

Investment:

	<u>FY93</u>	<u>FY94</u>
Headcount	6	7
Budget	892K	900K

# GIS CAMPAIGN SOLUTIONS

**ADSG Program:** COHESION Software Re-engineering and Migration

**Program Description:**

Partnership between ADSG and the Application Re-engineering and Services Group (ARAM) to use ALPHA migrations as the lead to open systems and a COHESION software development environment to allow further creation and maintenance of applications that offer portability and interoperability.

**DRI:** Henry Morris/Shirley Ann Stern (ADSG)  
Tom Owen (ARAM Services)

**Program Goal:** Support GIS's new business programs by providing a repository-based application development environment during the migration and left on-site after migration -- providing immediate and future business opportunities.

**GIS Responsibilities:**

1. Announce/market ARAM Services as integral component of COHESION Solution and Alpha Migration Program (Q1-Q3).
2. Sign agreement with Software/1 (U.K.) for repository bridge for tool/repository exchange across Digital-IBM platforms (Q1).
3. Announce availability of repository bridge with related consulting services for CASE interoperability (Q3).
4. Re-engineering workbench and related services; extend Hypersoft's Application Browser to FORTRAN and C.

**Key Dependencies:**

**Sales Responsibilities:**

1. Incorporate Re-engineering (to COHESION) in Alpha Migration sales campaign (Q1-A2) with materials to be provided by ADSG and ARAM Services.

**Services Responsibilities:**

1. Reskill personnel in AMC's (Alpha/Application Migration Centers) to do pre-sales work and delivery of re-engineering and repository implementation services.

Investment:

	<u>FY93</u>	<u>FY94</u>
Headcount	5	5
Budget	870K	900K

# GIS CAMPAIGN CHANNELS

**ADSG Program:** COHESION CSO Business Partnering

**Program Description:**

Drive ADSG's and Digital's revenue growth through effective marketing and technical partnerships with leading worldwide COHESION CSOs. Expand the range of Digital platform sales driven by CSO Solutions; Alpha OSF & NT.

**DRI:** Terry Condon

- Goals:**
1. Generate revenue for VAX/VMS and RISC/ULTRIX and layered software products through CSO Solutions.
  2. Deliver new solutions for client/server software development on NT/Alpha by the end of FY93.
  3. Expand the CSO portfolio and support the integration of CSO solutions with the COHESION solutions.
  4. Insure that existing CSO Partners migrate their products to Alpha, VMS, OSF, and NT.

**GIS Responsibilities:**

1. Execute product roll-out campaigns with CSOs as they deliver new solutions on the Alpha platform (Cognos, IBI, Cortex, SmartStar, Software AG, Andersen mid FY93 on VMS Alpha).
2. Recruit 10 new CSOs with innovative software development solutions to drive sales of Digital strategic products (Alpha, OSF, NT).
3. Drive new revenue growth by creating and rolling out a new Client/Server COHESION Solution based on NT Alpha (Q4 93).
4. Manage relationships with existing CSO portfolio.

**Key Dependencies:**

**Sales Responsibilities:**

1. Assign COHESION Sales and Sales Support Specialists to new CSOs and new solution (through 93).
2. Develop and execute tactical lead generation and selling programs in the field with our CSOs (through 93).

**Services Responsibilities:**

1. Develop and execute a plan to provide Digital services as a part of CSO Solutions. Assign and train services delivery personnel.



**Engineering Responsibilities:**

1. TNSG needs to develop and begin implementing the product plan for COHESION for NT Alpha and deliver product set by Q3 93.
2. TNSG needs to develop and implement an integration plan for the COHESION program so that CSOs and Digital can create more competitive and more powerful solutions.
3. CSOs will need hardware seeds and layered software on the new Alpha platform by early FY93 to have their solutions available this fiscal year.

**Investment:**

	<u>FY93</u>	<u>FY94</u>
Headcount	6	6
Budget	850K	900K

# GIS CAMPAIGN MARKETING PROGRAMS

ADSG Program: COHESION Field Readiness/Market Awareness

DRI: Leland J. Katz

- Goals:
1. Ensure that the worldwide sales and sales support organization, services, and our CSO's understand customer needs; our strategy and solutions and the products and services which make up those solutions; the competition and competitive environment; and can both meet that need and/or create demand as required.
  2. Create a market environment in which the defined market (customers and prospects) know about, understand, are favorably disposed to buy, and ask for COHESION solutions, products, and services.

GIS Responsibilities:

1. Consultant/Analyst Relations -- Shift the existing, successful analyst relations program to a focus on key consultants in order to drive additional business through that channel while maintaining contact with key analysts in order to maintain and continue to build credibility for COHESION in the market place.
2. Customer Programs -- Drive programs focused on the COHESION solutions which leverage activity with the customer/prospect base in order to provide additional selling opportunities and which prepare the market for new initiatives by quarter.
3. Press Relations -- Use PR as a technique to leverage analyst activities, build awareness, and develop selling tools (article reprints/success stories) for the sales/sales support organization.
4. Sales/Marketing Campaign Programs -- Drive field activities on a worldwide basis that relates to the solutions and the campaigns developed to deliver those solutions and the campaigns developed to deliver those solutions to the field. Ensure demos, lead and pipeline generation activities are developed which relate to ADSG strategic direction.
5. Sales/Sales Support Communications/Training Programs -- While maintaining support for the broad COHESION technology training as a necessary foundation for sales and cross-organizational cooperation, shift activities to be more focused on the ADSG solution set. Develop training tied to the solutions as an integral part of the campaigns in order to drive business activities.

6. **Geographic Market Penetration** – Explore opportunity and drive activities necessary to open up promising new geographies in order to provide breakthrough growth business opportunities (e.g. Indian "software factory" market).

**Currently Planned**

Projects:	1. Montreal CASE Conference .....	\$ 5K
	2. CASE Expo Japan .....	44K
	3. BIS Strategic Decisions COHESION Conference .....	35K
	4. Software Magazine COHESION Advertorial .....	64K
	5. DCI Reengineering Conference .....	10K
	6. DCI CASE WORLD Conference .....	50K
	<b>TOTAL Currently Committed .....</b>	<b>\$208K</b>

**Key Dependencies:**

<u>Sales</u>	<u>Services</u>	<u>IBU's</u>
Maintain CASE Partners Program	Expand service delivery resources for existing services	Incorporate CASE strategy in messages to IS
Proceed with COHESION FMS's	Complete CASE consultancy development	Top industries drive message to sales
Invest in COHESION Merchandising Plan	Implement CASE practice	- Telecom - Healthcare - Electronics - Banking - Government - More
Improve CSO/Teaming Support	Utilize COHESION in SI delivery	Incorporate COHESION within industry practices
Sales Programs for existing and new CSO's (lead generation, demos, campaigns)	Expand service offerings (repository, assessment, etc.)	
Organize for team selling		

**Investment:**

	<u>FY93</u>	<u>FY94</u>
Headcount	6	6
Budget	908K	1000K

## ADSG - COHESION Business Summary

<u>Major Programs</u>	<u>92 People</u>	<u>92 Expense</u>	<u>93 People</u>	<u>93 Expense</u>
COHESION Solutions	12	1.8	11	1.75M
COHESION CSO Business Partnering	8	1.0	6	.85M
COHESION Marketing	9	1.6	6	.9M
	<hr/>	<hr/>	<hr/>	<hr/>
	29	\$4.4M	23	\$3.5M

IBU NOR \$ 1.2B

Software NOR \$ 200M

**Information Systems Operations  
And Planning**

**FY93 Operations Plan  
Summary**

**Version 3  
16 June 1992**



## ISOP CAMPAIGNS Program Initiatives

### I. APPLICATION ACQUISITION:

#### POLYCENTER PORTFOLIO ENRICHMENT

Provide the industry-leading solution for the management of distributed multi-vendor IT environments by attracting the world's leading management application vendors, extending the solutions to PCs, and driving our partners' support of ALPHA and the Enterprise Management Architecture.

### II. SOLUTIONS:

#### POLYCENTER SOLUTION-LEVERAGED SALES

Increase Digital's market share in IS operations through more effective "solution" selling of POLYCENTER software and services, by:

- . Exploiting the "workbench" as a one-stop large-scale management buy.
- . Driving distribution and reseller agreements with partners
- . Creating an SI practice as an alternate channel.

### III. CHANNELS:

#### SELLING TO AND THROUGH IS DEPARTMENTS

Through direct selling channels, provide account teams with the knowledge, skills, tools, and information necessary to successfully sell, deliver, and support GIS solutions for CIO's and IS Executives.

### IV. MARKETING PROGRAMS:

#### IS EXECUTIVE SOLUTIONS:

IS Executive solutions are an integrated set of marketing seminars, executive education seminars and planning services targeted at the strategic needs of CIO's and IS Executives. The IS Executive solutions are revenue generating Executive Education and Consulting Services.

#### CIO MINDSHARE:

CIO Mindshare focuses on communicating Digital's messages to CIO's through a variety of vehicles such as, using IM&T Management as Partners of IS Executives (POISE Program), articles in CIO magazine, IS Society newsletters, press relations, industry analysts, direct-mail, and IS Society alliances on seminars, and research. 2



**ISOP SUMMARY  
CAMPAIGN/PROGRAM SUMMARY**

<u>CAMPAIGN/Program</u>	<u>HEADCOUNT</u>			<u>BUDGET (\$K)</u>		
	<u>FY92</u>	<u>FY93</u>	<u>FY94</u>	<u>FY92</u>	<u>FY93</u>	<u>FY94</u>
<u>APPLICATION ACQUISITION</u>						
Polycenter Portfolio Enrichment		5	5	\$560	\$668	
<u>SOLUTIONS</u>						
Polycenter Solution-leveraged Sales		7	7	\$841	\$1,002	
<u>CHANNELS</u>						
Selling To & Through IS Departments		5	5	\$650	\$711	
<u>MARKETING PROGRAMS</u>						
IS Executive Solutions		10	11	\$1,549	\$1,803	
CIO Mindshare 2000		3	3	\$1,129	\$1,266	
subtotal		13	14	\$2,678	\$3,069	
<b>TOTAL CAMPAIGNS</b>	39	30	31	\$5,600	\$4,729	\$5,450
<b>ADMIN SERVICES</b>				\$800	\$411	\$424
<b>GRAND TOTAL</b>	39	30	31	\$6,400	\$5,140	\$5,874
<b>R (\$M)</b>				\$74	\$82	\$92

## ISOP CAMPAIGN Application Acquisition

**Program:** POLYCENTER Portfolio Enrichment

**Responsible  
Party:** TBD

**Program  
Goal:** Provide the industry-leading solutions for the management of distributed multi-vendor IT environments.

### GIS

**Responsibility:**

- . Recruit and sign two of the world's leading (IBM-based) suppliers (targets: Legent - Q2; Candle - Q4).
- . Begin to extend POLYCENTER to incorporate PC platforms through appropriate leading partner applications: Teknosys/HELP! (Q3), another TBD (Q4).
- . Incorporate UNIX management applications released by Engineering into POLYCENTER promotion and the "workbench" (ongoing).
- . Manage/leverage existing CSO relationships to ensure:
  - Enterprise Management Architecture migration (Common Agent) field tests (Q2).
- . Work with TNSG/NAS Systems Management (NSM) to ensure:
  - Aggressive delivery of EMA framework by NSM.
  - Integrated business/development strategy between NSM and ISOP.
  - NSM solution to agent software for IBM VMS (SystemView).

### Sales

**Responsibility:** Account management of existing and targeted partners.

**Program  
Investment:**

FY92

FY93

FY94

Headcount

5

5

Budget (\$K)

\$560

\$668

**Program  
Return:**

NOR (\$M)

\$17,625

\$18,125

\$22,500

## ISOP CAMPAIGN Solutions

**Program:** POLYCENTER Solution-leveraged Sales

**Responsible Party:** TBD

### Program

**Goal:** Increase Digital's market share in IS Operations through more effective ("solution") selling POLYCENTER software and services.

### GIS

**Responsibility:**

- . Announce/release the POLYCENTER "workbench" as a complete tailored, integrated solution (products and services) for medium/large-scale environments requiring consistent centralized management (Q1).
- . Manage/leverage existing partner relationships to ensure:
  - Joint impact through ISOP "Mindshare" and "Selling" programs.
  - Revenue contribution through distribution agreements.
- . Support creation of a POLYCENTER SI practice, based on the "workbench" integration software (Q3).
- . Provide POLYCENTER content, direction, and support to ISOP "Mindshare" and "Selling" programs, targeting Digital's customer base (ongoing).

### Sales

**Responsibility:**

- . U. S. Field Marketing continues to drive POLYCENTER seminars and direct-marketing campaigns as planned.
- . Establish appropriate support infrastructures in geographies (e.g., proposed POLYCENTER Partners Program in U.S. Sales Support) by Q2.

### Service

**Responsibility:** Identify a complementary focus within Digital Services/SI by Q1.

### IBU

**Responsibility:** Integrate IS Operations requirements/solutions into sales training activities and appropriate customer events.

**Program  
Investment:**

FY92

FY93

FY94

Headcount

7

7

Budget (\$K)

\$841

\$1002

**Program  
Return:**

NOR \$M)

\$52,875

\$54,375

\$57,500

## ISOP CAMPAIGN Channels

**Program:** Selling To and Through IS Departments

**Program Description:** Account Team readiness to sell GIS products and services.

**Responsible Party:** TBD

**Program Goal:** Account teams are successful in selling, delivering, and supporting GIS solutions for CIO's and IS managers

**GIS Responsibility:**

- . Execute the Strategic Needs Analysis Program (SNAP) rollout to account teams. A PC notebook, consultative selling tool for IS customer Strategic Needs Assessment and GIS mapping.
- . Provide IS sales training support to all GIS sales training events.
- . Support selected industry, geography, and SI training events to maintain the focus on POLYCENTER and IS Executive Solutions.
- . Provide account engineering support for the POLYCENTER products in major accounts.
- . Provide global electronic information access to ISOP product and services information and customer presentations.
- . Use CIO/CLF's to train account managers and close ISOP business with IS customers.
- . Manage the Potomac Consulting Group (SNAP developers partnership agreement).

**Sales Responsibility:** Sales needs to goal account teams to become strategic planning partners with CIO's and measure them on their ability to participate in helping to set computing strategy at that level in current and new accounts. For ISOP to succeed, sales commits to sell the ISOP products and services as a means to leverage system sales..



**Service**

**Responsibility:** For ISOP to successfully meet its business and revenue goals in FY93, we need:

- . A GIS Executive Education and Consulting practice in Digital Management Consulting Services with business goals aligned to ISOP goals.
- . Dedicated global education and consulting resources of approximately 24 consultants starting in Q1 FY93, trained to provide both sales support and delivery for ISOP's executive offerings.

**Program**

**Investment:**

	<u>FY92</u>	<u>FY93</u>	<u>FY94</u>
Headcount		5	5
Budget (\$K)		\$650	\$711

**Program**

**Return:**

NOR \$M)	0	0	0
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## ISOP CAMPAIGN Marketing Programs

**Program:** IS Executive Solutions

**Program Description:** Provide CIO's and IS Managers with executive-level education, and strategic planning services that address their key issues and lead to GIS solutions.

**Responsible Party:** TBD

**Program Goal:**

- . With the high turnover rate of CIO's in large accounts, it is imperative that Digital provide IS Executive Education and Planning services to maintain account control and Digital presence in current installations, and to pre-dispose current and new customers to choose Digital in future decisions.
- . As CIO's become more involved in cross-departmental systems integration, business re-engineering, and client/server programs, IS Education and Planning Services helps them understand how partnering with Digital can provide them with solutions that address their key issues. This knowledge and expertise leads them to choose Digital for their systems integration and global IS business solutions.

