Equity and Cash/Assets use ending balances.

The following one-time charges are included in the results:

Most recent reported Quarter Schedule:

Conner \$12M (Q2, FY93); IBM \$8.9B (Q2, FY93);  
Apple \$320.9M (Q3, FY93); Novell \$320.5M (Q3, FY93).

Rolling Four Quarter Schedule:

HP \$137M(Q4, FY92); Compaq \$73M(Q3, FY92);  
IBM \$8.9B (Q2, FY93), \$7.2B(Q4, FY92), \$4.4B(Q3, FY92); Seagate \$15M(Q3, FY93);  
Conner \$58M(Q4, FY92), \$36M(Q1, FY93), \$12M(Q2, FY93);  
Apple \$320.9M (Q3, FY93); Novell \$320.5M (Q3, FY93).

N/A - Data not provided in press release. Data will be available from 10Q/Annual reports.

N/R - Data Not Reported by company.

(A) - Adjusted for one-time charges

Sources for this document include 10-Q filings, annual reports, VTX Standard and Poors, and Lotus One-Source

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I N T E R O F F I C E M E M O R A N D U M

Doc. No: 056130  
Date: 18-May-1993 04:56pm DST  
From: greg yoder  
YODER.GREG AT A1 at PICV03 at  
  
Dept: Corp. Controller Headquarters  
Tel No:

MLO

TO: See Below

Subject: Hewlett-Packard Q2 Earnings Summary

Hewlett-Packard announced today, May 18, 1993, financial results for their second fiscal quarter ended April 30, 1993. H-P recorded a 22% revenue increase and a 7% net income increase compared to the year-ago quarter. Revenues were a record \$5.1B for the quarter. Orders continued to be strong with a record \$5.4B for the quarter compared with \$4.2B in the second quarter of 1992. Earnings per share of \$1.38 were higher than the \$1.20 expected by Wall Street. Morning trading showed H-P stock up strongly to \$81 1/2. Announcement highlights follow:

Revenue

- \* Net Revenue was \$5.1B, up 22% over the same quarter last year
- \* Equipment revenue increased 22% to \$3.9B while Services revenue increased 20% to \$1.2B
- \* US revenue totaled \$2.2B, increasing 24% year-over-year. Non-US revenue was \$2.9B, a year over year increase of 20%
- \* Computer Products and Services, which make up 76% of total revenue, grew 26% year-over-year
- \* Net revenue for the six-months ended April 30 grew 20% over the same period last year
- \* "Growth was strong in all geographies and reasonably balanced across product areas," said Lewis Platt, President and CEO.

	Three months		Six months	
	For the periods ended April 30,			
	1993	1992	1993	1992

NET REVENUE

Computer products, service and support	\$3,886	\$3,087	\$7,379	\$5,920
Electronic test and measurement instrumentation, systems and service	592	533	1,132	1,059
Medical electronic equipment and service	299	273	551	502

Analytical instrumentation and service	176	175	345	344
Electronic components	143	115	262	221
	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>
Total	\$5,096	\$4,183	\$9,669	\$8,046

## Orders

- \* World wide orders increased 28% to \$5.4B, compared with \$4.2B in the second quarter of 1992
- \* Computer Products and Services, which make up 77% of total orders, grew 33% over Q2'92
- \* US orders totaled \$2.4B, a year-over-year increase of 28%, while non-US orders totaled \$3.0B, also a year-over-year increase of 28%
- \* Orders for the six-months ended April 30 were \$10.6B, up 26% from the same period last year

	Three months For the periods ended		Six months ended April 30,	
	1993	1992	1993	1992
<b>ORDERS</b>				
Computer products, service and support	\$4,123	\$3,096	\$8,093	\$6,229
Electronic test and measurement instrumentation, systems and service	568	541	1,162	1,079
Medical electronic equipment and service	339	256	635	500
Analytical instrumentation and service	172	166	354	330
Electronic components	165	124	324	238
	-----	-----	-----	-----
<b>Total</b>	<b>\$5,367</b>	<b>\$4,183</b>	<b>\$10,568</b>	<b>\$8,376</b>
United States	\$2,341	\$1,823	\$4,434	\$3,596
International	3,026	2,360	6,134	4,780
	-----	-----	-----	-----
<b>Total</b>	<b>\$5,367</b>	<b>\$4,183</b>	<b>\$10,568</b>	<b>\$8,376</b>

## Operating Income

- \* Operating income of \$554M grew 15% from the year-ago quarter. As a percent of revenue, operating income for the quarter was 10.9% in 1993 vs. 11.5% in 1992.
- \* Operating income for the six-months ended April 30 grew 3% over the same period last year
- \* Operating expenses(SG&A and R&D) as a percent of revenue fell 4.6 points to 30.3% compared to the year-ago quarter

- \* Cost of Goods Sold as a percent of revenue increased 5.2 points to 58.8% compared to the second quarter in FY92. Contributing factors include pricing pressures, manufacturing costs for new product ramp-up, and product mix shift. H-P stated that this trend was expected to continue
- \* Gross margin as a percent of revenue was 41.2% compared to 46.4% in the year-ago quarter
- \* R&D as a percent of revenue dropped over 1 point to 8.5% compared to 9.6 in the year-ago quarter
- \* SG&A as a percent of revenue dropped 3.4 points to 21.9% from 25.3% in the same quarter last year

#### Net Income

- \* Net income grew 7% from the year-ago quarter to \$347M. As a percent of revenue, earnings were 6.8% compared to 7.7% last year.
- \* Before the effects of FASB 106, net income for the six-month period ended April 30 decreased 3% over the same period last year

#### Population

- \* Total headcount increased by 700 people during the quarter to 93,800. Most of these people were added to support the Computer Products Organization's manufacturing operations.

#### Financial Models and Metrics

##### Business Model:

	Q2'93	Q2'92
	-----	-----
Revenue	100%	100%
CoGS	59%	54%
Gross Margin	41%	46%
SG&A	22%	25%
R&E	8%	9%
Op. Income	11%	12%

##### Performance Metrics:

ROA	9%	10%
ROE	17%	17%
DSO	62 days	66 days
Inv. Turns	4.1x	3.7x

HEWLETT-PACKARD CO. AND SUBSIDIARIES  
CONSOLIDATED CONDENSED STATEMENT OF EARNINGS  
(Unaudited)  
(In millions except per share amounts)

	Three months ended April 30,		Percent increase
	1993	1992	
Net revenue:			
Equipment	\$3,875	\$3,165	22
Services	1,221	1,018	20
	-----	-----	
Total	5,096	4,183	22
Costs and expenses:			
Cost of equipment sold and services	2,997	2,242	34
Research and development	431	403	7
Selling, general and administrative	1,114	1,057	5
	-----	-----	
Total	4,542	3,702	23
Earnings from operations	554	481	15
Interest income and other income (expense)	8	29	
Interest expense	28	22	
	-----	-----	
Earnings before taxes	534	488	9
Provision for taxes	187	165	
	-----	-----	
Net earnings	\$ 347	\$ 323	7
Net earnings per share	\$ 1.38	\$ 1.27	9
Average shares outstanding	253	254	

HEWLETT-PACKARD CO. AND SUBSIDIARIES  
CONSOLIDATED CONDENSED STATEMENT OF EARNINGS  
(Unaudited)  
(In millions except per share amounts)

	Six months ended April 30, 1993	1992	Percent increase (decrease)
Net revenue:			
Equipment	\$ 7,337	\$6,079	21
Services	2,332	1,967	19
	-----	-----	
Total	9,669	8,046	20
Costs and expenses:			
Cost of equipment sold and services	5,661	4,298	32
Research and development	830	767	8
Selling, general and administrative	2,203	2,031	8
	-----	-----	
Total	8,694	7,096	23
Earnings from operations	975	950	3
Interest income and other income (expense)	20	39	
Interest expense	60	50	
	-----	-----	
Earnings before taxes and effect of accounting change	935	939	0
Provision for taxes	327	314	
	-----	-----	
Earnings before effect of accounting change	608	625	(3)
Transition effect of accounting change, net of taxes	--	332	
	-----	-----	
Net earnings	\$ 608	\$ 293	
Earnings per share before effect of accounting change	\$ 2.41	\$ 2.46	(2)
Transition effect per share of accounting change, net of taxes	--	1.31	
	-----	-----	
Net earnings per share	\$ 2.41	\$ 1.15	
Average shares outstanding	252	253	