**GIS Responsibility:** Program management responsibility for:

- . Achieving Strategic Alignment and Partnerships (ASAP)
- . Digital's Architecture Response Team (DART)
  
- . IS Executive Institute Management
- . GIS Course Development
  - Downsizing the Mainframe (Client/Server)
  - Benchmarking

· <b><u>Institute Course Deliveries</u></b>	
- Achieving Strategic Alignment and Partnership	4
- From Chaos to Architecture	15
- Business Architecture	11
- Architecture to Solution	5
- Managing Technology Change	4
· <b>CIO Planning Services</b>	
- ASAP Consulting Engagements	25
- DART Consulting Engagements	65
- Consultant Training Sessions	12
- Sales Training Events	12
· <b>Program Support Documentation</b>	
- Consultant Delivery Kits	
- Customer Notebooks	
- Sales Kits	
- Customer Information Sheets	
- Account Training Materials	

## Sales

**Responsibility:** · ISOP requires a geography support infrastructure to successfully rollout out programs globally. This infrastructure must support the sales, administration, delivery, and revenue tracking and reporting process of ISOP's education and consulting offerings.

## Services

**Responsibility:** · Digital Consulting Services (Pat Zilvitis) commitment to support ISOP's externally developed methods and tools and partnership agreements, by Q4 FY92.

· Executive Education (Dave Berry), continues to support the planning, promotion, and delivery of IS Executive Institute offerings.

· Digital Consulting Services (Pat Zilvitis) commitment to deliver (90) IS Executive Planning Engagements in FY93.

**IBU**

**Responsibility:** Four (4) selected IBU's:

- . Aerospace/Electronics/Transportation
- . Petrochemical
- . Utilities and Telecommunications
- . Finance

Each assign one marketing person to work with ISOP to integrate our CIO offerings into their industry marketing strategy and each dictate, train, and goal twelve (12) industry sales teams to include our CIO offerings into selected account plans.

**Program  
Investment:**

	<u>FY92</u>	<u>FY93</u>	<u>FY94</u>
Headcount	-	10	11
Budget (\$K)	-	\$1549	\$1803

**Program  
Return:**

NOR (\$M)	3	9	12
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## ISOP CAMPAIGN Marketing Programs

**Program:** CIO Mindshare 2000

**Program Description:** Capture the mindshare of CIO's for Digital as a leading supplier of global IS solutions.

**Responsible Party:** TBD

**Program Goal:** Capture the attention and mindshare of CIO's and IS Managers on the breadth and depth of the ISOP solutions.

### GIS

**Responsibility:**

- . Create market pull through CIO/CLF's, Executive Seminars, PR, Industry Analysts, Direct Mail, and Advertising.
- . Continuation of Dan Infante's IM& T Global support of Partners of IS Executive (POISE Program). Work with POISE Program manager to assign top two levels of IM&T management to work as executive partners to IS managers in all accounts that currently have assigned corporate business executive partners.
- . Support Digital's Solutions Integration (SI) marketing strategies.
- . Help position Digital as an industry leader in business process re-engineering and client/server technology.
- . Form alliances with IS Societies, such as SIM, POSSP, and AF-COM.
- . Ensure that Corporate Communications includes the CIO Marketing Group in the corporate-wide product and services communications campaigns communicating in a clear, concise, and consistent message to CIOs beginning in Q1 FY93 (e.g., communicate our messages in CIO magazine).

**Program  
Investment:**

FY92

FY93

FY94

Headcount

3

3

Budget (\$K)

\$1129

\$1266

**Program  
Return:**

NOR

0

0

0



## PROGRAM SUMMARY - DOWNSIZING/REENGINEERING

<b>Initiative</b>	<b>GIS</b>	<b>U.S.</b>	<b>EUROPE</b>	<b>GIA</b>
<b>DECsolutions for Unisys</b>	<ul style="list-style-type: none"> <li>- Distribute qualified Unisys leads</li> <li>- Provide tools for interoperability and migration</li> <li>- Provide "expertise" to assist targeted prospects</li> <li>- Distribute "sales kit" to allow average rep to sell</li> </ul>	<ul style="list-style-type: none"> <li>- Continue 2 teams (East Coast, West Coast) to drive prospects to close</li> <li>- At CSC provide center of expertise and tools distribution</li> <li>- Assign responsibility for \$40 million to co-own results</li> </ul>	<ul style="list-style-type: none"> <li>- Drive program into countries at targeted sites</li> <li>- Provide 1 additional "technical resource"</li> <li>- Agree to \$25 million of revenue (5-10 accounts for FY93)</li> </ul>	<ul style="list-style-type: none"> <li>- Put a competitive SWAT team in place, including 2 Unisys experts</li> <li>- Agree to \$15 million in revenue (5-10 accounts) for FY93</li> </ul>
<b>Downsizing</b>	<ul style="list-style-type: none"> <li>- Lead corporate campaign with demand creation programs, 7 CLFs, executive breakfasts</li> <li>- Drive the joint sponsorship of "Downsizing International" conference in S.F.</li> <li>- Provide 3 solutions to downsizing</li> <li>- Drive program with industry IBUs</li> </ul>	<ul style="list-style-type: none"> <li>- Formation of 9 (mission critical) teams, 10 people each, 90-100 total Q1 FY93</li> <li>- Double PSRC resources from 40 to 80 to increase pipelines Q1 FY93</li> <li>- Need access to pipeline to focus joint efforts</li> </ul>	<ul style="list-style-type: none"> <li>- Expand U.K. mission critical teams to 4 major countries or industry segments</li> <li>- Take French model of support of TP/DB to other countries</li> <li>- Focus communications on 2-3 themes, including downsizing</li> </ul>	<ul style="list-style-type: none"> <li>- Deliver program in place - Mexico, Canada, Japan</li> <li>- Provide 1st-line support</li> <li>- Creation of "downsizing" program</li> </ul>

**PROGRAM SUMMARY - DOWNSIZING/REENGINEERING**  
**(Cont.)**

<b>Initiative</b>	<b>GIS</b>	<b>U.S.</b>	<b>EUROPE</b>	<b>GIA</b>
<b>DECsolutions for IBM</b>	<ul style="list-style-type: none"> <li>- Lead corporate program targeting MVS and DOS VSE</li> <li>- Provide expertise for selling and installation back-up</li> <li>- Provide CICS on VAX</li> <li>- Provide a Unix strategy for "downsizing"</li> </ul>	<ul style="list-style-type: none"> <li>- Formation of mission-critical teams (above)</li> <li>- Co-own plan of \$20Million in revenue from IBM sites</li> <li>- Pipeline identification to drive an "off-base program"</li> </ul>	<ul style="list-style-type: none"> <li>- Expand competitive team with "IBM experts"</li> <li>- Co-own plan for \$15Million of revenue from IBM sites</li> <li>- Help identify targeted pipeline accounts for resource allocation</li> </ul>	<ul style="list-style-type: none"> <li>- Co-own goal for downsizing program of \$10 million for FY93</li> </ul>

**PROGRAM SUMMARY - DOWNSIZING/REENGINEERING**  
**(cont.)**

<b>Initiative</b>	<b>IBUs</b>	<b>SERVICES</b>
<b>DECsolutions for Unisys</b>	<ul style="list-style-type: none"><li>- Federal government to create a team to follow up qualified prospects</li><li>- State and local government continue team through FY94</li></ul>	<ul style="list-style-type: none"><li>- Continue FY92 CSC focus on Unisys programs</li></ul>
<b>Downsizing</b>	<ul style="list-style-type: none"><li>- Make downsizing a "theme" in market programs</li><li>- Train with GIS resources sales and support</li><li>- Target 1-2 new applications for client/server architecture</li></ul>	<ul style="list-style-type: none"><li>- Create an SI practice focused on information systems</li><li>- Integrate 3-4 platforms with GIS-IBU</li><li>- Put 2 people on high-performance sales teams</li></ul>

**PROGRAM SUMMARY - DOWNSIZING/REENGINEERING**  
**(Cont.)**

<b>Initiative</b>	<b>IBUs</b>	<b>SERVICES</b>
<b>DECsolutions for IBM</b>	<ul style="list-style-type: none"><li>- Selected industry applications for rehosting/downsizing (i.e., SAS)</li><li>- Drive industry content into downsizing program</li></ul>	<ul style="list-style-type: none"><li>- Focus resources on 4-5 target industries</li><li>- Target 2-3 industries for outside SI (Andersen, Insurance)</li></ul>

GROWTH THROUGH CUSTOM SOLUTIONS (Segment #3)

SUB-PROGRAM #1  
DECSOLUTIONS FOR UNISYS CUSTOMERS

*Responsible Party*  
Walter Manter

*Program Goal*  
This program is focused on new account (off-base) business through the identification and migration of customer workloads from outdated Unisys 1100/2200 systems.

*Program Details*

- Continuation of successful FY92 program - \$40M revenue
- Over 100 identified target prospects.
- Utilization of 3rd party consulting resources to ease field selling.
- Double the FY92 revenue (\$80M).

*Dependencies*  
Joint ownership with the geography for business plan.

*Timing*  
Program available now.

	<u>FY92</u>	<u>FY93</u>	<u>FY94</u>
Investments	\$1.4M	\$2.07M	\$2.0M
Revenue	\$40M	\$80M	\$80M

<u>FY93 Investment breakdown</u>	<u>Total</u>
Sales support	\$.63
Demand creation	.61
3rd party recruitment	.50
Sales communications	<u>.33</u>
Total	\$2.07M



CUSTOM SI SOLUTIONS  
SUB-PROGRAM #2  
DECSOLUTIONS FOR IBM CUSTOMERS

*Responsible Party*

Walter Manter  
Rodger Wilcox

*Program Goal*

This program targets new accounts (off-base) through identification and migration of customer application workloads from IBM 30XX/ES90XX systems.

*Program Details*

- Integration of entire Company into a Corporate program targeted at re-hosting IBM customers.
- 3rd party CSO vendors with solutions for DEC/IBM, SAS, Millenium (D&B), Masterpiece (CA), etc.
- Identification of key IBM consultants and 3rd parties for help in selling and installing.
- Obtain CICS for VAX/OSF to allow customers to preserve larger investments.
- Key tools for interoperability and migration.
- FOCUS, FOCUS, FOCUS
- \$42M of FY93 business forecasted for first year start-up.

*Dependencies*

Joint ownership with the geography.



CUSTOM SI SOLUTIONS  
 SUB-PROGRAM #2 (Con't)  
DECSOLUTIONS FOR IBM CUSTOMERS

*Timing*  
 Q2 FY93

	<u>FY92</u>	<u>FY93</u>	<u>FY94</u>
Investments		\$3.2M	\$3.8M
Revenue	\$5M	\$42M	\$80M

FY93 Investment breakdown	<u>Total</u>
Sales support	\$.68
Demand creation	.90
3rd party recruitment	.67
Sales communications	<u>.96</u>
Total	\$3.21M

## GROWTH THROUGH CUSTOM SOLUTIONS (SEGMENT #3)

### SUB-PROGRAM #3 DOWNSIZING PROGRAM

*Responsible Party*  
Bill Askins

*Program Goal*

To simplify selling to solve customer's business problems as they downsize, off-load or re-engineer. This program will provide integrated solutions, selling methodologies and support resources for these new off-base customers, and will enable DEC to gain critical marketshare in this service led (SI) business.

*Program Details*

- Integration of all DEC parties into a single, focused, hard-hitting program which includes product marketing, services, IBUs and field marketing.
- Demand creation;
  - ~ CLFs, Executive Series, Consultants & Analysts
- 3rd party solutions and expertise;
  - ~ Develop industry leaders to push DEC client/server networked based solutions.
- DEC solutions for network management, PC connectivity and data center.
- Partners in planning to help large accounts identify new opportunities.
- Joint sponsorship of CIO downsizing expo with major presence in booth, speakers and key prospect attendees.

## GROWTH THROUGH CUSTOM SOLUTIONS (SEGMENT #3)

### SUB-PROGRAM #3 (Con't) DOWNSIZING PROGRAM

#### *Dependencies*

- Partnering/training the field to participate in the window of opportunity.
- Characterization of solutions to make selling simple.
- Lack of IBM expertise and knowledge.
- Integrating all the parts of the Company to project a single strong image.

#### *Timing*

August FY93

	<u>FY92</u>	<u>FY93</u>	<u>FY94</u>
Investments	0	\$2.7M	
Revenue		\$28M	
FY93 Investment breakdown		<u>Total</u>	
Sales support		\$ .48	
Demand creation		1.04	
DECsolutions		.79	
Partners in Planning		<u>.35</u>	
Total		\$2.66M	



GIS DOWNSIZING  
INVESTMENT ANALYSIS

(\$=MILLIONS)

	<u>Sub- Prog. 1</u> Unisys	<u>Sub- Prog. 2</u> IBM	<u>Sub- Prog. 3</u> Downsizing	<u>Total</u>
Sales Support	\$ .63	\$ .68	\$ .48	\$1.79
Demand Creation	.61	.90	1.04	2.55
3rd Party Recruitment	.50	.67		1.17
Sales Communication	.33	.96		1.29
DECsolutions			.79	.79
Partners in Planning	_____	_____	<u>.35</u>	<u>.35</u>
Totals	\$2.07	\$3.21	\$2.66	\$7.94
 Incremental Revenue	 \$50M	 \$42M	 \$28M	 \$120M

GIS MARKETING REENGINEERING

FY93 BUDGET

<u>Spend Type</u>	<u>Sub- Prog. 1</u>	<u>Sub- Prog. 2</u>	<u>Sub- Prog. 3</u>	<u>Total Programs</u>
Pop	\$1.23	\$1.47	\$1.88	\$ 4.58
Non-pop	.84	1.74	.78	3.36
<u>Total</u>	\$2.07	\$3.21	\$2.66	\$ 7.94
Incremental Revenue	\$50M	\$42M	\$28M	\$120M
True Population	10.5	12.5	16	39
Capital				\$ .3M

Sub-Program #1 - DEC solutions for Unisys Customers  
 Sub-Program #2 - DEC solutions for IBM Customers  
 Sub-Program #3 - Reengineering/Downsizing Program

## GIS Marketing Reengineering Budget

### Proposed Nonpopulation Spending Detail:

(\$ = Millions)

	<u>Item</u>	<u>Owner</u>	<u>Uni</u>	<u>Program</u>			<u>Total</u>
				<u>IBM</u>	<u>DS</u>	<u>CIQ</u>	
			<u>P1</u>	<u>P2</u>	<u>P3</u>	<u>P4</u>	
7000	<b>Events</b>						
	Pinehurst Events	Wilcox	.07	.08	.08	.07	.3
	Local Cab	Wilcox	.04	.04	.04	.03	.15
	TP Customer Prog.	Grenham				.1	.1
	Customer Programs	Young	.02	.04			.06
7001	<b>Trade Shows (Dallas Act.)</b>	Manter		.05			.05
7011	<b>Exec Briefing Series</b>	Askins			.2		.2
7012	<b>CLFs</b>	Askins		.1	.1		.2
	CLFs	Wilcox	.07	.08	.08	.07	.3
7021	<b>Prod. Sol. (Incl. StarTek)</b>	Askins			.21		.21
7022	<b>Service Solutions</b>	Askins			.06		.06
7023	<b>Third Party: SAS</b>	Wilcox		.12			.12
	Migration SVS	Manter	.05				.05
	Black & Assoc.	Manter	.04				.04
	Misc. Tools	Manter	.11	.14			.25
	VI Systems	Manter		.1			.1
	TP Ord. Proc.	Grenham				.13	.13
7030	<b>Consultants: PSSM</b>	Wilcox	.05	.25	.15		.45
	Rightsizing	Wilcox			.05		.05
	Field Support	Manter	.3	.16			.46
7040	<b>Training: Events</b>	Wilcox	.01	.01	.01	.01	.04
	Ind. Marketing	Askins	.1	.1	.1		.3
	General	Manter	.1	.14			.24
	Gen/Mkt. Dev.	Grenham				.13	.13
	SI/Audio Cas.	Klinkow		.11			.11
7051	<b>Literature</b>						
	Brochures/Mailings	Manter		.04			.04
7052	<b>Advertisements</b>						
	Production/Media	Young	.18	.35			.53
7053	<b>Public Relations</b>	Young	.16	.12		.28	.56
	Eur Tgt City	Manter	.2				.2
7054	<b>Sales Comm:</b>						
	Sales Kit/Audio	Young	.06	.09			.15
	Telemarketing	Manter		.38			.38
7055	<b>Other - Anal. Rel.</b>	Young	.02	.03		.04	.09
<b>Total</b>			<b>\$1.48</b>	<b>\$2.53</b>	<b>\$1.08</b>	<b>\$ .86</b>	<b>\$5.95</b>



**GIS Marketing Engineering Budget**

Item (\$=Millions)		Competitive Programs		Customized Programs		
<u>Population Spending</u>	<u>Project #</u>	<u>DECsolutions for Unisys Cust.</u>	<u>DECsolutions for IBM cust.</u>	<u>Downsizing</u>	<u>CIO Mktg.</u>	<u>Total</u>
DECsols. -Unisys	6001	\$ .77	\$	\$	\$	\$ .77
DECsols. -IBM	6002		.77			.77
Downsizing	6003			\$1.53		1.53
CIO Marketing	6004				.48	.48
Cross-Functional	6005	.35	.35	.35	.35	1.40
<b>Subtotal</b>		<b>\$1.12</b>	<b>\$1.12</b>	<b>\$1.88</b>	<b>\$ .82</b>	<b>\$ 4.95</b>
	<b>People</b>	<b>9.5</b>	<b>9.5</b>	<b>16</b>	<b>7</b>	<b>42</b>
<b><u>Nonpopulation Spending</u></b>						
Events	7000	\$ .13	\$ .16	\$ .12	\$ .2	\$ .61
Trade Shows	7001		.05			.05
Exec Programs	7010					
Exec Briefing	7011			.2		.2
CLF	7012	.07	.18	.18	.07	.5
Solutions	7020					
Product	7021			.21		.21
Service	7022			.06		.06
3rd Party	7023	.2	.36		.13	.69
Consultants	7030	.35	.41	.2		.96
Training	7040	.21	.36	.11	.14	.82
Marcom	7050					
Literature	7051		.04			.04
Advertisement	7052	.18	.35			.53
Public Relations	7053	.36	.12		.28	.76
Sales Comms	7054	.06	.47			.53
Other	7055	.02	.03		.04	.09
<b>Subtotal</b>		<b>\$1.58</b>	<b>\$2.53</b>	<b>\$1.08</b>	<b>\$ .86</b>	<b>\$ 6.05</b>
<b>Total</b>		<b>\$2.70</b>	<b>\$3.65</b>	<b>\$2.96</b>	<b>\$1.68</b>	<b>\$11.00</b>

**REVENUE PLAN**

<u>INITIATIVE</u>	Customer Base		FY93				<u>TOTAL</u>	<u>ASV</u>
			<u>Q1</u>	<u>Q2</u>	<u>Q3</u>	<u>Q4</u>		
DELIVER MARKET DRIVEN OFF-BASE BUSINESS	IBM	CERTS	3	4	9	13	29	
		Revenue	\$ 4.3M	\$ 5.8M	\$13.1M	\$18.8M	\$ 42.0M	\$1.4M
<u>CUSTOMER FOCUS MKTG</u> - OFF-BASE LEAD GENERATION	UNISYS	CERTS	6	8	11	13	38	
		Revenue	\$12.7M	\$16.9M	\$23.0M	\$27.4M	\$ 80.0M	\$2.1M
<u>INTEGRATED MKTG PROGRAMS</u>	OTHER	CERTS	4	7	10	12	33	
		Revenue	\$ 3.5M	\$ 6.0M	\$ 8.5M	\$10.0M	\$ 28.0M	\$ .8M
		TOTALS	\$20.5M	\$28.8M	\$44.6M	\$56.2M	\$150.0M	\$1.5M

**GIS MARKETING ACTIVITIES**

**\$M**

**1. DEMAND CREATION**

- **Executive Briefing Series**      Focus:      \$ .48  
 Audience: CIOs, Peers, Direct Reports  
 Target: 35 U.S. Cities      - Downsizing  
          105 Sessions      - Rightsizing  
          6000 Senior Level Executives      - Partnership
  
- **Customer Leaders Forum**      Focus:      \$ .7  
 Audience: CFOs, CIOs, Peers  
 Target: Worldwide/Industries      - Re-engineering I.S.  
          8 Events      - Open Systems  
          600 Senior Level Executives
  
- **Customer Advisory Boards**      Focus:      \$ .36  
 Audience: CIOs, I.S. Ops Managers  
 Target: U.S., Europe, GIA      - 6 Sigma
  
- **Trade Shows (Downsizing Expo)**      Focus:      \$ .24  
 Audience: I.S. Management  
 Target: U.S.      - Open Advantage  
          800 Conference Attendees      - TP Demo  
          10,000 Expo Attendees
  
- **Dallas A.C.T.**      Focus:      \$ .12  
 Audience: I.S. Executives      - IBM Interoperability  
 Target: U.S.      - Benchmarking

**GEOGRAPHY DEPENDENCIES**

- **Deliver right level of customers for each demand creation activity**
  
- **Participate with customer in each event**
  
- **Follow up on all leads and feedback specific customer requirements**

GIS ENGINEERING INITIATIVES

DIGITAL EQUIPMENT CORPORATION

June 29, 1992

# GLOBAL INFORMATION SYSTEMS

## "Simple To Buy and Sell" Initiatives

	<u>ACTIVITY</u>	<u>TIMING</u>
<b>PLATFORMS</b>	<b>Modular Computing</b>	<b>5 Platforms FY92 5 Platforms FY93 2 Platforms FY94</b>
<b>OPERATING SYSTEMS</b>	<b>Correct Positioning OpenVMS/OSF</b>	<b>NOW</b>
<b>LAYERED PRODUCTS</b>	<b>Change Release Process to Batch Release</b>	<b>FY93</b>
<b>APPLICATIONS</b>	<b>Identify Volume Application For Full Characterization and Mktg.</b>	<b>FY92 - Started FY93 - Accelerated</b>
<b>BUSINESS PRODUCTS</b>	<b>User Based Licensing Layered Products OpenVMS</b>	<b>Now FY93</b>
	<b>Single Line Ordering For Complex Platforms</b>	
	<b>- Layered Products</b>	<b>Now</b>
	<b>- Advantage - Servers</b>	<b>July FY93</b>
	<b>- ACCESSWORKS</b>	<b>Now</b>

FINANCIAL SUMMARY

DIGITAL EQUIPMENT CORPORATION

June 29, 1992

# Commitment to Growth and Profitability

## Action Plans

**Manager:** Frank McCabe- Global Information Systems

	<u>FY93</u>								<u>FY93</u> <u>Commitment</u> \$M	<u>FY94</u>		<u>FY94</u> <u>Commitment</u>
	<u>Q1</u>		<u>Q2</u>		<u>Q3</u>		<u>Q4</u>			<u>Total Year</u>		
	\$	H/C	\$	H/C	\$	H/C	\$	H/C		\$	H/C	
<b>Action:</b>												
Engineering	22	415	11	--	12	25	15	25	60	41	184	41
Marketing	2	43*	3	7	4	7	5	7	14	10	33	10
<b>Total</b>	26	458	14	7	16	32	20	32	\$74	51	217	\$51

\*21 in Q4



# Commitment to Growth and Profitability

## Action Plans

**Manager:** Frank McCabe- Global Information Systems Marketing

	<u>FY93</u>								<u>FY93</u>	<u>FY94</u>		<u>FY94</u>
	<u>Q1</u>		<u>Q2</u>		<u>Q3</u>		<u>Q4</u>		<u>Commitment</u>	<u>Total Year</u>		<u>Commitment</u>
	\$	H/C	\$	H/C	\$	H/C	\$	H/C	\$M	\$	H/C	\$M
Eliminate Redundancy between Product Marketing and Product Management	.2	2	.4	2	.7	2	.7	—	2.0	—	—	
Consolidate Field Programs and Communications into single GIS Organization	.5	5	.7	4	.8	2	1.0	—	3.0	—	—	
Simplify literature and other marketing communications	1.0	8	1.0	8	1.0	3	2.0	4	5.0	—	—	
Establish single channels focus and streamline administration functions	.2	2	.2	1	.3	1	.3	—	1.0	—	—	
Form single unified Global Information Systems marketing function	.5	5	.7	3	.8	2	1.0	—	3.0	10	33	
<b>Total</b>	2.4	43*	3.0	7	3.6	7	5.0	7	<b>\$14.0</b>	10	33	<b>\$10.0</b>

\*21 in Q4

# Commitment to Growth and Profitability

## Action Plans

Manager: Mike Thurk - NAC Engineering, Bill Demmer - VSS Engineering

	FY93								FY93 <u>Commitment</u> \$M	FY94		FY94 <u>Commitment</u> \$M
	Q1		Q2		Q3		Q4			<u>Total Year</u>		
	\$	H/C	\$	H/C	\$	H/C	\$	H/C		\$	H/C	
<b>AC:</b>												
<b>Actions:</b>												
Downsizing	7	110							7			
People transfers	2	30							2			
Reduce discretionary spending					1	1			2			
<b>Sub-Total NAC</b>	<b>9</b>	<b>140</b>			<b>1</b>	<b>1</b>			<b>11</b>			
<b>SS:</b>												
10% downsizing	4	140	5		5		6		20			
Product Strategy (Eliminate Fault Tolerant, Nitro and others to be identified.)	8	155	5		5		6		24			
Organization Restructure	1	30	1		1		1		4			
Attrition						25	1	25	1			
<b>Sub-Total VSS</b>	<b>13</b>	<b>275</b>	<b>11</b>		<b>11</b>	<b>25</b>	<b>14</b>	<b>25</b>	<b>\$49</b>	<b>41</b>	<b>184</b>	<b>\$41</b>

**GLOBAL INFORMATION SYSTEMS**  
**GIS SUMMARY**  
**TRADITIONAL PRODUCT P&L**  
**\$M**

	FY92		FY93 Base Plan		FY93 Compel SG&A		Competitive VAR	FY93 Business Unit Compel SG&A		FY94 Business Unit Unconstrained	
	\$	%	\$	%	\$	%		\$	%	\$	%
<b>UNITS</b>	49,392		#VALUE!		51,116		0	58,262		#VALUE!	
<b>NOR (\$M)</b>	\$4,209		\$3,713		\$3,713			\$4,063		\$5,081	
<b>Product Cost</b>	960	23%	950	26%	950	26%		1,022	25%	1,153	23%
<b>Other COGS</b>	1,029	24%	707	19%	707	19%		607	15%	920	18%
<b>Gross Margin</b>	2,220	53%	2,057	55%	2,057	55%		2,435	60%	3,008	59%
<b>Engineering</b>	904	21%	779	21%	779	21%		781	19%	569	11%
<b>SG&amp;A</b>	2,230	53%	1,698	46%	1,262	34%	\$436	1,375	34%	1,810	36%
<b>OPERATING PROFIT</b>	(\$914)	-22%	(\$420)	-11%	\$16	0%		\$279	7%	\$630	12%
<b>%NOR</b>											

**GLOBAL INFORMATION SYSTEMS**  
**HIGH END BUSINESS UNIT**  
**TRADITIONAL PRODUCT P&L**  
**\$M**

	FY92		FY93 Base Plan		FY93 Compel SG&A		Competitive VAR	FY93 Business Unit Compel SG&A		FY94 Business Unit Unconstrained	
	\$	%	\$	%	\$	%		\$	%	\$	%
<b>UNITS</b>	93		231		231			250		295	
<b>VAR (\$M)</b>	\$143		\$169		\$169			\$184		\$170	
<b>Product Cost</b>	50	35%	82	49%	82	49%		77	42%	71	42%
<b>Other COGS</b>	180	126%	24	14%	24	14%		24	13%	25	15%
<b>Gross Margin</b>	(87)	-61%	63	37%	63	37%		83	45%	74	44%
<b>Engineering</b>	56	39%	11	7%	11	7%		11	6%	6	4%
<b>SG&amp;A</b>	84	59%	78	46%	57	34%	\$21	63	34%	58	34%
<b>OPERATING PROFIT</b>	(\$227)	-158%	(\$26)	-15%	(\$5)	-3%		\$9	5%	\$10	6%
<b>%NOR</b>											

**GLOBAL INFORMATION SYSTEMS**  
**MIDRANGE BUSINESS UNIT**  
**TRADITIONAL PRODUCT P&L**  
**\$M**

	FY92		FY93 Base Plan		FY93 Compel SG&A		Competitive VAR	FY93 Business Unit Compel SG&A		FY94 Business Unit Unconstrained	
	\$	%	\$	%	\$	%		\$	%	\$	%
<b>UNITS</b>	4,826		3,149		3,149			3,339		2,052	
<b>NOR (\$M)</b>	\$1,239		\$829		\$829			\$879		\$585	
Product Cost	223	18%	195	24%	195	24%		207	24%	129	22%
Other COGS	305	25%	78	9%	78	9%		78	9%	53	9%
Gross Margin	711	57%	556	67%	556	67%		594	68%	403	69%
Engineering	215	17%	104	13%	104	13%		104	12%	0	0%
SG&A	686	55%	370	45%	282	34%	\$88	299	34%	199	34%
<b>OPERATING PROFIT</b>	<b>(\$190)</b>	<b>-15%</b>	<b>\$82</b>	<b>10%</b>	<b>\$170</b>	<b>21%</b>		<b>\$191</b>	<b>22%</b>	<b>\$204</b>	<b>35%</b>
<b>%NOR</b>											



**GLOBAL INFORMATION SYSTEMS  
ENTRY SYSTEMS BUSINESS UNIT  
TRADITIONAL PRODUCT P&L  
\$M**

	FY92		FY93 Base Plan		FY93 Compel SG&A		Competitive VAR	FY93 Business Unit Compe SG&A		FY94 Business Unit Unconstrained	
	\$	%	\$	%	\$	%		\$	%	\$	%
<b>UNITS</b>											
	35.873		38.382		38.382			41.926		33.600	
<b>NOR (\$M)</b>	\$1.600		\$1.189		\$1.189			\$1.299		\$923	
<b>Product Cost</b>	381	24%	258	22%	258	22%		282	22%	212	23%
<b>Other COGS</b>	170	11%	111	9%	111	9%		111	9%	92	10%
<b>Gross Margin</b>	1,049	66%	820	69%	820	69%		906	70%	619	67%
<b>Engineering</b>	180	11%	46	4%	46	4%		46	4%	0	0%
<b>SG&amp;A</b>	846	53%	523	44%	404	34%	\$119	442	34%	314	34%
<b>OPERATING PROFIT</b>	\$23	1%	\$251	21%	\$370	31%		\$418	32%	\$305	33%
<b>%NOR</b>											

**GLOBAL INFORMATION SYSTEMS**  
**ALPHA SUMMARY**  
**TRADITIONAL PRODUCT P&L**  
**\$M**

	FY92		FY93 Base Plan		FY93 Compel SG&A		Competitive VAR	FY93 Business Unit Compel SG&A		FY94 Business Unit Unconstrained	
	\$	%	\$	%	\$	%		\$	%	\$	%
<b>UNITS</b>	8,485		8,962		8,962			12,181		54,790	
<b>NOR (\$M)</b>	\$0		\$376		\$376			\$511		\$2,145	
<b>Product Cost</b>	0	0%	118	31%	118	31%		160	31%	429	20%
<b>Other COGS</b>	0	0%	59	16%	59	16%		59	12%	408	19%
<b>Gross Margin</b>	0	0%	199	53%	199	53%		292	57%	1,308	61%
<b>Engineering</b>	220	0%	414	110%	414	110%		414	81%	360	17%
<b>SG&amp;A</b>	0	0%	160	43%	128	34%	\$32	174	34%	820	38%
<b>OPERATING PROFIT</b>	(\$220)	0%	(\$375)	-100%	(\$343)	-91%		(\$296)	-58%	\$128	6%
<b>%NOR</b>											