HEWLETT-PACKARD CO. AND SUBSIDIARIES  
CONSOLIDATED CONDENSED BALANCE SHEET  
(In millions except par value)

ASSETS	(Unaudited) April 30, 1993	Oct. 31, 1992
Current assets:		
Cash and cash equivalents	\$ 1,104	\$ 641
Short-term investments	478	394
Accounts and notes receivable	3,530	3,497
Inventories	3,022	2,605
Other current assets	613	542
	-----	-----
Total current assets	8,747	7,679
	-----	-----
Property, plant and equipment, net	3,768	3,649
Long-term receivables and other assets	2,348	2,372
	-----	-----
	\$14,863	\$13,700
LIABILITIES AND SHAREHOLDERS' EQUITY		
Current liabilities:		
Notes payable and short-term borrowings	\$ 1,618	\$ 1,384
Accounts payable and accruals	2,342	2,307
Employee compensation and benefits	973	913
Taxes on earnings	752	490
	-----	-----
Total current liabilities	5,685	5,094
	-----	-----
Long-term debt	427	425
	-----	-----
Other liabilities	607	633
	-----	-----
Deferred taxes on earnings	44	49
	-----	-----
Shareholders' equity:		
Common stock and capital in excess of \$1 par value	968	874
Retained earnings	7,132	6,625
	-----	-----
Total shareholders' equity	8,100	7,499
	-----	-----
	\$14,863	\$13,700

Distribution:

TO: TONY WALLACE @MRO  
TO: UVA @ROLAID@MRGATE  
TO: BILL STRECKER @CORE  
TO: BILL STEUL @CORE  
TO: ADRIANA STADECKER @CORE

CC: ROBYN HASTINGS  
O )

CC: MIKE KING  
CC: ZAVADIL @SHIRE@VAXMAIL

( HASTINGS.ROBYN AT A1 at PICV03 at ML

( KING.MIKE AT A1 at PICV03 at MLO )

CC: JAY ZAGER @MRO  
CC: PAT YOUNG @OGO

Use the RDL option to see remainder of distribution lists.

Competitors Operational Results  
Ranked by Net Income %  
=====

Latest 4 quarters ended September 30, 1992	Percent of Revenue							Ratios and Metrics					Headcount Information(1)		
	\$M Rev.	Qtr/Qtr Growth	Gross Margin	SG&A	R&D	Oper Income	Net Income	ROA	ROE	DSO	Inv. Turns	Debt/ Debt+Eq.	Avg Pop	Rev./ Emplee.	HC Period End
Novell *	\$933M	45.8%	80.3%	29.1%	12.9%	38.2%	26.7%	27.3%	32.4%	92days	13.4x	0.2%	2.8K	\$229K	10-91
Microsoft	2995	45.8	83.4	34.5	12.8	36.1	25.8	32.5	39.0	36	6.8	0.5	9.9	279	6-92
Intel	5192	12.4	54.2	17.8	14.0	22.4	15.9	12.3	17.5	61	4.8	9.9	24.6	232	12-92
Stratus	479	9.4	59.9	29.5	16.0	14.5	12.0	14.7	17.8	87	2.0	2.0	2.4	184	12-91
Computer Assoc.	1688	20.4	N/R	53.6	12.1	17.3	10.6	8.9	17.6	106	N/R	10.0	8.0	189	3-92
Apple	7087	12.3	43.6	23.8	8.5	11.4	7.5	13.7	26.8	55	6.4	7.8	14.5	485	9-92
Conner Periph.	2035	27.2	19.7	6.8	4.4	8.5	6.2	8.2	19.6	48	6.4	46.0	8.2	195	12-91
Seagate	2998	12.4	20.7	7.2	4.6	8.9	5.7	9.6	21.1	43	6.1	29.8	43.0	67	6-92
Compaq	3550	4.4	32.0	19.2	5.0	8.1	5.4	6.7	10.2	66	4.4	1.9	10.6	309	12-91
Dell **	1679	117.8	24.4	14.9	2.4	7.0	5.1	14.2	32.1	52	7.1	12.7	3.0	310	1-92
Sun	3690	11.8	44.7	27.6	10.9	5.9	4.1	6.1	11.2	61	7.4	25.2	12.6	285	6-92
H. P. *	16410	13.2	44.2	25.8	9.9	8.6	3.3	4.3	7.4	73	3.8	19.4	90.8	181	10-92
Comp. Sciences	2411	31.4	10.6	4.7	N/R	6.2	3.0	6.1	12.1	75	N/R	28.4	24.7	86	3-92
3 Com ***	453	19.5	45.7	29.9	11.4	2.1	1.6	2.5	3.6	48	5.7	2.7	1.8	229	5-92
IBM	66931	1.6	48.0	30.4	9.8	1.2	-3.0	-1.1	-2.6	122(2)	3.2	43.4	358.9	181	12-91
Sil. Graph. (3)	914	19.1	51.4	32.3	14.4	9.1	-8.4	-10.6	-14.9	98	4.1	6.3	3.5	250	6-92
Digital	13950	-1.1	40.1	34.1	12.6	-6.6	-18.5	-22.8	-41.8	90	4.8	2.1	111.5	125	6-92

\* Quarter ended October 31, 1992  
\*\* Quarter ended November 1, 1992  
\*\*\* Quarter ended August 31, 1992

*full competition*

Data is as reported. The following one-time charges are included in the above results:  
Digital \$1500M; Hewlett Packard \$137M(Q4'92), \$150M(Q4'91); IBM \$4400M(Q3'92), \$3400M(Q4'91);  
Compaq \$73M(Q3'92), \$135M(Q3'91); Seagate \$52M;

- (1) Population and Revenue/Employee figures are for the most recent fiscal year-end period available. In most instances, this does not correspond with the September quarter because quarterized data is not available for competitors. Digital's Q1 Revenue/Employee was \$31.5K.  
(2) Includes lease payments receivable  
(3) Includes combination of pre- and post-MIPs merger results.

Sources for this document include 10-Q filings, Annual Reports, and VTX Standard and Poors.

Competitors Operational Results  
Ranked by Net Income %  
=====

Quarter Ended September 30, 1992	Percent of Revenue							Ratios and Metrics					Headcount Information(2)		
	\$M Rev.	Qtr/Qtr Growth	Gross Margin	SG&A	R&D	Oper Income	Net Income	ROA	ROE	DSO	Inv. Turns	Debt/ Debt+Eq.	Avg Pop	Rev./ Empl.	HC Period End
Novell *	\$260M	38.9%	79.6%	28.6%	12.7%	38.3%	26.7%	26.7%	31.4%	92days	13.8x	0.2%	2.8K	\$229K	10-91
Microsoft	818	40.8	83.5	35.3	12.8	35.3	25.6	30.5	36.3	36	6.2	0.4	9.9	279	6-92
Intel	1426	20.1	55.0	18.0	14.1	23.0	16.9	13.5	19.7	61	4.9	9.6	24.6	232	12-92
Stratus	124	10.0	59.8	29.3	16.0	14.5	12.0	14.1	16.7	87	2.6	1.3	2.4	184	12-91
Computer Assoc.	432	29.8	N/R	53.6	11.5	17.8	10.9	8.7	19.3	106	N/R	19.4	8.0	189	3-92
Seagate	743	19.8	24.5	7.9	4.9	11.3	8.0	13.1	27.1	43	6.9	24.2	43.0	67	6-92
Conner Periph.	626	58.5	19.3	6.6	4.0	8.8	6.7	9.4	24.2	48	10.0	54.5	8.2	195	12-91
Silicon Graph.	231	25.5	52.8	30.7	13.0	9.1	5.7	6.8	10.6	98	3.4	7.4	3.5	250	6-92
Apple	1768	17.3	42.7	25.2	10.1	7.5	5.5	9.4	18.1	55	7.3	6.3	14.5	485	9-92
Dell **	570	148.6	21.4	12.6	1.9	6.9	5.0	14.5	34.6	52	8.8	13.1	3.0	310	1-92
3 Com ***	131	51.2	44.8	28.0	11.6	5.1	3.7	6.5	9.7	48	5.5	4.7	1.8	229	5-92
H. P. (1)*	4324	12.8	42.1	25.8	10.2	6.0	3.6	4.7	8.1	73	4.0	19.4	90.8	181	10-92
Compaq(1)	1067	50.4	28.1	16.9	4.2	7.0	3.4	6.8	10.5	66	6.3	0.0	10.6	309	12-91
Comp. Sciences	616	31.8	19.1	9.2	N/R	5.3	2.8	5.0	10.7	75	N/R	32.2	24.7	86	3-92
IBM(1)	14702	1.8	52.6	32.1	10.2	2.7	0.6	0.5	1.1	122(3)	2.6	45.9	358.9	181	12-91
Sun	856	13.4	42.9	29.6	12.3	1.0	0.6	0.7	1.3	61	9.6	24.0	12.6	285	6-92
Digital	3314	0.6	38.5	34.1	12.2	-7.8	-7.9	-9.5	-21.7	90	4.8	2.0	111.5	125	6-92

\* Quarter ended October 31, 1992

\*\* Quarter ended November 1, 1992

\*\*\* Quarter ended August 31, 1992

- (1) Estimated to exclude one-time charges. Percent of revenue calculations CFG derived, as no breakdown was provided by the companies. Charges include: Hewlett Packard, \$157M; IBM, \$4400M; Compaq, \$73M
- (2) Population and Revenue/Employee figures are for the most recent fiscal year-end period available. In most instances, this does not correspond with the September quarter because quarterized data is not available for competitors. Digital's Q1 Revenue/Employee was \$31.5K.
- (3) Includes lease payments receivable

Sources for this document include 10-Q filings, Annual Reports, and VTX Standard and Poors.