**GLOBAL INFORMATION SYSTEMS**  
**ADD-ONS BUSINESS**  
**TRADITIONAL PRODUCT P&L**  
**\$M**

	FY92		FY93 Base Plan		FY93 Compel SG&A		Competitive VAR	FY93 Business Unit Compel SG&A		FY94 Business Unit Unconstrained	
	\$	%	\$	%	\$	%		\$	%	\$	%
UNITS	0										
NOR (\$M)	\$1,191		\$1,070		\$1,070			\$1,070		\$1,070	
Product Cost	298	25%	268	25%	268	25%		268	25%	268	25%
Other COGS	359	30%	323	30%	323	30%		323	30%	323	30%
Gross Margin	534	45%	480	45%	480	45%		480	45%	479	45%
Engineering	199	17%	161	15%	161	15%		161	15%	161	15%
SG&A	595	50%	513	48%	364	34%	\$149	364	34%	364	34%
<b>OPERATING PROFIT</b>	<b>(\$260)</b>	<b>-22%</b>	<b>(\$194)</b>	<b>-18%</b>	<b>(\$45)</b>	<b>-4%</b>		<b>(\$45)</b>	<b>-4%</b>	<b>(\$45)</b>	<b>-4%</b>
<b>%NOR</b>											

**GLOBAL INFORMATION SYSTEMS  
ADJUSTMENT  
TRADITIONAL PRODUCT P&L  
\$M**

	FY92		FY93 Base Plan		FY93 Compel SG&A		Competitive VAR	FY93 Business Unit Compel SG&A		FY94 Business Unit Unconstrained	
	\$	%	\$	%	\$	%		\$	%	\$	%
<b>UNITS</b>											
<b>NOR (\$M)</b>	\$0		\$0		\$0			\$0		\$0	
Product Cost	0	0%	0	0%	0	0%		0	0%	0	0%
Other COGS	0	0%	103	27%	103	27%		0	0%	0	0%
Gross Margin	0	0%	(103)	-27%	(103)	-27%		0	0%	0	0%
Engineering	0	0%	(2)	-1%	(2)	-1%		0	0%	0	0%
SG&A	0	0%	14	4%	0	0%	\$14	0	0%	0	0%
<b>OPERATING PROFIT</b>	<b>\$0</b>	<b>0%</b>	<b>(\$115)</b>	<b>0%</b>	<b>(\$101)</b>	<b>0%</b>		<b>\$0</b>	<b>0%</b>	<b>\$0</b>	<b>0%</b>
<b>%NOR</b>											

## APPENDIX 3

### **COMPETITIVE ASSESSMENTS**

- ¶ Systems Integration market competitive review
- ¶ International Business Machines Corporation competitive review
- ¶ Hewlett-Packard Company competitive review





# Systems Integration

## A Competitive Review

Lynn Sarison  
GIS Consulting  
June 18, 1992

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## **1 INTRODUCTION**

### **1.1 Overview**

Systems Integration (SI) is defined by G2 Research, Inc. as multivendor applications solutions design, development and delivery.<sup>1</sup> Systems Management, or Facilities Management has been defined as assuming full responsibility for providing computing services to a client with or without the acquisition of the staff. This is a separate component from SI. According to the Gartner Group, SI usually involves large (i.e. greater than \$1M) customized Information Systems projects that require multiple components (hardware, software, communications and professional services).<sup>2</sup> SI projects address specific significant problems for user organizations and involve heavy reliance on an external contractor for program development. The external vendor generally assumes a high degree of a project's risks.

A Systems Integrator is defined as a company providing multivendor solutions to large, complex information systems and network requirements.<sup>3</sup> A Systems Integrator is responsible for the overall management of a systems integration contract and is the single point of contact to the buyer for the delivery of the specified system function on schedule and at the contracted price.<sup>4</sup>

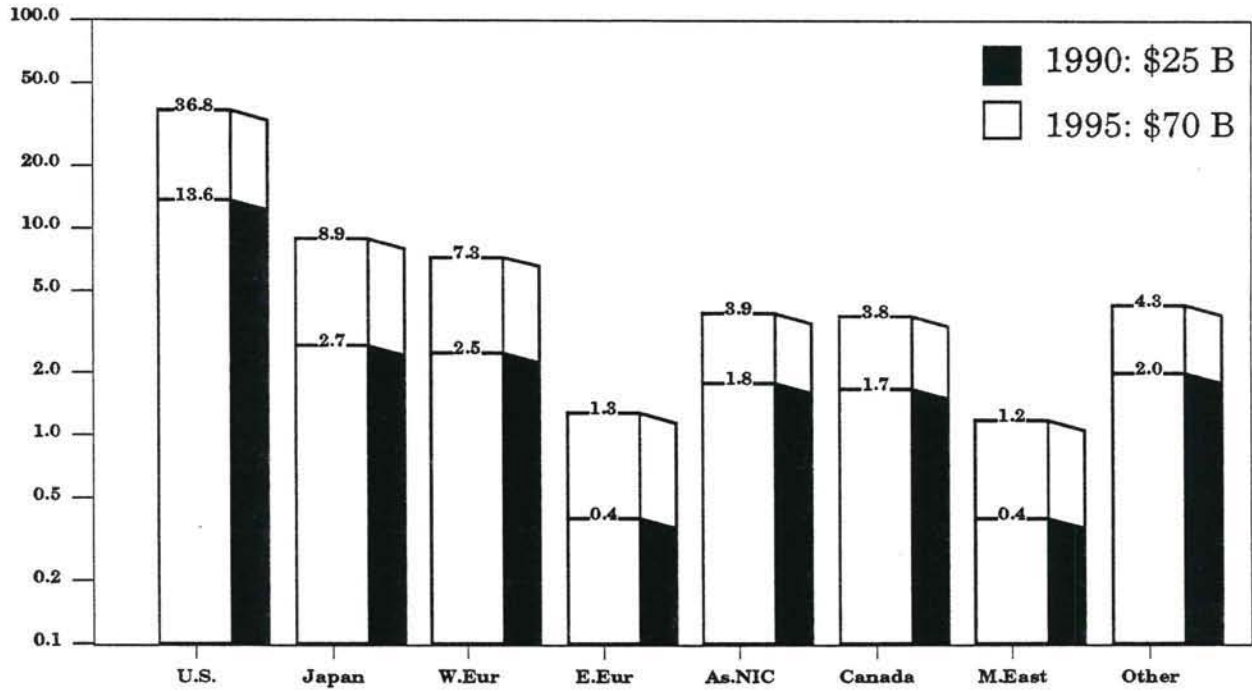
SI offers many advantages to users. Solutions can often be implemented more quickly than it takes a company to build-in house, resulting in extra revenue or decreased cost. Multivendor solutions can be accomplished with one contract. When internal resources are limited or inexperienced, companies often turn to systems integrators.

### **1.2 Market Sizing**

The SI market is healthy and growing. By 1995, G2 Research Inc. estimates the worldwide SI market will be \$70B, up \$45B from 1990's revenue of \$25B.<sup>5</sup> International Data Corporation (IDC) more conservatively estimates that systems integration sales will reach \$58.6B in 1996.<sup>6</sup> In 1995, 53% of the worldwide SI revenue will be from the US, 12% from Europe, 18% from Japan and Asia and 17% from other markets.<sup>7</sup> Japan will demonstrate the most significant growth (230%) from 1990 to 1995 in SI (\$2.7B to \$8.9B).<sup>8</sup> Please refer to Figure 1-1 for market sizing.



**Figure 1-1**  
**WORLDWIDE SI MARKETS, 1990-1995°**  
**Revenue (\$B)**



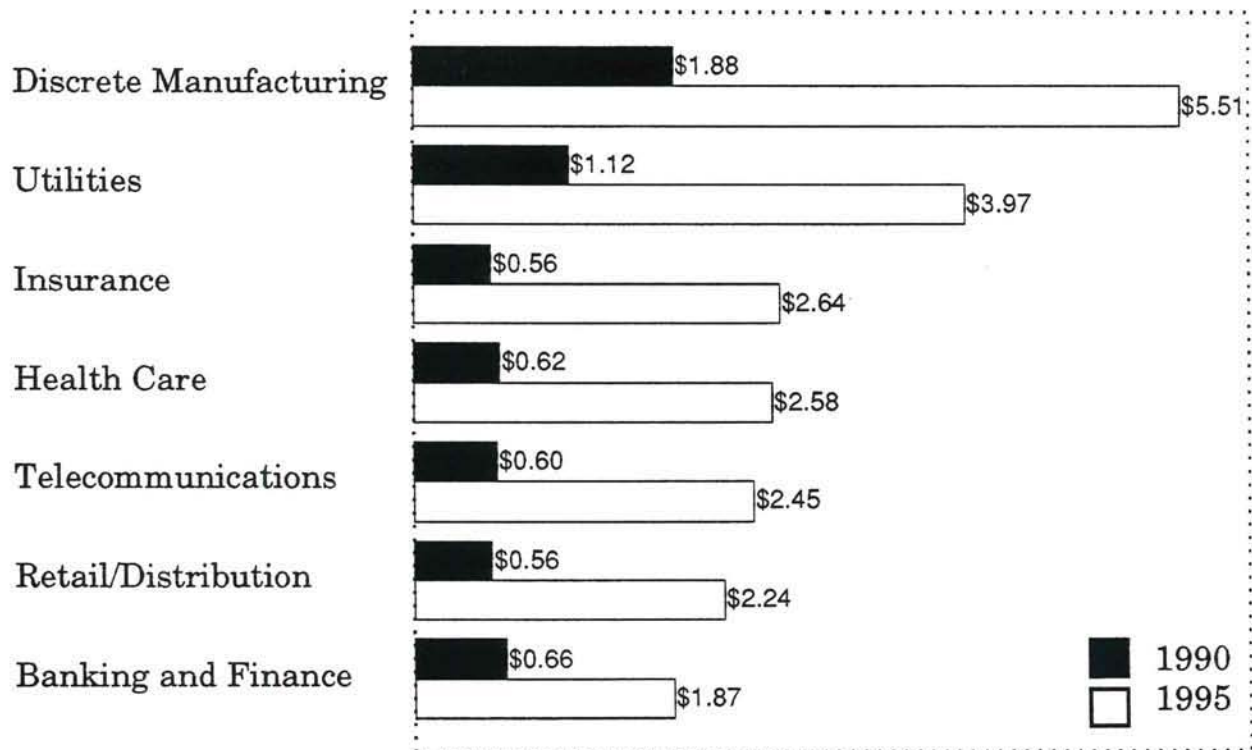
Source: "Global Systems Integration In The 1990's: Marketing Directions and Competitive Analysis" G2 Research Inc. (1991): Exhibit IIC.



G2 Research Inc. predicts that in 1996, the top five vertical markets for SI spending will be discrete manufacturing, utilities, insurance, health care and telecommunications.<sup>10</sup>

**Figure 1-2**

**VERTICAL MARKETS  
FOR SYSTEMS INTEGRATION**



Source: Rich Whiting, "Finding The Right Partner For The Systems Integration Hustle" Electronic Business (April 27, 1992): 66.

### 1.3 Growth Factors

The growth of SI is fueled by changes occurring in the worldwide business environment. These include the globalization of markets, increasing competitive pressures and shortening product and market cycles.<sup>11</sup> These factors have increased management expectations to apply technology at the strategic and operational levels. Customers are demanding more complex solutions that are an integration of applications, data and technology. Other factors contributing to growth of the SI market include the growing complexity of computers, larger networks and the move towards open standards.<sup>12</sup>

### 1.4 Competitive Factors

Competition in the SI market is intense. To win in the systems integration arena, some key factors are paramount:<sup>13</sup>

- Vendors need to add value by focusing on specific industry sectors and have specialized product/professional expertise. Management and technical skills as well as business knowledge must be broad. Previous experience is important.
- Selling must be solutions focused and consultative to accurately gauge requirements and win the business. It is essential to have an integrated view of the customer's business and operations from an IT perspective. It is important to know the customer's competition and environment.
- SI vendors must have a global focus. Broad market access and account coverage are needed to generate new business as well as a strong repeatable business contract base.
- A vendor needs to offer the full SI life cycle delivery from consulting to functional management. Third party relationships are key to complement a vendor's offerings.
- Financial strength is important as both a tactical weapon and for projects of long duration.

Input predicts the SI organization of the future will be a separate division or subsidiary.<sup>14</sup>

The following pages focus on Electronic Data Systems (EDS), Andersen Consulting and IBM. Table 1-1 provides a financial comparison.

**Table 1-1 FINANCIAL MODELS OF "SERVICES" VS. "SYSTEMS" VENDORS  
1990**

	<i>Services Providers</i>		<i>Systems Vendors</i>	
	<b>EDS</b>	<b>Andersen</b>	<b>Digital</b>	<b>IBM</b>
SI Revenue (\$M):	\$1,367	\$1,220	\$1,100	\$2,800
Cost of goods sold: (Digital) SI MEM: <sup>2</sup>	76%	77%	56.3% = 70% 13.3%	63% <sup>1</sup>
G&A:	3.3%	3.6%	5.1%	5%
Cost of Sales: (Digital) Field Other: (Digital) SI Proj. & EIS O/H's	7.7%	8.3%	15.8% = 27% 4.8% 6.4%	25%
Gross Margin	24%	23%	33% <sup>3</sup>	37%
Net Profit (Year 1990)	12.7%	11%	1.3%	3 - 7% <sup>4</sup>

- Service providers are more profitable than are systems vendors.

Digital's cost of sales is 2 - 3 times that of EDS and Andersen.

- Digital and IBM have a significantly higher mix of product vs. services content and thus have higher "real" R & D costs (Digital MEM = 13.3%).

<sup>1</sup> Estimates using annual report figures. R & D costs (9%) included here to make the COGS comparable to Digital SI.

<sup>2</sup> 10.3% allocated of the "MEM number to COGS; the remaining 3% was considered "marketing" (G&A).

<sup>3</sup> Estimated. It is unclear what percent of the "MEM" allocation is for marketing.

<sup>4</sup> Estimates at the low end of the range.

Source: David Rothberg, "Electronic Data Systems and Andersen Consulting, Systems Integration Selling Models" Digital Equipment Corporation Corporate Competitive Analysis (December 19, 1991): 14.



## 2 ELECTRONIC DATA SYSTEMS

### 2.1 Overview

EDS was founded in 1962 by Ross Perot to provide systems operations services to insurances companies, government funded health insurance programs and financial institutions. Ross Perot left IBM to start EDS and implement his vision of a separate company dedicated to Facilities Management.

EDS was acquired by General Motors in 1984 and is operated as a wholly owned subsidiary. EDS is the leading provider of facilities management services and second to IBM in the SI market.<sup>15</sup> EDS also provides processing and professional services including consulting. For a summary of EDS's capabilities in comparison to its competitors, see Table A-1.<sup>16</sup> Off-the-shelf products provided by other vendors are used, although in recent years, EDS has developed some application products. EDS's business is growing at a healthy rate (26.4% from 1991 to 1992 expected, excluding GM, 13.1% including GM).<sup>17</sup> Over half of EDS's 1990 revenue was from EDS's parent, GM.<sup>18</sup> Worldwide, EDS claims about 20% of its revenues from SI and 70-80% from Facilities Management. As of June 1991, there were 62,000 EDS employees with roughly 15% involved in SI.<sup>19</sup> EDS operates in 28 countries.<sup>20</sup>

### 2.2 Strategy

EDS's strategy includes the growth of the non-GM revenue portion of the business. GM business as a percentage of total EDS business is declining. EDS is focused on growing its global business.