Printed by NICK SHARMA

I N T E R O F F I C E   M E M O R A N D U M

Doc. No: 003128  
Date: 13-Nov-1992 03:19pm EST  
From: NICK SHARMA  
SHARMA.NICK  
Dept: DIGITAL SVCS. MKTG.  
Tel No: DTN 276-8018

TO: Russ Gullotti  
TO: Max Mayer  
TO: Dick Scarborough

( PAPER MAIL )  
( PAPER MAIL )  
( PAPER MAIL )

Subject: Andersen Consulting Profile

Attached is a profile of Andersen Consulting. Some of the performance data I have been able to obtain is only till FY1990. I will update that as soon as I can gather FY1991 information.

Please call me if you need further clarification.

Regards,

Nick

RECEIVED  
NOV 16 1992  
RUSS GULLOTTI

# Andersen Consulting Profile

Nick Sharma  
9 November '92

Sources:  
G2  
IDC  
Dataquest/Ledgeway

# Andersen Consulting

## Company Statistics

Worldwide Headquarters	Chicago, Illinois
Managing Partner	George T. Shaheen, New York
Number of Employees Worldwide	23,608
Number of Partners Worldwide	711
Revenue for FY1992	\$2.3B

# Andersen Consulting

## Services Provided:

- Change Management Services
  - Organization Change
  - Knowledge Transfer
    - Interactive Video Disc
    - Digital Video Interaction
    - CBT
    - Video Conferencing
  - Technology Assimilation
  - Quality Management
  
- Strategic Services
  - Competitive and Industry Analysis
  - Marketing and Sales Planning
  - Organization and Change Management
  - IT Strategy, Operations Planning
  
- Application Software Products
  - MRP
  - CASE
  - Warehouse Management Services (R&D)
  
- Technology



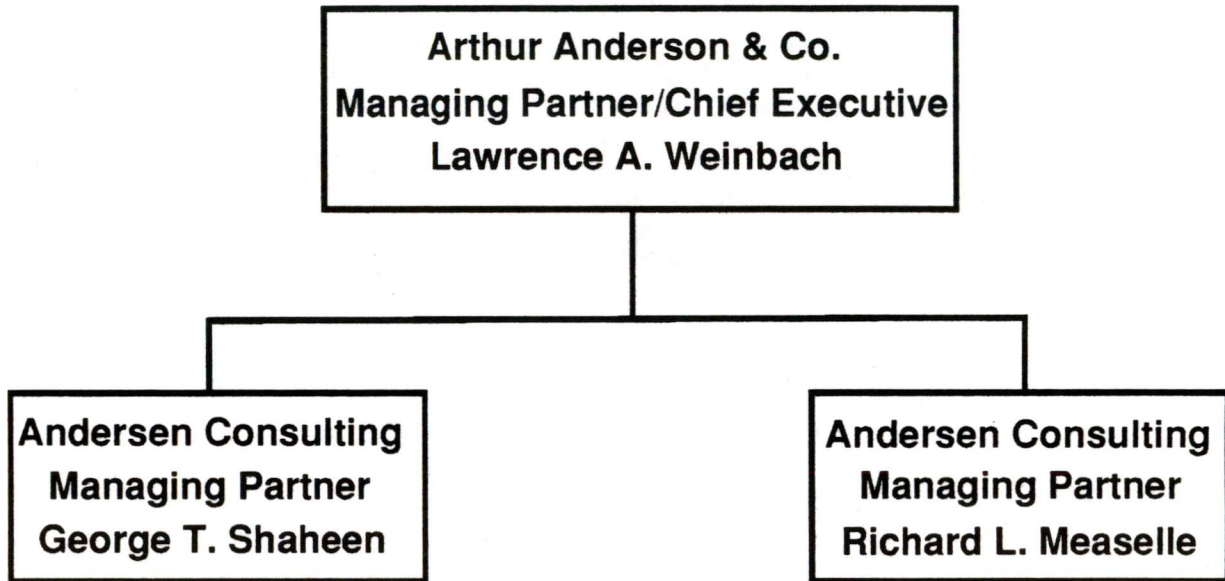
# Andersen Consulting

## Services Provided (Cont'd):

- Integration Services
  - Systems Integration
    - Systems Planning, Design, Implementation
  
- Systems Management
  - Software Re-engineering and Renewal
  - Network Services
  - Security
  - Systems Operations
  - Backup and Recovery

# **Andersen Consulting**

## Worldwide Organization



## Vision

To be the Worlds' Premiere Professional Services Organization

# Andersen Consulting

## Organization

- Complex matrix made up of geographies, vertical market and practice area organizations
  - Geographically into three areas; Americas, Europe/Middle East/Africa/India and Asia/Pacific
    - Managing partners responsible for three geographies which are responsible for delivery of all Services to clients
  - Also divided into three international lines of Services; Integration Services, Strategic Services and Change Management Services
    - Global in scope, a Service line such as Systems Management, a component of Integration Services, has a managing partner in each geography
- In addition the organization is structured to provide lines of Services; technology, application products and market development

# Andersen Consulting

## Organization (Cont'd)

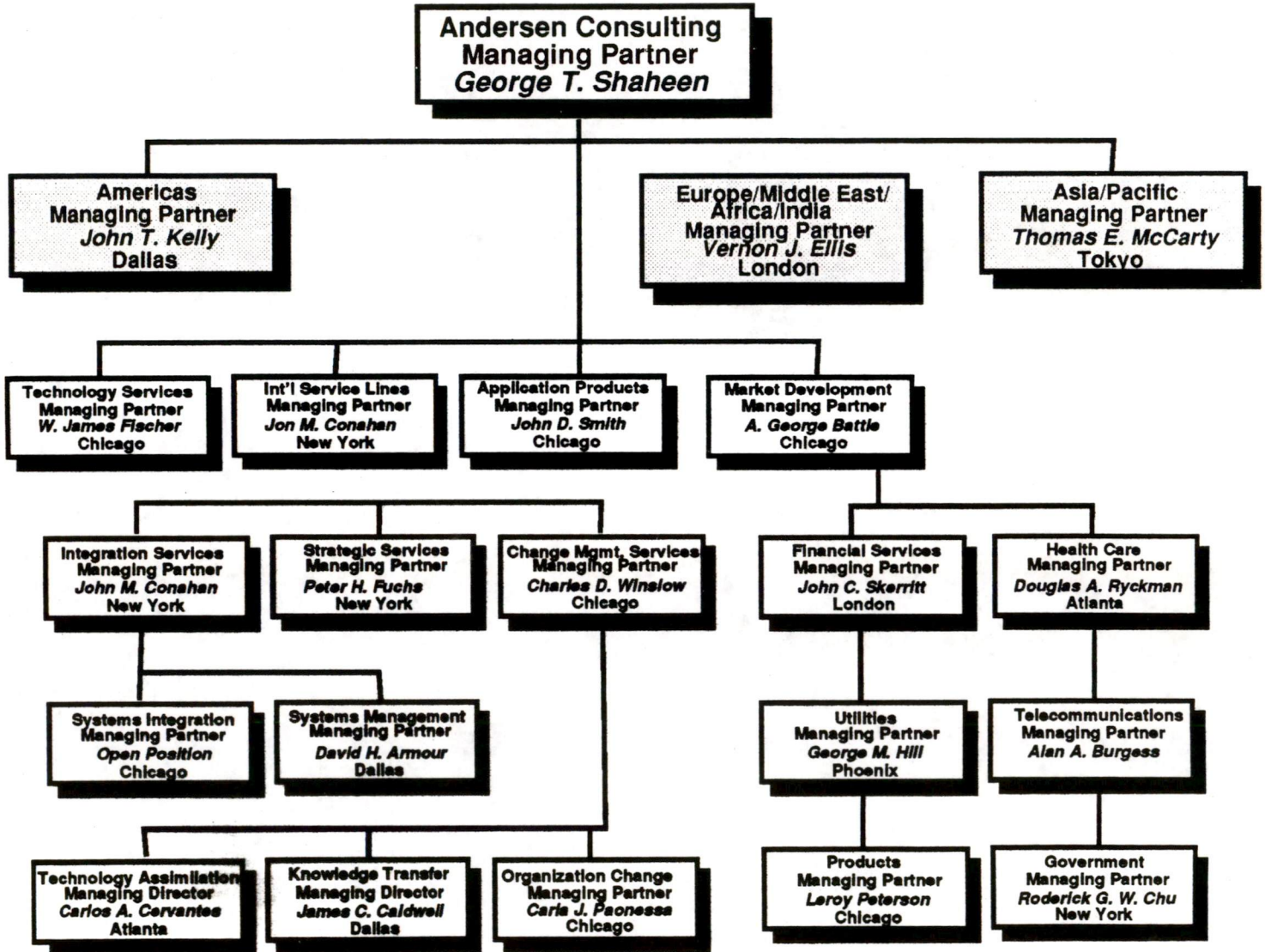
- Technology Service Organization is responsible for ensuring technical competencies, R&D and maintenance of FOUNDATION. It operates six units:
  - Advanced Technology
  - Network Solutions
  - Center for Strategic Research
  - FOUNDATION Development
  - Advanced Development
  - Knowledge Transfer
  
- Application products builds and maintains Andersen Consulting's packaged software applications.
  
- Market development organization is responsible for corporate communications and image initiatives, internal and external communications, market analysis and competitive assessment. In addition, it also manages six industry practices; Financial Services, Utilities, Products, Healthcare, Telecommunications and Government.

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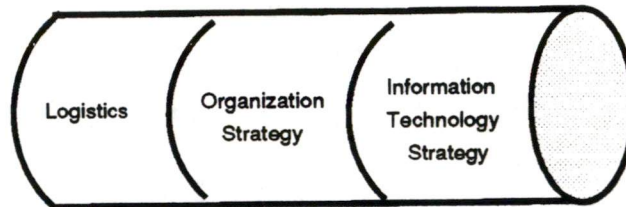


## Andersen Consulting Organizational Structure

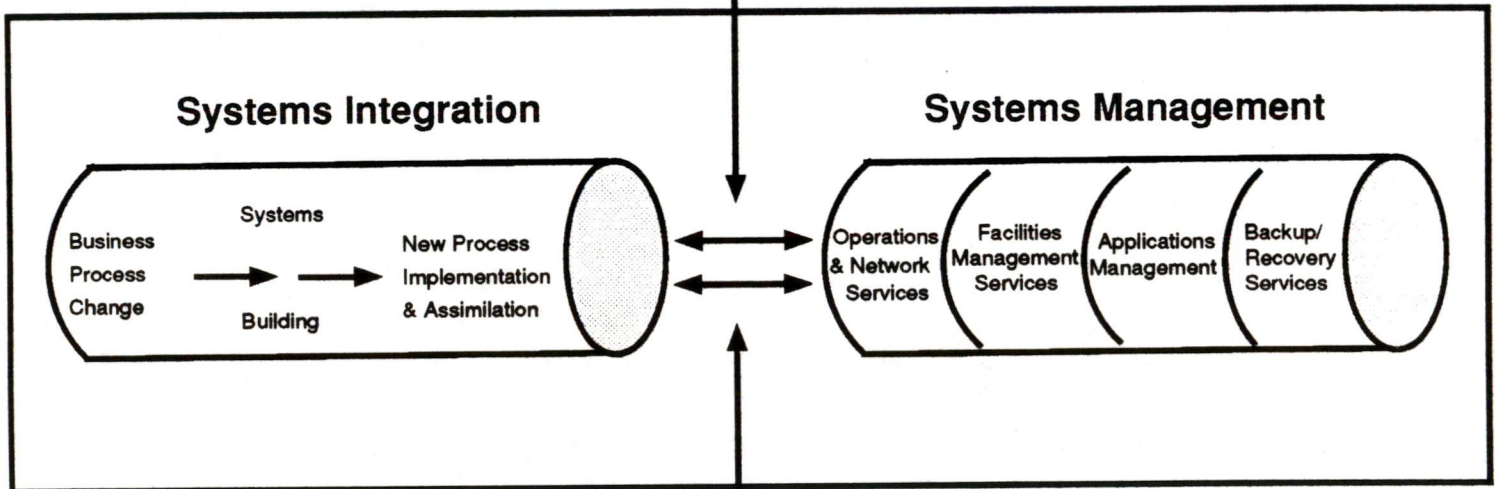


# Andersen Consulting Service Lines

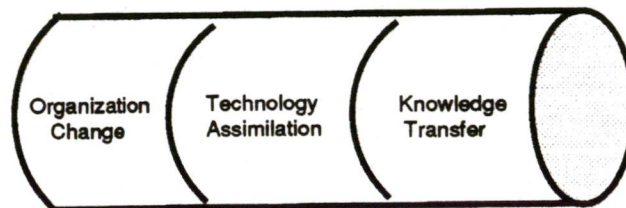
## Strategic Services



## Integration Services



## Change Management



# Andersen Consulting

## Andersen Consulting Strategy

- Andersen Consulting strategic direction is to focus on four key competencies to achieve its vision:
  - Industry Knowledge
  - Technology Expertise
  - Geographic Coverage
  - Full Service Provision
  
- Andersen Consulting expand its market presence and capabilities through three approaches:
  - Mergers and Acquisitions
  - Joint Ventures
  - New Offices
  
- Andersen Consulting believes that SI has evolved into business integration. On a worldwide basis, Andersen Consulting is attempting to merge its integration of business consulting operation to market a total solution.
  
- Andersen Consulting's strategy when it expands into new market is to first build a client base.