SI will be a key offering to grow revenue. EDS will acquire companies to fill holes or satisfy niche markets they are not currently addressing.

Growth will be focused on targeting new vertical markets as well as continuing to grow other vertical markets. G2 Research Inc. ranked the top vertical markets in order of importance to EDS in 1991 as follows: Manufacturing, Banking & Savings Institutions, Government, and Health Care.<sup>21</sup> Telecommunications is also a key industry focus. For a comparison between vendors on industry focus, see Tables A-2 and A-3. (Vendor specific SI revenue numbers in vertical industry segments are difficult to obtain).

EDS has developed teaming arrangements with major U.S. hardware and software suppliers. Like Andersen Consulting, EDS is predominately a prime vendor engaging in minimal subcontracting. Please refer to Table A-4 for more detail on alliances.

EDS's strategy also calls for it to be the largest processor of electronic card based financial transactions. An additional component of EDS's strategy is to be a worldwide provider of telecommunications services.

## 2.3 Organization

EDS is a matrix organization with approximately 480 direct sales people called Account Managers (AMs).<sup>22</sup> Vertical industry expertise is required of all AMs. AMs base salaries range from \$75K-150K and they also receive commissions.<sup>23</sup> The commissions are based on new customers won, account retention, one, three and five year revenue measurements and net profit.<sup>24</sup> AMs are responsible for P&Ls for their accounts. AMs reside within Strategic Business Units (SBU) cost structures. European organization is on a country or regional basis.

The organization is as follows:<sup>25</sup>

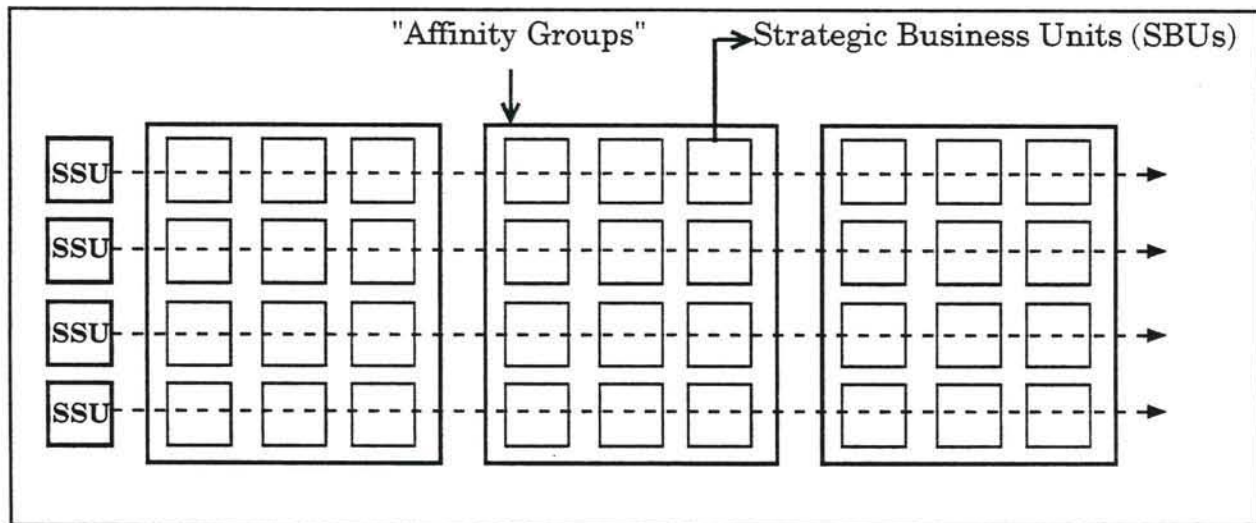
- 38 SBUs
  - 23 focused on vertical (non-GM) markets (EDS would like to organize its entire world business by industry.)
  - 11 dedicated to GM business
  - 4 horizontals

SBUs are the core of the EDS organization. They are responsible for sales [10-12 AMs per SBU], marketing, operations and systems functions and have P&L responsibility.<sup>26</sup> SBUs receive technical support from Support Services Units (SSUs). SSUs provide common non-industry specific support to SBUs and get funding from the Leadership Council (similar to an Executive Committee). SSUs include software developers and R&D personnel. Systems Engineers and other technical support people are part of the total SBU cost structure and are allocated across common industry SBU accounts. SBUs report to a V.P. with full P&L responsibility. SBUs are organized into Affinity Groups.

The Affinity Groups can be geographically focused, global or associated with a vertical market. Each Affinity Group V.P. reports into the Leadership Council. Affinity Group V.P.'s are focused on strategy (70%) and spend the rest (30%) of their time working business issues.<sup>27</sup> The Leadership Council reports to the President and CEO, Les Alberthal. Corporate headcount numbers at EDS are small, and equal about 150.<sup>28</sup>



## EDS Organizational Structure



Source: David Rothberg, "Electronic Data Systems and Andersen Consulting, Systems Integration Selling Models" Digital Equipment Corporation Corporate Competitive Analysis (December 19, 1991): 6.

### 2.4 Selling Approach/Strategy

EDS promotes itself as providing total services from developing integrated solutions through systems integration and including system operations. They position themselves as partners to their clients and use reference selling extensively. EDS stresses its value-added capabilities rather than its ability to provide MIPS or routine programming services. If companies are intent on reducing costs, EDS stresses the impact of technology on cost reduction in the entire business, not just IT. EDS AMs are adept at a combination of technical and financial selling.

All senior executives spend a great amount of their time selling and close many of the large commercial contracts.

Pricing:

EDS is rarely the low bidder. Their pricing is usually based on the quantitative business improvements the solution will generate for the customer. Shared risk is built into EDS's pricing model. Depending on whether the business metric is achieved, EDS either shares the savings or charges the customer on a time and materials basis. AMs have much pricing authority over SI contracts. EDS is adept at custom pricing new business.

### 2.5 Strengths

One of EDS's key strengths is the corporate size and large client base. This size enables purchasing power yielding economies of scale allowing EDS to cut costs and improve margins. This is especially useful when EDS is negotiating hardware costs.

Another key strength is EDS's direct access to Hitachi products at a low cost. This provides EDS with selling and marketing leverage in the IBM world.

**Pricing:**

EDS sells business benefits and not products. Due to the unique pricing model EDS uses, it is difficult for customers to compare competitive bids. The implied backing of General Motors enables EDS to bid large projects at competitive prices.

Terms and conditions for all customer contracts are aggressively negotiated. Most changes result in EDS gaining incremental revenue.

**Organization:**

EDS has a skilled technical and managerial staff with SI experience and excellent technical consulting capabilities. There is a very low staff turnover rate. Training is emphasized, with \$1.5K spent per employee.<sup>29</sup> (This is less than Andersen's \$7.4K per employee). Account Managers are the corporation's most critical and valued asset and constitute a crucial competitive advantage.<sup>30</sup> They bring flexibility, business knowledge and experience to the table.

EDS's ability to evaluate and manage risk is one of their most important competitive advantages.<sup>31</sup>

**Financial Position:**

EDS has a solid financial position. A majority of its business is covered by long-term fixed price projects which indicate a steady cash flow available for investments and acquisitions.<sup>32</sup> EDS has large cash reserves which enable it to bid aggressively and/or offer creative financing.

EDS has a proven ability to control costs. Extensive experience in operational data processing enables efficient and cost-effective use of technology.

## 2.6 Weaknesses

EDS lacks hardware and extensive system software products. However, due to their relationships with third party vendors, they can effectively compete in the SI market. Over the past 4 years, the company has added application products of its own such as:

Banking	-Compete (resource management tool) -Integrated Financial Systems (bank information system) -EDS*LINK (electronic funds transfer switching system)
Distribution	-POS Networks
Insurance	-Insurance Machine (comprehensive life insurance administration system)
Manufacturing	-EDI*ASSET
Telecom	-APEX Billing System

They have moderate capability in hardware and software maintenance. However, support comes from third party connections. EDS manufacturing experience is

narrow and primarily with General Motors. Many of EDS's clients look to them as a technical, rather than a total supplier of business consulting.<sup>33</sup>

EDS needs to continue to expand outside of the US and win non-GM related deals to solidify their European position.



## Positioning Digital Against EDS<sup>34</sup>

**EDS**

**Digital**

<i>Customer Base</i>	
EDS has a smaller customer base than Digital's.	Digital has a large customer base to leverage new SI business.
<i>Focus</i>	
EDS is focused with a clear business model.	Digital has a less well defined business focus.
<i>Products and Perceived Bias</i>	
EDS's strengths are focused primarily on putting the pieces together. It uses off-the-shelf hardware and software products provided by other vendors. EDS uses this as a sales tactic by claiming they offer the best available components to a solution and are not biased. EDS has a proven ability to deliver large scale customized application systems.	Digital has an in-depth portfolio of hardware, software and networking products, as well as extensive capability in producing customized hardware. Digital technical expertise is strong. However, Digital is often perceived as biased in recommending their own products.
<i>Maintenance Capability</i>	
EDS has moderate hardware and software maintenance capabilities. However, support comes from third party connections.	Digital has a global infrastructure in place to provide support and maintenance of Digital and third party products. However, front-end services such as consulting are expected to grow more rapidly than maintenance services, Digital's traditional area of expertise.
<i>Sales Approach</i>	
EDS does not have a large sales force and infrastructure. Their sales force are considered excellent and focused.	Digital has an extensive, but unfocused sales network that can serve the customer locally. Digital Services people have been criticized for lacking real world experience and skills.

## Positioning Digital Against EDS

(continued)

**EDS**

**Digital**

<i>Sales Approach</i>	
<p>EDS's senior staff is more experienced at selling and used more extensively to help close business. They are better at selling business benefits and use a consultative selling approach.</p>	<p>Digital senior staff does not have as strong a selling background. Digital's selling approach is technical problem solving, rather than a balance between business and technical selling.</p>
<p>EDS recognizes the sales cycle is longer and rewards their sales force accordingly.</p>	<p>Digital has a short term current fiscal year focus and rewards their sales force accordingly.</p>
<i>SI Team</i>	
<p>EDS's SI team is on-site. It is easier to manage existing business and gain incremental business.</p>	<p>Digital's SI team does not have the same magnitude of presence at the customer site.</p>
<i>Corporate Headcount</i>	
<p>Corporate headcount is low.</p>	<p>Corporate headcount is much higher than EDS.</p>
<i>Risk Evaluation/Mgmt. Capabilities</i>	
<p>EDS's ability to evaluate and manage risk on large projects limits their financial exposure.</p>	<p>Digital SI teams have relatively less risk evaluation capabilities.</p>
<i>Market Experience</i>	
<p>Manufacturing experience has been through GM primarily. EDS has good experience in the commercial marketplace.</p>	<p>Digital has vast experience in all areas of manufacturing, engineering and distribution. Digital's strengths are in the technical marketplace. Digital lacks significant commercial marketplace experience.</p>



### **3 ANDERSEN CONSULTING**

#### **3.1 Overview**

Andersen Consulting grew as an extension of Arthur Andersen & Company's core accounting business. It was given the name Andersen Consulting and granted a separate reporting structure in October of 1988. The cultural legacy of self-restraint and low visibility from Arthur Andersen is one which Andersen Consulting has worked hard to overcome.

Andersen's primary capabilities include business consulting, design and project management. They rely heavily on their capabilities in education, training and documentation. For a summary of Andersen Consulting's capabilities in comparison to its competitors, see Table A-1.<sup>35</sup> Andersen Consulting has a strong position in the applications software area. Its offerings and alliances encompass all aspects of professional services and SI. SI contributed 67% of the total Andersen Consulting revenues in 1990 with an estimated capability to grow to 80-95% in 1995.<sup>36</sup> In 1991, there were 20,600 professionals.<sup>37</sup> Andersen Consulting operates 145 offices in 46 countries.<sup>38</sup>

#### **3.2 Strategy**

Andersen Consulting has several strategic business objectives.<sup>39</sup> The first is to organize, package and sell integrated business solutions along vertical industry lines. They have positioned themselves on the ability to apply information technology to achieve a competitive advantage. Andersen Consulting is moving from a branch office structure to a vertical market delivery business. G2 Research Inc. ranked the top five vertical markets in order of importance to Andersen Consulting in 1991 as follows: Manufacturing, Banking & Savings Institutions, State & Local Government, Retail/Wholesale and Utilities.<sup>40</sup> For a comparison between vendors on industry focus, see Tables A-2 and A-3.

A second component to Andersen Consulting's strategy is gearing resources towards superior 3rd party alliance management. For the short term, Andersen Consulting will utilize alliances with hardware vendors. In the long term, they will have the capital to acquire and resell hardware where needed. Their growth will be primarily through major recruiting efforts and not acquisitions. Like EDS, Andersen rarely agrees to subcontract. Please refer to Table A-5 for more detail on alliances.

Thirdly, Andersen Consulting is expanding its facilities management market share. Another component of their strategy is to continue both commercial and public sector development in global integration services.

Andersen Consulting's strategy is to enable quick access to Andersen skills worldwide. Andersen Consulting is making a major thrust into Japan and West Germany. They are already well established in Europe.

### 3.3 Organization

There are three lines of business at Andersen Consulting in addition to SI which is the largest and fastest growing. These include Services other than SI, Change Management and Strategy Services.<sup>41</sup> Through the Change Management division, Andersen helps organizations manage growth and change. In the Strategy Services area, Andersen analyzes clients' competitive positions and helps them develop strategic plans for improved performance. These lines of business provide services such as:<sup>42</sup>

- Facilities Management (3%)
  - Andersen's goal is to renew or rehabilitate a company's data center and systems and eventually hand it back to the customer. Another facilities management goal is to be the long-term value-added strategic partner.
- Consulting Services (17%) including management, applications, technology, Information Systems, human resources and organizational consulting.
- Customer Training (10%).
- Development and project management, including SI (60%).
- License and maintenance for core platforms/products (10%).