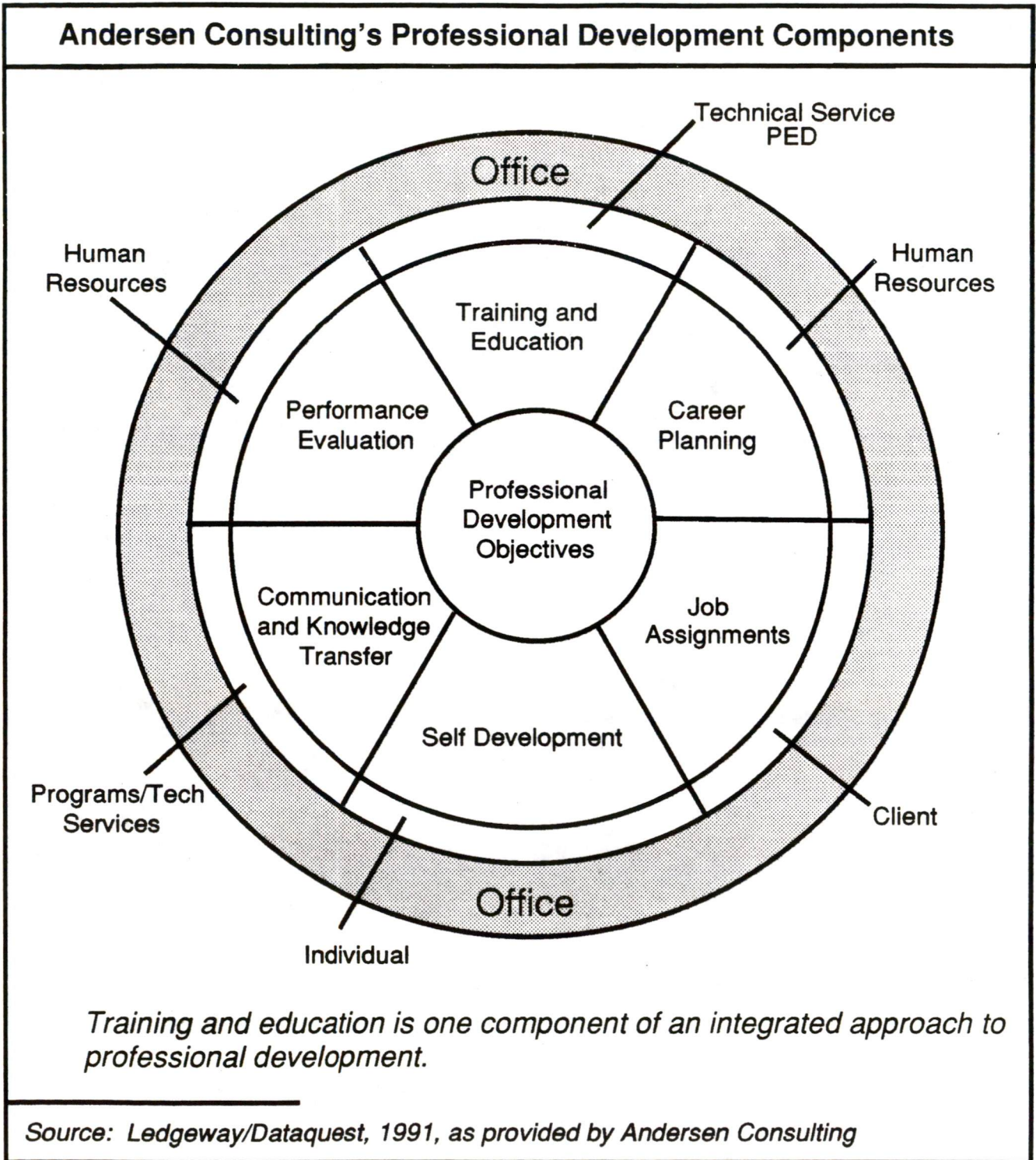
# Andersen Consulting

## Andersen Consulting Strategy (Cont'd)

- Attracting, training and retaining skilled professionals is a major challenge for Andersen Consulting. Each year Andersen Consulting hires approximately 4,000 new employees, primarily fresh out of college.
  - Andersen Consulting spends about 170 million on internal training resulting in expenditures of 8,500 per professional.
- Offers 247 courses and consultants average 800 training hours during first five years at Andersen Consulting.
- Andersen Consulting uses major/minor/continuing education concept to develop breadth and depth of knowledge.
- Instructors are consultants who went through training in previous years.



## Andersen Consulting Strategy (Cont'd)



# Andersen Consulting

## Andersen Consulting Strategy (Cont'd)

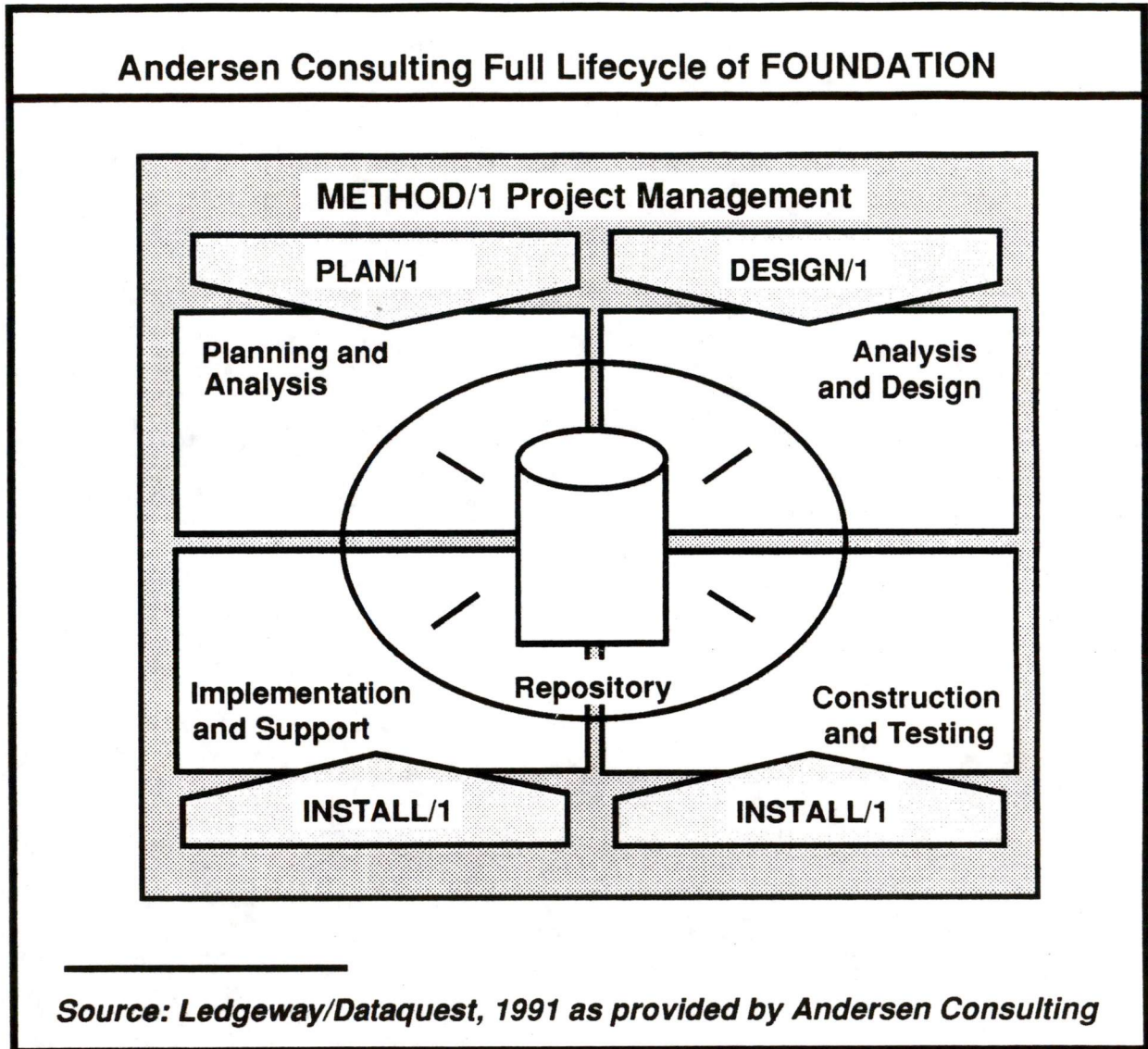
- Andersen Consulting was first professional Services organization to embark on image campaign.
- Andersen Consulting views its major marketing challenge as educating customers.
- Andersen Consulting sees one of its key differentiators as its commitment to R&D. It has increased its investment at a CAGR of 20% in R&D (\$264M in 1992). The organization also has taken aggressive slips to remain at the forefront of technology through affiliations with universities, research centers and MCC. It is also a founding sponsor of the Institute of Hearing Sciences at Northwestern University. Andersen Consulting has organized itself in accordance with customer environments (enterprise, desktop, networked) rather than specific technologies.
- Andersen Consulting has System Management Centers (SMCs) located in Dallas, U.K. and Toronto to support customers wishing to remotely operate any portion of their computing operations.

# Andersen Consulting

## Andersen Consulting Strategy (Cont'd)

- Advanced Technology Centers (ATCs) are located in Dallas, L.A., Madrid and Manila to provide client support, marketing support and R&D.
- FOUNDATION has been developed with the objective of providing a comprehensive integration solutions across multiple platforms and architecture. It is a tool kit of full life-cycle CASE tools for mixed vendor environments.

Andersen Consulting Strategy (Cont'd)



# Andersen Consulting

## Andersen Consulting Strategy (Cont'd)

- Client/server is one of the four key technologies that Andersen Consulting views as critical in addressing client's business needs. The other are smart systems (knowledge-based interfaces), universally accessible networks that Andersen Consulting calls human metaphor-interfaces based on human senses of speech and visual images.

# Andersen Consulting

## Andersen Consulting Structure

- Andersen Consulting's partners constitute the sales force. They generate about \$3-4M per partner.
- Andersen Consulting's selling structure revolves around the partner and a pyramid structure which resides under the partner. Each partner has approximately 20-25 people in his/her program.
- 100% of each of Andersen Consulting's support resource hours is "billed" in support of customer business.
- Anderson Consulting has tools which enable them to do sophisticated analysis of historical bid and customer data to compute target pricing and target margins.
- Anderson Consulting spends 40-45% of their selling costs on prospecting.
- In Anderson Consulting it is very clear to customer and all internal organizations who is in charge of the account, program and conflict resolution.

# Andersen Consulting

## Services Delivery

- Andersen Consulting's capabilities span a broad range of services across a wide range of services.
- Andersen Consulting's Services portfolio has been expanding from a core of management consulting services to encompass systems design, systems development, implementation/integration to Management/Operations.
- Andersen Consulting uses a well defined methodology to deliver services. Services consistency is stressed worldwide and achieved through common education/training, tools and methodologies. There is a lot of synergy between Andersen Consulting's methodology and Service lines.

Planning	→	Strategic Services
Designing	→	Systems Integration
Implementing	→	Change Management
Maintaining	→	Systems Management

# Andersen Consulting

## Services Delivery (Cont'd)

- Advanced technology such as CASE, decision support, executive information systems (EIS) object-oriented programming, imaging and AI is utilized as a tool to enhance effectiveness and gain competitiveness. The tool selection is based on company's strategic issues.
- While custom application development was Andersen Consulting's bread and butter, the organization does not see high growth in this area. Instead, the opportunities lie in network support/integration and systems management. Andersen Consulting has chosen to organize SI and system management under one line of service called Integration Service to create synergies.
- Andersen Consulting has leading edge education/training technology such as interactive video disc, digital video interactive, CBT, integrated performance support systems and video conferencing. Andersen Consulting used change management services as way of implementing technology via organizational change, knowledge transfer and technology assimilation.

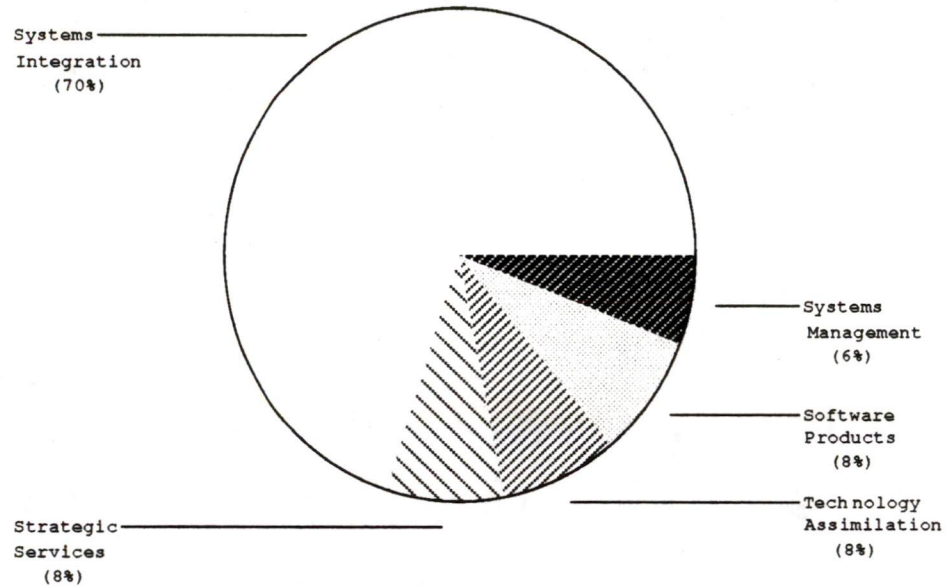


# Andersen Consulting

## Services Delivery (Cont'd)

- Andersen Consulting has over the past years changed its pricing scheme from T&M to fixed price in attempt to more discretely identify and revamp costs associated with SI business.

## Andersen Consulting Performance



Total Revenues = \$2.3B

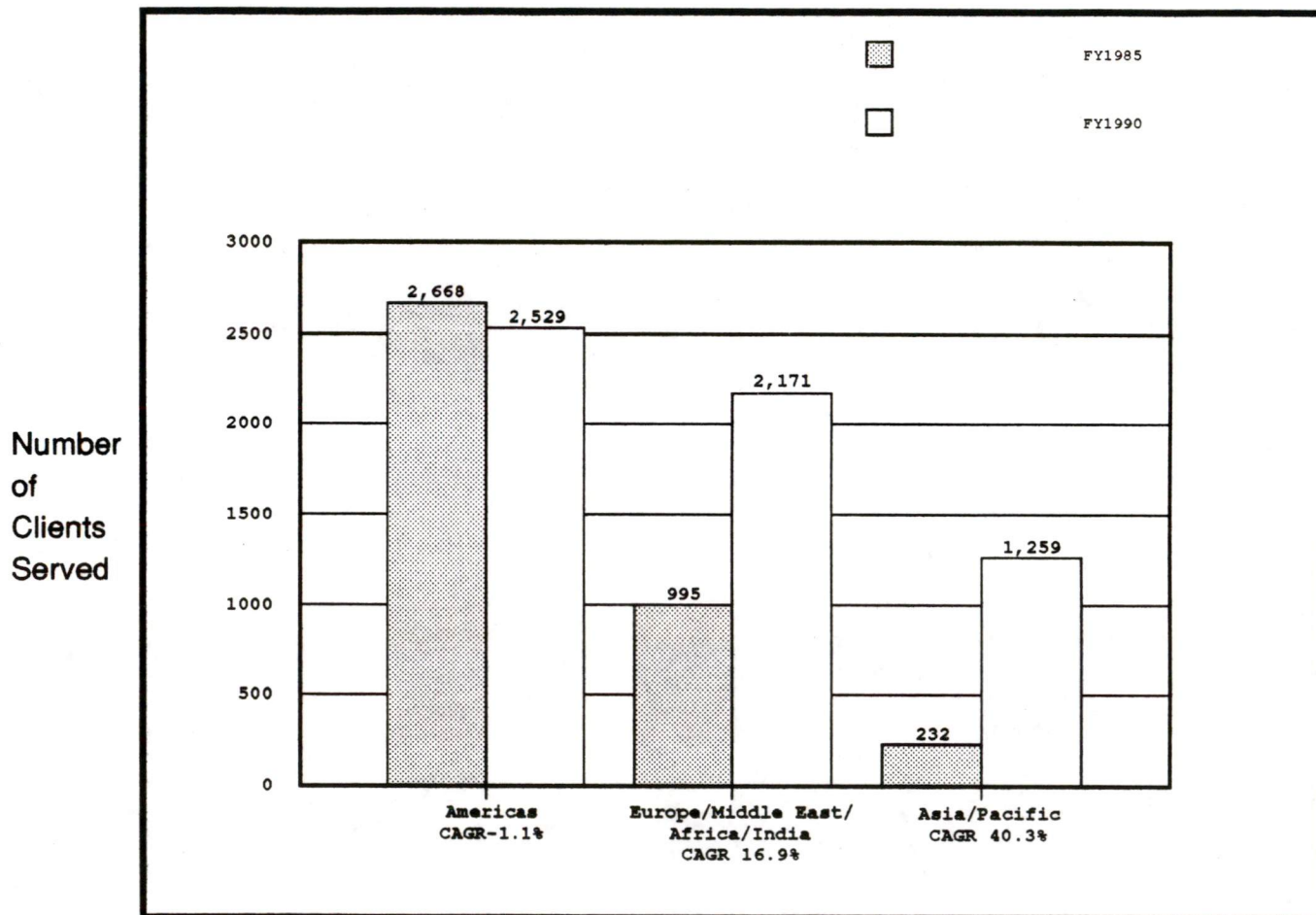
## Andersen Consulting Performance

<b>Andersen Consulting Revenues Per Clients Served -- FY1985 to FY1990</b>						
	Revenues per Client Served (\$K)			CAGR FY85-FY90		
	FY1985	FY1989	FY1990	Clients	Revenues	
Americas	\$139	\$362	\$430	-1.1%	24.0%	
Europe/Middle East/Africa/India	86	247	305	16.9%	50.4%	
Asia/Pacific	88	65	99	40.3%	43.7%	
<b>Total</b>	<b>\$123</b>	<b>\$244</b>	<b>\$315</b>	<b>8.9%</b>	<b>31.5%</b>	