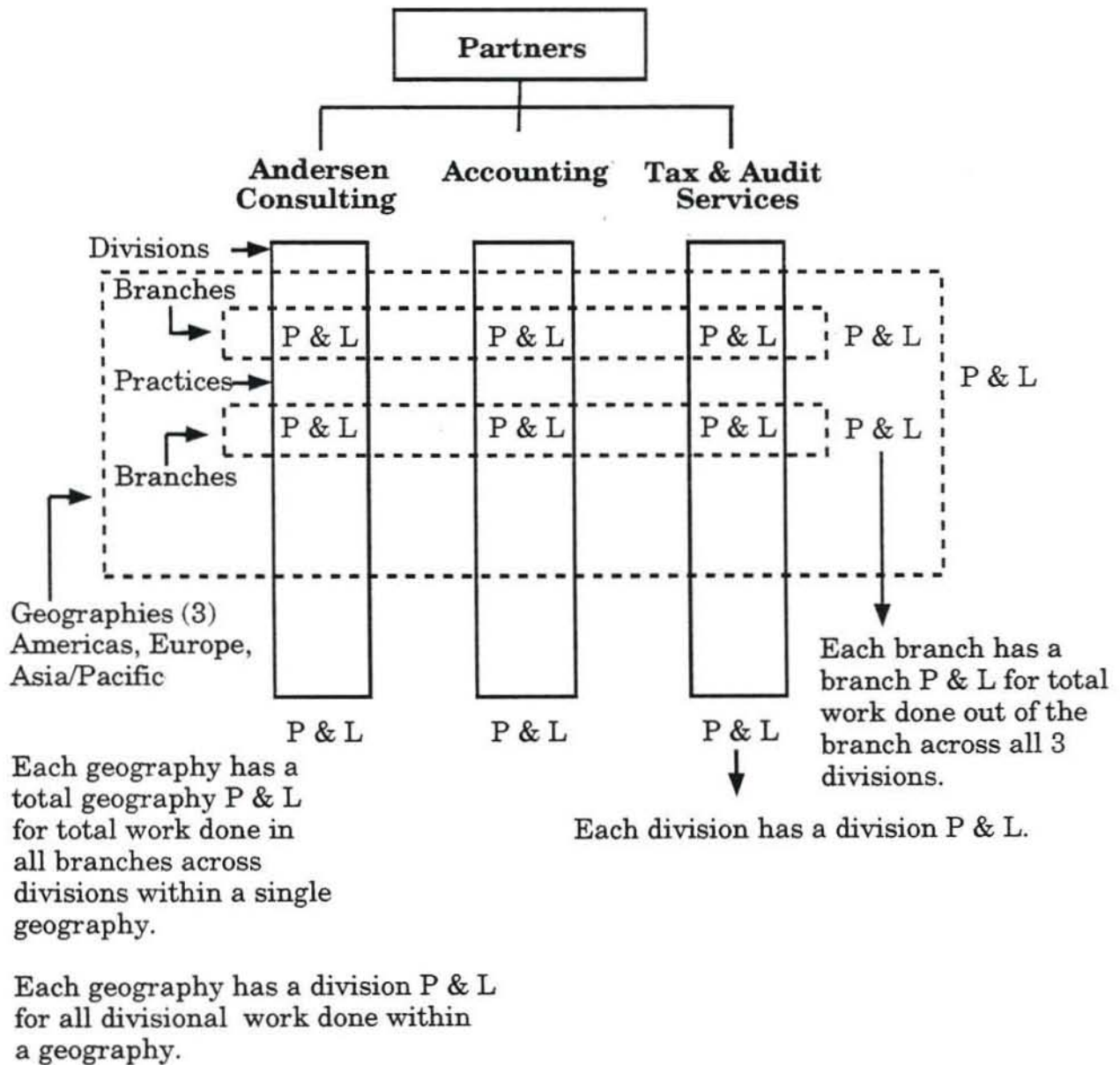
Andersen Consulting is a privately held business owned and controlled by 794 Partners.<sup>43</sup> Andersen Consulting is a matrix organization with five key segments. The segments are divisions, geographies, branches, practices and lines of business. Branches are very autonomous and are controlled by partners. Branches contain specialists who are dedicated to the industries that Andersen Consulting addresses. Branch Partners are responsible for selling.

Practices are virtual teams of people specializing in the same industry. They reside in multiple geographies. Practices do not have a formal P&L.

Andersen Consulting corporate headcount is small and the firm is highly decentralized. The groups run from corporate are marketing, strategic planning and corporate training.

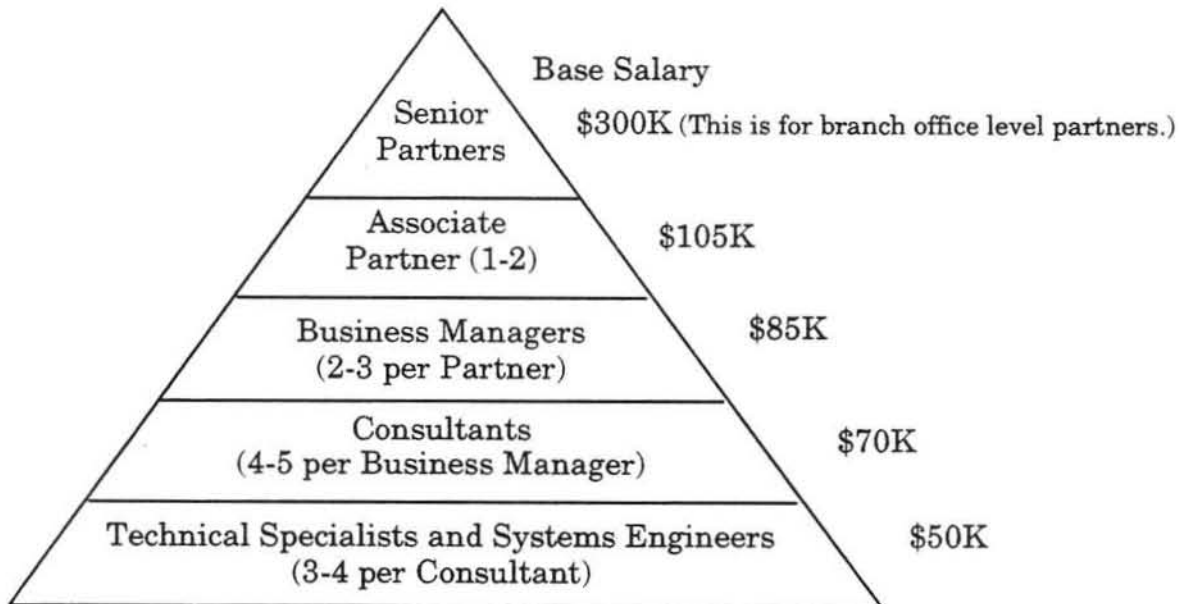


## Andersen Consulting Organizational Structure



Source: David Rothberg "Electronic Data Systems and Andersen Consulting, Systems Integration Selling Models" Digital Equipment Corporation Corporate Competitive Analysis (December 19, 1991): 12.

### 3.4 Selling Approach/Strategy



Senior Partners have 20-25 people in a pyramid structure.<sup>44</sup>

The selling strategy is focused on the chief financial officer as the client. This is natural as they have strong established relationships with their customers' senior management from their tax and audit businesses.

The main platform vendor plays a larger role than Andersen Consulting in the bidding process for new clients and accompanies Andersen to client meetings.<sup>45</sup> Andersen has two reasons for this:

- Belief that clients like to have a personal contact for the equipment portion of the contract.
- Desire for the platform vendor to field technical questions that arise.

### 3.5 Strengths

Andersen Consulting has corporate financial stability and name recognition. Andersen's reputation in professional services is strong, and the breadth of technology covered is wide. Their software products on a variety of platforms are well received. Some of Andersen's key products include:

- "ALTAMIRA" is an application for retail banking. Plans exist for migrating these tools to the VAX platform.
- "BRAHMS" are marketing tools for retail banking. Plans exist for migrating these tools to the VAX platform.
- "DCS/Logistics" is a comprehensive high volume distributed logistics application available on the VAX platform and IBM mainframe.

- "Foundation" is a comprehensive software development environment for a variety of platforms including the IBM and Bull mainframes and Digital's VAX systems. The focus for the future of Andersen's CASE product line is Foundation for Cooperative Processing with mainframes or the OS/2 environment. Includes:
  - "Foundation Method/1"--structured process manager.
  - "Foundation Design/1"--first generation tool for capturing business rules.
  - "Foundation Install/1"--a DB2-based dictionary that manages the final stage of software design, code generation and software testing.
  - "Foundation Plan/1"--integrated tool set that supports engineering and information planners in the creation of comprehensive strategic information plans.
- "MAC-PAC" is an integrated manufacturing software application. MAC-PAC-D is designed for VAX users and enables them to plan and execute manufacturing operations independent of reporting requirements while at the same time provides the information needed to adhere to those requirements.
- "PR-ISM" supports the entire maintenance life cycle for nuclear and fossil power plants for both IBM and DEC.
- "Process/1" is aimed at the needs of process manufacturers such as food, chemical and drug companies. It is based on the VAX and the Network Application Support approach to distributed computing. One of the features promoted by Andersen is the environmental health, safety and training module. It also tracks information required by regulatory authorities.
- "Work/1" Cooperative. This was jointly developed by BC Gas and Andersen to address the vital business function of transmission and distribution work management for utility companies.

Andersen Consulting possesses a wide scope of business practices, industry knowledge and application skills. They have five Business Integration Centers which showcase their industry expertise with a variety of exhibits<sup>46</sup>:

- Atlanta, Georgia-logistics
- Evanston, Illinois-CIM
- Chicago, Illinois-food industry research
- Dallas, Texas-retail, hospital, factory, engineering
- Brazil-CIM

One of Andersen Consulting's strengths is its ability to sell top down. Business issues and needs are the major drivers of SI projects with senior management a key decision maker. Because of Andersen Consulting's accounting roots, they acquire many clients through senior management contacts who are able to provide them with an understanding of top level business issues.



Andersen Consulting has strong third-party hardware and software vendor relationships. One of Andersen Consulting's strengths is its ability to work with IBM. Although they compete with IBM in most situations, Andersen Consulting's strengths in business consulting and complex application development sometimes wins projects working with IBM as a team.

Andersen Consulting spends significant amounts each year educating its staff. Education is ongoing throughout one's career and begins with new employee training. In 1990, Andersen Consulting spent 8.3% of its revenue or about \$7.4K per consultant on training.<sup>47</sup> One goal of this training is to keep consultants technically proficient. Another goal is to provide consultants with a common way of approaching and solving problems. The training also focuses on building dynamic relationships between different types of consulting (i.e. strategic services, SI, system management and change management) which helps enhance teamwork.

Andersen Consulting also has strong expertise in the area of distributed computing.

### **3.6 Weaknesses**

Andersen Consulting Partners have been viewed as less technically grounded than EDS Account Managers.<sup>48</sup> Their skill mix is still focused largely on IBM mainframe products, although this is changing.<sup>49</sup> Other criticisms include a lack of internal teaming and international account management.

Andersen Consulting is also weak in the area of service and repair, and design integration. Andersen Consulting has a business process orientation. Their approach to design and engineering is considered inflexible and by the book.<sup>50</sup> Andersen Consulting must overcome customers' concerns about the bias of software vendors recommending their own products.

They must also continue overcome the legacy image of accounting firms as conservative, rigid and expensive. Andersen Consulting needs to do a better job of reassuring clients of the extras that come with the high price.

Andersen Consulting's partner structure puts it in a unique position compared to public companies when it comes to growth. Andersen Consulting management must be willing to take income cuts if revenue and profit is down in order to maintain a high investment in people and technology.

Although Andersen Consulting has focused on vertical industries, it has failed to develop industry blueprints for solutions. G2 Research Inc. believes Andersen Consulting has missed the opportunity to seize the leadership position in the creation and delivery of strategic solutions.<sup>51</sup> Andersen Consulting must gain credibility in the federal sector.

## Positioning Digital Against Andersen Consulting<sup>52</sup>

### Andersen Consulting

### Digital

<b>Andersen Consulting</b>	<b>Digital</b>
<b><i>Market Experience</i></b>	
<p>Over 90% of Andersen's SI projects are in the commercial marketplace. Andersen Consulting lacks manufacturing experience.</p>	<p>Digital has experience in all areas of manufacturing, engineering and distribution. Digital's strengths are in the technical marketplace. Digital lacks significant commercial marketplace experience.</p>
<b><i>Products and Perceived Bias</i></b>	
<p>Andersen Consulting relies on outside vendors for their hardware equipment requirements. Andersen does have well received software products.</p>	<p>Digital has an in-depth portfolio of hardware, software and networking products as well as extensive capability in producing customized hardware and software. However, Digital is often perceived as biased in recommending their own products. Andersen Consulting will try to convince customers of our bias.</p>
<b><i>Consulting and Program Mgmt.</i></b>	
<p>Andersen Consulting has strong consulting services and a strong program management approach to SI. However, they lack an operational background.</p>	<p>Digital has a strong operational background. However, they have lack strong consulting services and a strong program management approach to SI. Criticisms include a small number of program managers and limited focused vertical resources.</p>
<b><i>Sales Approach</i></b>	
<p>Andersen's senior staff is more experienced at selling and used more extensively to close business. They are better at selling business benefits and use a consultative selling approach. They have good access to executive contacts.</p>	<p>Digital senior staff does not have as strong a selling background. Digital's selling approach is technical problem solving, rather than a balance between business and technical selling. Digital has less executive contact and sells lower down in the organization.</p>



## Positioning Digital Against Andersen Consulting

(continued)

### Andersen Consulting

### Digital

<p data-bbox="636 432 971 464" style="text-align: center;"><i>Maintenance Capability</i></p> <p data-bbox="186 472 787 583">Andersen Consulting is weak in service and repair. However, support does come from third party connections.</p>	<p data-bbox="821 472 1421 741">Digital has a global infrastructure in place to provide support and maintenance of Digital and third party products. However, front-end services such as consulting are expected to grow more rapidly than maintenance services, Digital's traditional area of expertise.</p>
<p data-bbox="695 758 915 789" style="text-align: center;"><i>Global Presence</i></p> <p data-bbox="186 800 787 911">Andersen Consulting's SI capability in international markets is significantly weaker than in the U.S.</p>	<p data-bbox="821 800 1421 911">Digital is a global company with more than half of its FY91 revenue coming from outside the U.S.</p>
<p data-bbox="626 957 984 989" style="text-align: center;"><i>Contractual Engagements</i></p> <p data-bbox="186 999 787 1110">Andersen Consulting often structures their contracts to change and/or prolong engagements.</p>	<p data-bbox="821 999 1421 1110">Digital is motivated to complete the project and will adhere to delivery commitments made at the time of sale.</p>

## **4 IBM**

### **4.1 Overview**

In an apparent effort to make up for sagging profits in its mainstream businesses, during May 1987, IBM announced that it was entering a new facet of the computer business: installing and running systems composed of equipment from alternative vendors. Thus, IBM's foray into multivendor SI was born.

IBM is acknowledged as the world's largest information systems and SI company. IBM has extensive experience in SI, technology consulting, program management and complex systems software development. IBM is organized to address global SI opportunities. In 1990, 3% of IBM's corporate revenue was from SI.<sup>53</sup> Five percent of IBM's 374,000 employees are involved in SI.<sup>54</sup> For a summary of IBM's capabilities in comparison to its competitors, see Table A-1.<sup>55</sup>

Each of the countries where IBM operates has some form of an SI organization. The SI organizational structures vary between geographies and are not consistent. To handle all services in the US, IBM created the independent subsidiary Integrated Systems Solution Corp. (ISSC) in May of 1991. ISSC is IBM's endeavor as a premier solution provider and is not limited to SI. In the U.K., Information Solutions Ltd. has been established with 1500 employees.<sup>56</sup> IBM Germany also formed an independent subsidiary at about the same time as IBM U.K. IBM Canada formed an independent SI subsidiary in 1986 and has since reorganized with sales and marketing resources as a distinct line of business.

### **4.2 Strategy**

IBM's vision is to continue as the leading SI provider worldwide. For IBM, SI provides the means to retain account control and develop a stronger revenue stream. IBM targets the SI market by both vertical markets and horizontal applications. IBM teams with software developers and integrators that have vertical market expertise. This has the added bonus of building their own application knowledge and software portfolio. IBM has SI presence in every leading vertical commercial market. G2 Research Inc. ranked the top five vertical markets in order of importance to IBM in 1991 as follows: Federal Government, State and Local Government, Manufacturing, Capital Markets and Banking & Savings Institutions.<sup>57</sup> For a comparison between vendors on industry focus, see Tables A-2 and A-3. IBM's strategy is to build repeatable solutions in vertical industries that can be modified.

IBM offers a wide continuum of horizontal solutions including image processing, network management and software engineering.

Business alliances have grown in importance in recent years and are used to supplement internal resources. In most cases, IBM will assume prime contractor responsibility and involve outside vendors to fill specific requirements. Commercial Systems Integrators (CSIs) are used when industry or application expertise is required, established end-user relationships exist, proprietary software is appropri-



ate or significant IBM content is in place.<sup>58</sup> For more detail on alliances, see Table A-6.

### 4.3 Organization

The European SI management structure is primarily organized at the country level. Therefore, it is difficult to talk in as much detail about SI in Europe as about the ISSC in the U.S. SI Managers with vertical expertise exist within the country organization. National bid managers have the authority to determine prices, terms and conditions.