*Source: Ledgeway/Dataquest, 1991*

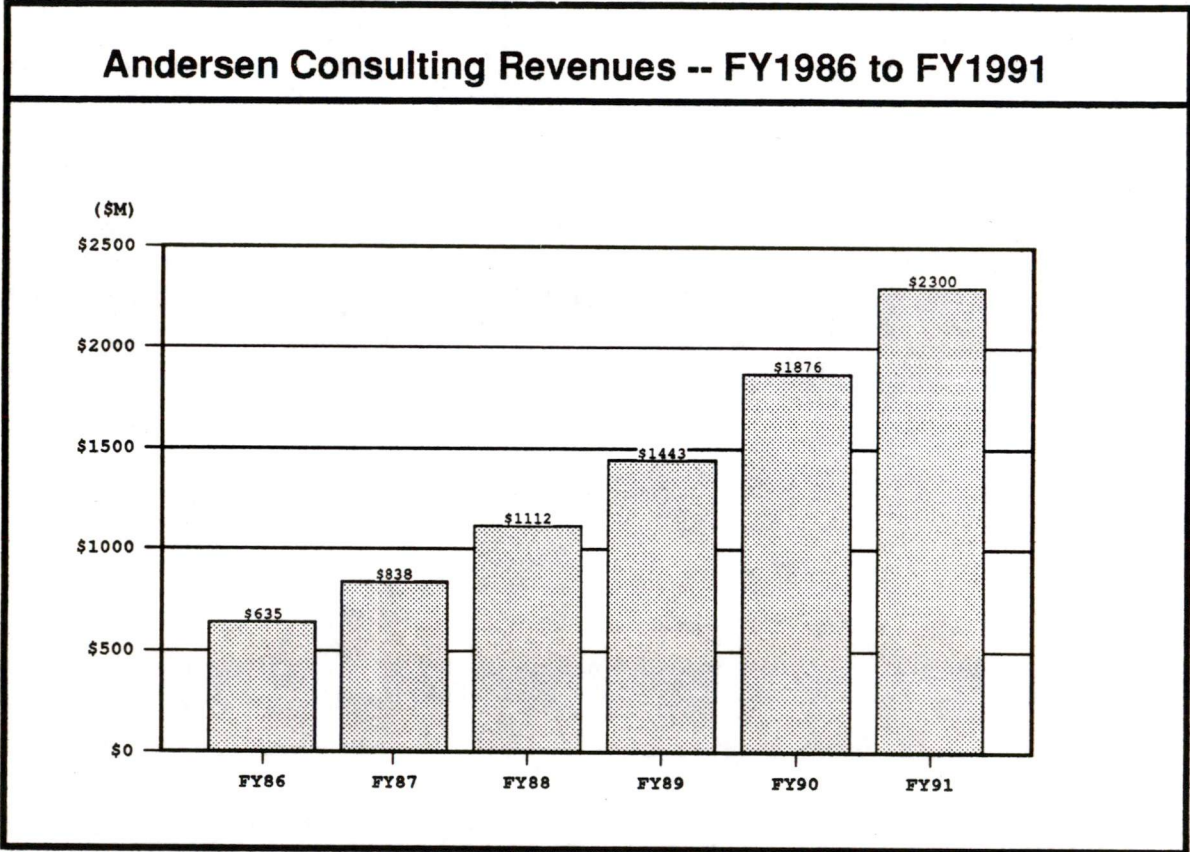
## Andersen Consulting Performance

### Andersen Consulting Number of Clients Served Worldwide -- FY1985 to FY1990

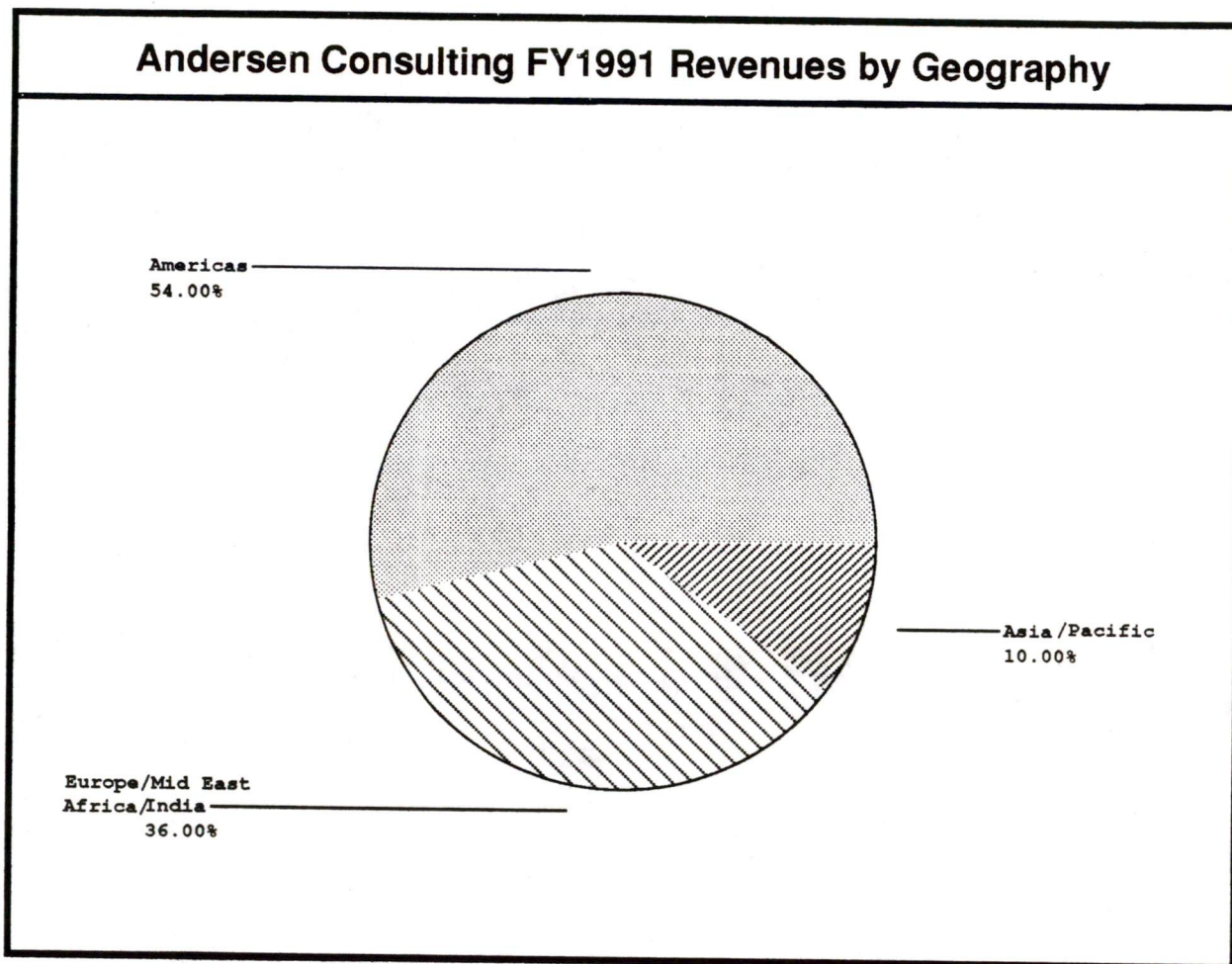


Source: *Ledgeway/Dataquest, 1991, as provided by Andersen Consulting*

Andersen Consulting Performance



## Andersen Consulting Performance



**Total = \$2.3B**

## Andersen Consulting Performance

### Andersen Consulting's Growth in Revenues by Geographical Area (\$M)

	FY1985	FY1988	FY1989	FY1990	CAGR	% Change
					FY85-FY90	FY89-FY90
Americas	\$370.9	\$679.5	\$870.9	\$1087.9	24.0%	24.9%
Europe/Middle East/Africa/India	86.0	359.7	465.2	662.8	50.4%	42.5%
Asia/Pacific	<u>20.4</u>	<u>72.8</u>	<u>105.6</u>	<u>124.8</u>	43.7%	18.2%
<b>Total</b>	<b>\$477.3</b>	<b>\$1,112.0</b>	<b>\$1,441.7</b>	<b>\$1,875.5</b>	<b>31.5%</b>	<b>30.0%</b>

Source: Ledgeway/Dataquest, 1991

### Andersen Consulting Professional Personnel by Geography

	FY1985	FY1988	FY1989	FY1990	CAGR	% Change
					FY85-FY90	FY89-FY90
Americas	5,064	8,783	10,450	11,481	17.8%	9.9%
Europe/Middle East/Africa/India	1,679	4,083	5,615	6,782	32.2%	22.4%
Asia/Pacific	<u>407</u>	<u>1,492</u>	<u>2,078</u>	<u>2,256</u>	40.8%	8.6%
<b>Total</b>	<b>7,150</b>	<b>14,358</b>	<b>18,143</b>	<b>20,609</b>	<b>23.6%</b>	<b>13.6%</b>

Source: Ledgeway/Dataquest, 1991

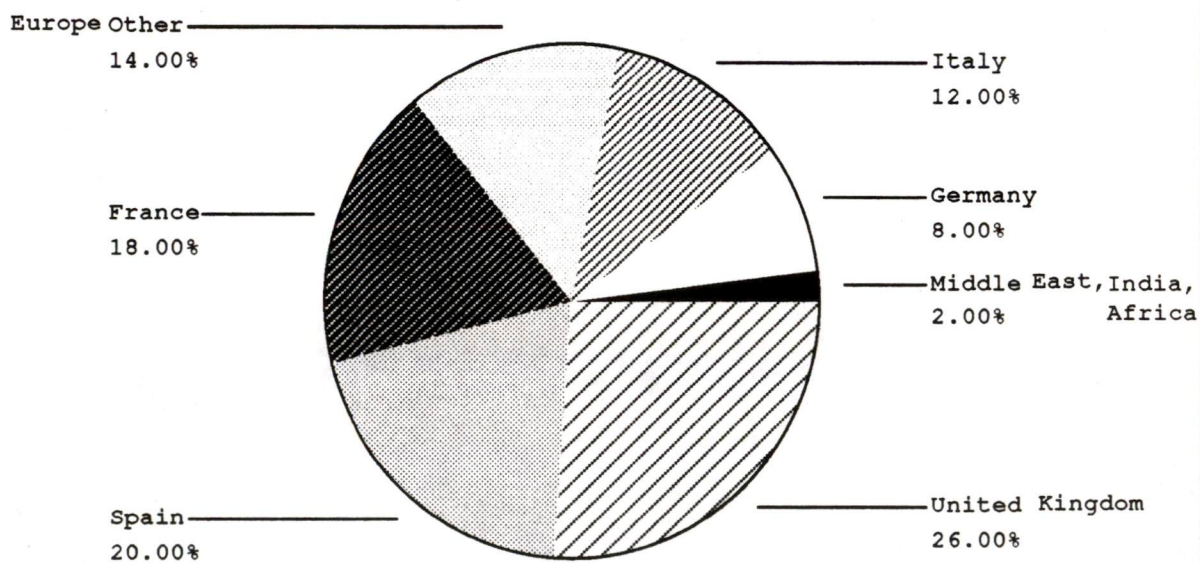
### Andersen Consulting Revenue per Professional

	Revenues per Professional (\$K)				CAGR FY85-FY90	
	FY1985	FY1988	FY1989	FY1990	Professionals	Revenues
Americas	\$73	\$77	\$83	\$95	17.8%	24.0%
Europe/Middle East/Africa/India	\$51	\$88	\$83	\$96	32.2%	50.4%
Asia/Pacific	\$50	\$49	\$51	\$55	40.8%	43.7%
Worldwide	\$65	\$77	\$79	\$91	23.6%	31.5%

Source: Ledgeway/Dataquest, 1991

## Andersen Consulting Performance

### Andersen Consulting Europe/Middle East/India Revenues by Region -- FY1990

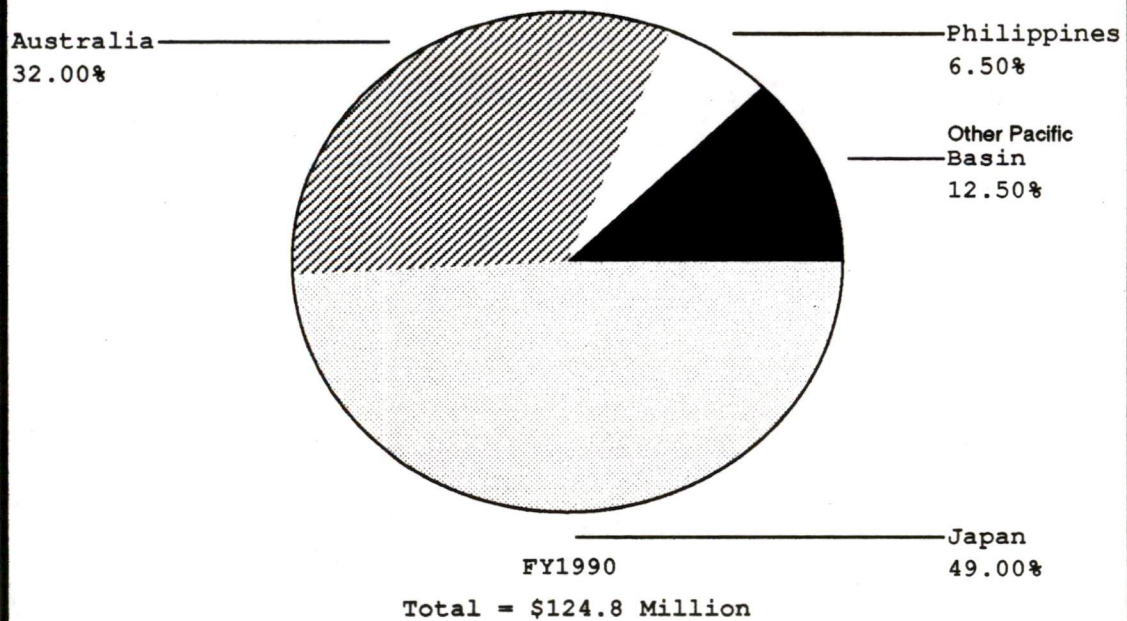


FY1990  
Total = \$662.8 M



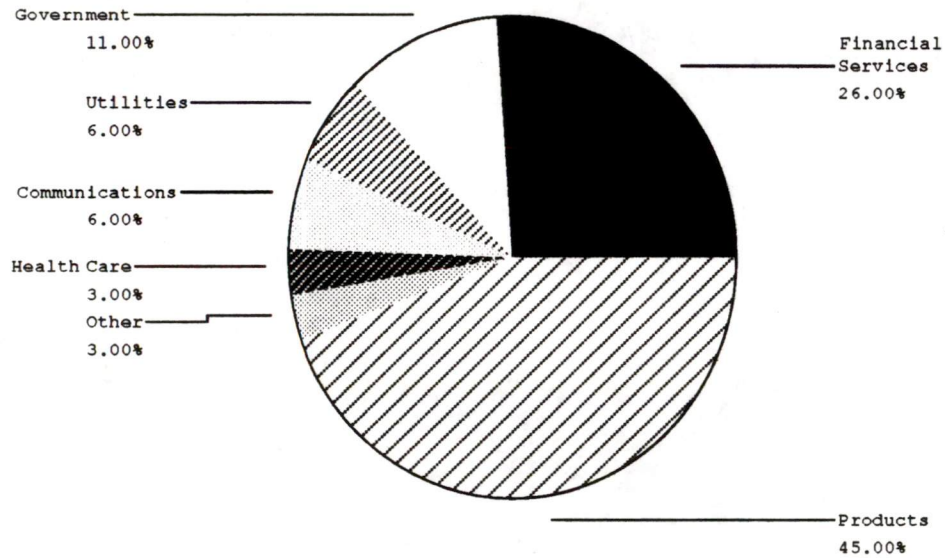
## Andersen Consulting Performance

### Andersen Consulting Asia/Pacific Revenues by Region -- FY1990



## Andersen Consulting Performance

### Andersen Consulting Revenues by Industry -- FY1990



FY1990  
Total = \$1,875.5 Million

Source: *Ledgeway/Dataquest, 1991*

# Andersen Consulting

## Potential Weaknesses

- Large influx of new, young employees reduces average tenure and experience of Andersen Consulting's work force
- 15-20% work force turnover annually (loses about 1,200 of 8,000 U.S. based consultants each year -- the Anderson Consulting career path is up or out)
- Anderson Consulting's traditional strength is in mainframes not client/server
- Anderson Consulting's organization of partners and associates is not well suited for large SI or outsourcing projects
- Anderson Consulting has a tradition of non-cooperation with internal MIS groups
- Anderson Consulting has a perception of "steam-rolling" (getting the job done!!) not quality of delivery

# Andersen Consulting

## Potential Weaknesses (Cont'd)

- Anderson Consulting's drive for consistency (Method/1,...) has been equated to "rigidity"
- Anderson Consulting has a dedicated sales force for FOUNDATION that works in conjunction with consultants to market the product. The establishment of separate sales force to market FOUNDATION line of CASE tools has raised questions about Anderson Consulting's objectivity as an integrator promoting the best solution.