ISSC:

ISSC (U.S. only) offers all services with an emphasis on outsourcing, processing services, large complex commercial SI projects, disaster recovery, IS and management consulting, software development and network management. More detail on this is as follows:

- |                        |   |
|------------------------|---|
| Outsourcing:           | This is a key area to ISSC. In 1991, IBM, including ISSC, had about two dozen contracts worth more than \$2B. <sup>59</sup> ISSC is the number two outsourcer in the US behind EDS. IBM sees this as one means to retain account control, increase overall services revenue and establish IBM as a total services provider. |
| Disaster Recovery:     | ISSC provides backup facilities for 1,500 disaster recovery clients.  |
| IS Consulting:         | This service entails providing systems architecture design and development, as well as IS organizational planning.  |
| Management Consulting: | This service is aimed at senior executives for providing advice regarding the setting and execution of corporate vision and business strategy. There is also a focus on business issues which provides advice regarding the analysis of business processes.   |

In the future, ISSC hopes to provide data services, particularly check processing.<sup>60</sup>

### 4.4 Selling Approach/Strategy

IBM does high-level selling and stresses user partnerships. IBM positions itself by emphasizing the client is gaining the latest state-of-the-art technology by going with IBM. It stresses the benefits of project success, return on investment and a predetermined cost and schedule. IBM sells by marrying technology with business acumen.

ISSC services are sold in the Field by the IBM sales force. ISSC does not have its own sales force.



## 4.5 Strengths

The name recognition and financial stability associated with IBM provide a sense of security and well being to customers.

IBM's ability to invest in SI is tremendous; IBM can buy advanced technology in the form of an equity stake in a company and negotiate favorable terms for products.

IBM is the SI market leader in both the federal and commercial markets.<sup>61</sup> Approximately 46% of IBM revenue is from the federal market, 34% from the commercial market, and 20% from state and local government.<sup>62</sup> IBM has a significant global presence. It has an enormous installed base from which to obtain new business and extensive products and resources including third parties. IBM's technical skills and project management capabilities are strong, although less so in Europe.

ISSC:

ISSC is doing well and Dataquest/Ledgeway estimates 1991 revenue was \$500 million.<sup>63</sup>

ISSC attempts to appeal to the needs of customers for a non-biased SI vendor. ISSC fosters the perception that customers may obtain the best solution, which could include non-IBM hardware if necessary.

The Gartner Group believes that ISSC will enable IBM to compete with major service providers by adapting more quickly to changing market conditions and customer needs without being burdened in service bids for hardware pull-through.<sup>64</sup> Its smaller size (than parent company) will enable ISSC to be more flexible and not encumbered by IBM's organizational overhead. ISSC can hire the best talent externally and is not constrained by IBM policy to hire from within. ISSC will be competing for resources and will create longer selling cycles for other SI giants.<sup>65</sup> Having services under one roof will enable IBM to offer bids that provide complete service solutions.

ISSC does have access to large discounts on IBM products.

## 4.6 Weaknesses

The Gartner Group believes IBM's market share will not increase over the next five years because maintaining such a large market share in any market is impossible. However, Gartner does predict that IBM will continue to be the market leader.<sup>66</sup>

IBM avoids installing other vendor's products for fear of losing control of the account.<sup>67</sup> IBM's guidelines for SI sales recommend that an SI project must include at least 50% IBM standard products and 25% IBM custom products.<sup>68</sup> Not surprisingly, customers perceive an IBM bias. However, this is not necessarily a weakness in terms of business management.

From an applications perspective, IBM lacks vertical industry applications and wide acceptance of internally developed applications software.

IBM's sales force is still more oriented on box selling than integrated solutions. IBM has also been criticized for lack of management consulting expertise.

IBM does not have a robust project-level cost collection system in place in the commercial market (as it does in the federal market). This would help provide information to project managers so complex projects can be managed more profitably.

ISSC:

There is a perceived lack of objectivity regarding recommending non-IBM equipment. ISSC's inexperience with other vendors' platforms could pose an additional question in customer's minds.

ISSC has a ramp-up for internal assimilation and education of the IBM sales force. The SI market is growing and won't stand still while ISSC sorts itself out. There is much confusion both inside and outside IBM about how ISSC works. As IBM assumes an entrepreneurial attitude with new start-up businesses, ISSC may be competing with some of these. For example, a year-old effort is under way to establish a general consulting arm; ISSC is also responsible for consulting. Last December, IBM's NY Marketing group closed an outsourcing contract for Quotron without involving ISSC.



## Positioning Digital Against IBM

### IBM

### Digital

<i>Multivendor Integration</i>	
IBM has little multivendor integration experience.	Digital has considerable expertise in multivendor integration. This is key in SI.
<i>Sales Approach</i>	
IBM's senior staff is more experienced at selling and used more frequently to close business. They are better at selling business benefits and use a consultative selling approach. Their sales strategy is to convince the customer that the customer's need matches an IBM solution. They have good access to executive contacts on a frequent basis. IBM has more direct linkage to getting new SI business due to their large installed base.	Digital senior staff does not have as strong a selling background. Digital's selling approach is technical problem solving, rather than a balance between business and technical selling. Digital provides customized solutions more frequently than IBM. Digital has less executive contact and sells lower down in the organization.
IBM's sales force sells solutions with an emphasis on hardware. The sales force lacks management consulting expertise and has excellent financial selling skills.	Digital's sales force sells hardware. The sales force lacks management consulting expertise and has poor financial selling skills.
The financial power of IBM Credit Corp. provides a considerable selling tool.	Digital's financial tactical selling is not as strong.
<i>Perceived Bias</i>	
There is a perceived bias of a hardware vendor using their own equipment for solutions.	There is a perceived bias of a hardware vendor using their own equipment for solutions.

**Table A-1**

**A COMPARISON:  
SYSTEMS INTEGRATION CAPABILITIES  
BY VENDOR**

	<b>IBM</b>	<b>EDS</b>	<b>Andersen Consulting</b>	<b>Digital</b>
Perceived Quality In SI Marketplace	M	H	H	M
Perceived Strength In SI Marketplace	H	H	M-H	H
Global Presence	H	M-H	M-H	H
Financial Strength	H	H	H	H
Successful Executive To Executive Selling	H	H	M-H	L-M
Solutions Oriented Selling	M	H	H	L-M
Business/Financial Oriented Selling	H	H	M-H	L
Responsive & Flexible Infrastructure To Support Sale	L-M	H	M-H	L
Pricing	M-H	H	M-H	M
Perceived Bias In Recommending Products	H	L	M	H
Number Of Third Party Relationships	H	M-H	M-H	M

Legend: H=High, M=Medium, L=Low



**Table A-2**

**A COMPARISON:  
VERTICAL MARKET FOCUS RANKING**

<b>Industry Sector</b>	<b>IBM</b>	<b>EDS</b>	<b>Andersen Consulting</b>	<b>Digital</b>
Federal Government	1	3	-	2
State & Local Government	2	4	3	-
Manufacturing	3	1	1	1
Capital Markets	4	-	-	-
Banking & Savings Institutions	5	2	2	4
Retail/Wholesale	-	-	4	-
Utilities	-	-	5	-
Telecommunications	-	-	-	3
Insurance	-	-	-	5
Health Care	-	5	-	-

Legend: 1 is the highest

Source: "Systems Integration Distribution Channels & Competitive Analysis" G2 Research Inc. (June 1991): Exhibit B.

**Table A-3 A COMPARISON: VERTICAL MARKET APPLICATION FOCUS**

Industry Sector	IBM	EDS	Andersen Consulting	Digital
Federal Government	- Multiple Applications Coverage	- ID Card - Alien Records Management - Personnel Procurement & Supply	- Law Enforcement Revenue Systems - Imaging	- U.S. Census Integration Systems
State & Local Government	- Multiple Applications Coverage	- Social Security - GBT - Medicaid Eligibility - Administration	- Tax Accounting Revenues - Law Enforcement	
Manufacturing	- Multiple Applications Coverage	- CAD/CAM - CAE - CIM - MRP II - Material Mgmt. - Orders Retrieval	- JIT - CIM - Time Compression Mgmt.	- Pharmaceutical - Chemical - Oil & Gas - Refinery Automation - Many Discrete Applications
Capital Markets	- Multiple Applications Coverage			
Banking & Savings Institutions	- Multiple Applications Coverage	- Bank Management - Item Processing - ATM - EFT	- Trust & Investment Mgmt. - ATM	- Funds Transfer - Communications Interface - Retail Branch Delivery - Loan Origination/ Processing, etc.

Source: "Systems Integration Distribution Channels & Competitive Analysis" G2 Research Inc. (June 1991): Exhibit B.

**A COMPARISON: VERTICAL MARKET APPLICATION FOCUS (continued)**

Industry Sector	IBM	EDS	Andersen Consulting	Digital
Retail/Wholesale	- Multiple Applications Coverage	- POS - EBT - Administrative	- Inventory Mgmt.	- Network Mgmt.
Utilities	- Multiple Applications Coverage	- Engineering - Waste Disposal	- Communications Protocols	
Telecommunications	- Multiple Applications Coverage	- ISDN - Voice - Network Mgmt.	- Infrastructure Modernization	- Multiple Applications Coverage
Insurance	- Multiple Applications Coverage	- Policy Holder Services - Underwriting - Administrative	- Claims Processing - Asset Mgmt.	- Insurance Professional Workstations - Funds Transfer - Asset Mgmt. - Corp. Legal Sys.
Health Care	- Multiple Applications Coverage	- Policy Holder Services - Group Membership	- Bedside Diagnostic Systems	

Source: "Systems Integration Distribution Channels & Competitive Analysis" G2 Research Inc. (June 1991): Exhibit B.

**Table A-4**

**SOME EDS ACQUISITIONS  
AND ALLIANCES**

Name	Type
Creative Management Services	<p><u>Acquisitions:</u> CMS provides services to cable TV industry. Acquisition includes scheduling and dispatch capabilities, credit and collection management tools and accounting and billing systems.</p>
Hitachi Data Systems	<p>Acquisition of minority shares. EDS has direct access to Hitachi products at a better price than it could negotiate independently. EDS also benefits from strengthened ability to negotiate with IBM and Amdahl.</p>
Infocel Inc.	<p>Specialist in information systems for city and county institutions.</p>
Japan System K.K	<p>Acquisition in progress (19.9%) of Tokyo computer services concern. Will bring EDS broad access to Japanese services market.</p>
McDonnell Douglas Systems Integration Company (MDSI)	<p>Provides EDS with expertise in manufacturing services. Acquired for Unigraphics.</p>
SD-Scicon	<p>Acquisition of UK based services firm enabling EDS to enter significant European markets</p>
	<p><u>Alliances:</u></p>
Ameritech	<p>Alliance in systems software.</p>
ASK	<p>EDS has agreed to sell ASK manufacturing software.</p>
Compaq	<p>EDS is an authorized worldwide systems integrator. EDS will resell and integrate the broad range of Compaq products.</p>
Consilium	<p>Non-exclusive agreement for both parties. EDS will help target aerospace and defense accounts.</p>
Dell Computer and Compression Labs	<p>Enables EDS to have PC and videoconferencing support and services.</p>
Digital	<p>Digital Services Alliance agreement to pursue and deliver service project business in the U.S.</p>
EDS, HP	<p>SI Cooperation Agreement (joint proposals).</p>



**SOME EDS ACQUISITIONS  
AND ALLIANCES**  
(continued)

Name	Type
Minicom	Provides EDS access to Mincom's experience in the energy market.
Northwest Corporation Banc One Corporation	For large retail bank processing systems.
Versant Object Technology Corp.	Agreement to jointly provide object technology support services.
Apple, AT&T, Computer Data Systems Inc., Digital, DG, IBM, Price Waterhouse, SUN, TRW	<u>Bid by Bid Teaming:</u> System and network design.
Andersen Consulting, Hughes	Consulting, feasibility, scoping.
Aetna Life, Allen Bradley, Unilever	Teaming Arrangements.
Lucky-goldstar	<u>Joint Ventures:</u> Joint venture provides SI, data processing and communications to Korean companies.
Telefonica	Joint venture to develop, sell, install and market packet data networks.

**Table A-5**  
**SOME ANDERSEN CONSULTING ACQUISITIONS**  
**AND ALLIANCES**

Name	Type
Computer Management Associates	<p><u>Acquisitions:</u>                      Exclusive rights to Computer Management's facilities management software.</p>
McCormack & Dodge PIOS	<p>Part of an agreement to jointly market MD's Millennium and Andersen's MAC-PAC.</p>
Synerlogic	<p>Strengthen Canadian presence.</p>
Systems, Applications and Products (SAP) AG	<p>Joint ownership of SAP Consultants, a software development and services company in Germany.</p>
Amdahl	<p><u>Alliances--Hardware:</u>                      3 year non-exclusive agreement for the promotion of packaged solutions.</p>
AT&T	<p>Andersen sells AT&amp;T's network server products.</p>
Compaq/Sears Business Systems Centers	<p>Andersen holds the status of a dealer for Compaq products.</p>
Dell Computer	<p>Multi-year re-marketing agreement for customers downsizing into client/server environments.</p>
Digital	<p>Member of Business Integration Partner Program. Digital hardware can be marketed by Andersen in large SI bids.</p>
FileNet Corp.	<p>Re-marketing of image processing products.</p>
Groupe Bull	<p>Agreement for joint development of Foundation.</p>
Health Systems Group	<p>Andersen will support product sales of medical records imaging systems.</p>
HP	<p>Andersen can re-market HP's complete line of hardware in SI projects. Renewable annually.</p>
IBM	<p>Series of standard agreements on hardware and initiatives on mainframe application software.</p>
Norand	<p>Non-exclusive agreement enables the two companies to work together to develop integrated solutions for retail, wholesale distribution and consumer products clients.</p>



## SOME ANDERSEN CONSULTING ACQUISITIONS AND ALLIANCES

(continued)

Name	Type
Pyramid Technology Corp.	Non-exclusive agreement identifying Andersen as a reseller of Pyramid products and an integration partner.
Sequent Computer Systems	Enables Andersen's use of Sequent systems in the commercial market.
Sun Microsystems	Andersen will team with Sun to integrate Sun Unix into other environments, such as IBM.
Tandem	Designed to move Tandem Hardware.
	<u>Alliances--Software:</u>
Bolt Beranek and Newman (BBN)	Andersen and BBN package manufacturing software.
Digital	Andersen is a Cooperative Marketing Partner which includes Digital's agreement to market MAC-PAC/D family of software products, Foundation and DCS.
HP	Agreement for Andersen to market NewWave office automation software. HP leverages Andersen's capabilities in integrating systems platforms via application of software packages.
Inference Corp.	Andersen is allowed access to Inference's expert system development software, Automated Reasoning Tool, as part of integration contracts and internally.
Microsoft	Cooperation on client/server integration projects and marketing Microsoft's LAN Manager network software at reduced prices.
Multitrack Software Development Corp.	Established to assist large customers in managing multiple development projects.
Systematics Financial Services, Inc.	Agreement to provide SI and banking software to nation's financial institutions.
Systems Center (SC)	Alliance for integration projects which include enterprise network management components.
Vicorp	Andersen utilizes Vicorp software in exchange for licensing Vicorp's application development utilities and application programming interface.

**SOME ANDERSEN CONSULTING ACQUISITIONS  
AND ALLIANCES**  
(continued)

Name	Type
Codex	<p><u>Alliances--Network Services:</u></p> <p>Alliance to pursue systems integration opportunities.</p> <p>Enables AC to offer networking services to clients, use Infonet data centers and leverage Infonet skills.</p> <p>Provide software tools for managing enterprise wide networks.</p>
Infonet	
MCI/International Tele-management	
Cincinnati Bell Information Systems	<p><u>Alliances--Other:</u></p> <p>Provide services with Andersen Systems, including feasibility studies, system design and development, application porting, device driver development and implementation.</p> <p>Service Alliance Agreement: This non-exclusive agreement is to pursue SI business across a broad range of industries.</p> <p>Other alliances.</p>
Digital	
Apple, Wang, NCR, Novell, Olivetti	



**Table A-6**

**SOME IBM ALLIANCES**

Name	Type
American Management	<p><u>Acquisitions:</u>                      IBM owns 10% of American Management's stock. Works with IBM on projects involving state and local government. Provides coding and customization support and works on image based SI projects.</p>
Computer Task Group	<p><u>Equity investments</u> in key vertical market oriented companies:                      Provides services to mfg., telecom., healthcare.</p>
Geographic Systems Corp.	Vendor of geographical related information systems.
Hogan Systems	Software developer for banking industry.
PCO Inc.	Fiber optics.
Plexus Corp.	Insurance industry applications.
Polygen Corp	Molecular modeling.
AT&T	<p><u>Alliances:</u>                      Agreement with IBM to develop software interfaces to make network management systems interoperate.</p>
ERI	Business Partner and Cooperative Services Supplier. Provides comprehensive set of AIX based SI services which connect disparate hardware and system software in a wide variety of applications environments.
Netview	Network Integration Alliance.
Andersen Consulting, Coopers & Lybrand, CSC, EDS, Martin Marietta Data Systems, SHL Systemhouse, aerospace companies, regional telephone companies	Other alliances.

**SOME IBM ALLIANCES**  
(continued)

Name	Type
First Boston Corp.	<i>Joint Ventures:</i> Provides integrated trading and investment management systems to the financial services industry.
GFI Informatique	Paris based arm of EDS to provide services to French legal profession).
Policy Management Systems Corp.	Major outsourcer and software developers for insurance companies.
US Trust Co.	Other joint venture.

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# **International Business Machines Corporation**

## **A Competitive Review**

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GIS Consulting  
June 18, 1992



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# 1 INTERNATIONAL BUSINESS MACHINES CORPORATION

## 1-1 Corporate Overview

IBM is in the business of helping people solve problems through the use of advanced technologies. IBM creates value by offering products and services that help customers succeed. These offerings include: services, software, systems, products, and technologies.<sup>1</sup>

Through its worldwide marketing and services companies, business partners, and strategic alliances, IBM offers unique solutions and skills to address each customer's individual needs. IBM manufacturing and development businesses and key alliances provide timely and competitive offerings to meet the demands of the markets IBM serves.<sup>2</sup>

IBM revenues last year topped \$64 billion. \$40 billion of that revenue came from the ES/9000 systems, \$14 billion from the AS/400 systems and \$1.7 billion from the RS/6000 systems. Included in these revenue figures are hardware, software, and services. However, all is not well with IBM. Last year IBM had the first yearly loss in its history (\$2.8 billion) and this year had a down revenue first quarter.<sup>3</sup>

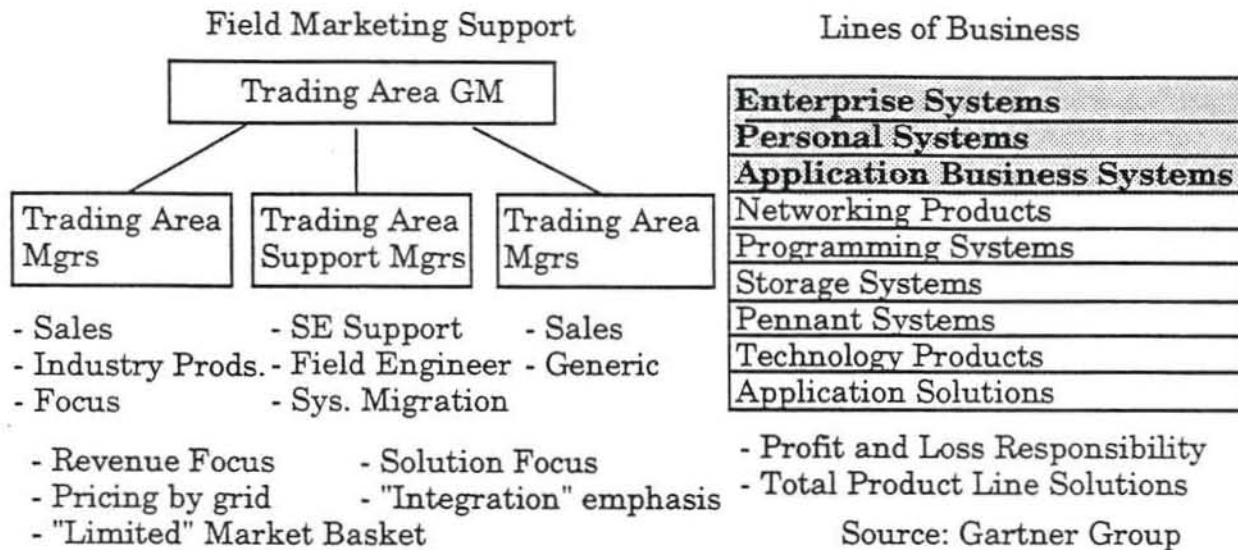
IBM's dramatic reorganization announcement of December 5, 1991 telegraphed the company's frustrations and concerns about competing successfully as profound changes are sweeping the information industry.<sup>4</sup> IBM divided the company into separate Business Units.

This paper will discuss only three of those Business Units:

- Enterprise Systems provides enterprisewide solutions involving the development and manufacture of IBM's largest general-purpose processors, operating systems, systems software, and supercomputing offerings.
- Application Business Systems develops and manufactures processors and related software for small- and medium-sized businesses, and departments of large companies.
- Personal Systems develops and manufactures personal computers and high-performance workstations and their operating systems, as well as multimedia, graphics, and display systems.<sup>5</sup>



## The "New" IBM -- A Family of Companies



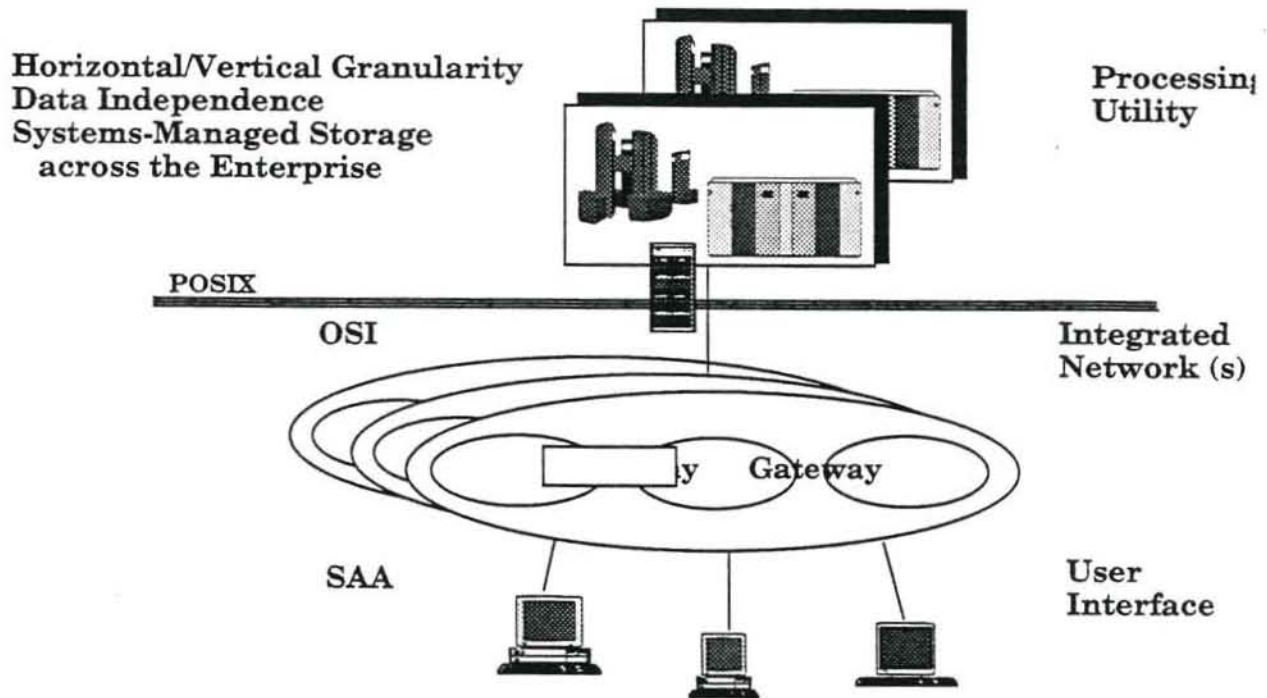
### 1-2 IBM's Computing Vision

In September, 1990 IBM introduced its vision for enterprise computing. It is broad, encompassing all the Information Technology resources of the enterprise and provides the architecture for meeting the requirements of computing in the 1990s. It allows the user to tie together all the enterprise resources/systems into a single system (utility), accessed by users through a consistent set of Systems Application Architecture (SAA) defined interfaces. Users will access the utility through a System Network Architecture (SNA) backbone network with gateways to Open System Interconnection (OSI) networks. Advanced Program-to-Program capabilities (APPC) were announced to provide the foundation for client/server application implementation and application/system interoperability.<sup>6</sup> The first step in the implementation of IBM's vision was the introduction of IBM's new hardware platform, the System/390 (S/390) and its new processors, the Enterprise System/9000 (ES/9000). The ES/9000 was introduced as a replacement for the ES/3090.<sup>7</sup>

The IBM vision is a centrally managed architecture with the provision for distributed system and application function. There were two primary themes to IBM's System/390 announcement: wider, more comprehensive information access under host control and accomodation of cooperative and distributed processing. The announcement blesses local processing if a host is used to provide security, backup, integrity and access paths to all data components.<sup>8</sup>



## The IBM Vision of Enterprise Computing



**A single "super server" to all enterprise clients**

Source: Gartner Group

APPC is the foundation for IBM's client/server architecture implementation. It is a major addition to MVS/ESA -- over 400,000 lines of code. APPC is the "catcher" of client requests for services on a host system, and the "requestor" on a client system. Any client or server entity that implements the APPC protocols can access an APPC entity through a gateway into an SNA or TCP/IP network.<sup>9</sup>

IBM has to transform its system control and management to effectively implement its enterprise vision. Many of the pieces have been announced. AD/Cycle, SMS, NetView, APPC, ESCON, and the Repository are all key pieces. The glue to this evolution is SystemView. The goal of SystemView is to address the primary systems control and management issues of the enterprise.<sup>10</sup>

In September 1991, IBM made an announcement that continues the vision -- integrating the enterprise. IBM's vision of this "open enterprise" embodies the principles expressed by the Institute of Electrical and Electronic Engineers (IEEE) in their definition of an open systems environment.<sup>11</sup>

IBM's vision for client/server computing is to provide enterprise-wide access to applications and data, both new and existing. This access must work across the widest range of information technologies and transparently present to the end-user the image of a single integrated solution. This vision places new demands on the Management Information System (MIS) organizations and the application providers. The MIS organization must be able to connect, manage, operate, and support diverse systems platforms. The applications must include sophisticated, easy-to-use solutions that maximize the potential of each system in the distributed enterprise. Open solutions are the key to the evolving distributed environment whether they are based on international standards, consortia definitions, or de-facto standards.<sup>12</sup>

IBM's client/server strategy is to deliver a systems infrastructure that enables cooperative applications across the open, distributed enterprise. Key among the client/server announcements are LANRES/VM and LANRES/MVS which expand the role of the VM and MVS mainframe to support Novell's NetWare LAN environments.<sup>13</sup>

In support of integrating the open enterprise, IBM announced its intention to support Portable Operating System Interface for Computer Environments (POSIX) interfaces on MVS/ESA and OS/400, and announced its intention to deliver selected components of the Open Software Foundation's Distributed Computing Environment (OSF/DCE) on MVS/ESA, OS/400, and OS/2.<sup>14</sup> For customers that desire a UNIX-type operating environment on an ES/9000 platform, IBM announced Advanced Interactive Executive/ESA (AIX/ESA) which will support OSF/DCE.<sup>15</sup> IBM also announced the Information Warehouse framework which is an architecture for Enterprise-wide data access and availability.<sup>16</sup>

The reorganization announcement of December 5, 1991 has users asking questions. Has IBM abandoned the SAA vision? Will it now leave the individual Lines of Business to form their own visions specific to their products?<sup>17</sup>

Without a single overall cohesive vision or product set in place IBM is forced to sell and, more importantly, to develop products that address solutions in a systems platform sense vs. a software or strategic services sense.<sup>18</sup>

**Table 1 Enterprise IT Architecture**

	SAA	AIX	NAS
Servers	MVS VM OS/400 OS/2	S/370 RS/6000 PS/2	VMS ACE OSF/1 WindowsNT MVS SVR4
Development	AD/Cycle	SoftBench	COHESION
Repository	IBM Repository	(Future)	CDD/Repository
Distribution Function	APPC DCE	APPC DCE	ACMS DCE
OLTP	CICS	CICS	ACMS
Security	Kerberos	Kerberos	DSSA
Network	SNA OSI	SNA OSI	DECnet OSI
Network Manager	NetView	NetView	EMA
System Manager	SystemView DME	SystemView DME	EMA DME
Office	OfficeVision	OfficeVision	All-in-1

Source: Gartner Group<sup>19</sup>



## 2 IBM ENTERPRISE SYSTEMS

### 2-1 How IBM Sells the Enterprise Systems

IBM Enterprise Systems are sold directly to customers in the traditional manner by the IBM Account Manager and their team. Customers are supported by the Account Team, which contains both sales and technical sales support (systems engineer) personnel.<sup>20</sup>

Each year, for each Enterprise Account, IBM plans exactly what it will sell and how it will sell it to each customer. The IBM year is the same as the calendar year and once opportunities are identified by the annual Account Planning process, the Account Manager creates the plan. This plan is a list of events and activities which target key individuals in the customer's company, with the aim of selling a particular IBM solution.<sup>21</sup>

Traditionally, IBM tackles the sales campaign from the top of the customer organization down. The Account Manager tries to gain the executive mindshare before attempting to solve the business problem.<sup>22</sup>

IBM recognizes that the massive expenditure required by mainframe computing means that the decision maker in this instance is usually at the very top of the customer's company and so the Account Manager focuses themselves at this level. An advantage for IBM in making contact in this way, is that IBM can quickly undo any decisions made in any other competitive vendor's favor lower down in the customer hierarchy by invoking executive contacts.<sup>23</sup>

IBM's next step is to understand the customer's business plans and then to develop an "IT Plan" with the customer, which supports the customer's business plan. In doing this, IBM effectively writes the Request for Proposal (RFP). Having linked the use of computers to business requirements, IBM then helps the customer buy the solution by doing a financial justification. A financial justification is not a competitive cost of ownership. It is the balancing of costs and the timing of the costs of the computer solution with the financial benefits of implementing the solution. In this way, IBM makes it easier for the customer to buy the solution. The IBM marketing representative also elevates himself to a position of business or financial consultant in helping prepare these justifications and can more easily cost justify any price differences between IBM and the competition.<sup>24</sup>

IBM rarely has to prove that a configuration will work. Because IBM is "IBM", customers believe. IBM will often show a standard demonstration illustrating more than the customer's actual requirement. The customer then assumes that, "If IBM can do all that, it must be able to cope with my smaller problem". In this way, IBM saves time and effort in what can be the most labor-intensive aspect of selling. All these tactics can work because IBM does not forget to sell the "why"



before it sells the "how". Most customers assume that IBM will know the how.<sup>25</sup>

Although the entire IBM organization is a very effective selling machine, there are problems. "Everyone sells" and everyone up the management hierarchy is on some kind of sales quota. This means the IBM marketing representatives, backed by IBM management, will go to extremes to force a customer to buy what IBM wants and install the system when IBM needs it. Many customers are angered by this behavior and resent being manipulated by IBM. There have been instances where IBM has forced good customers to buy and install products in December and then announced price reductions or product discontinuations the following February or March. Many IBM customers are very unhappy about this behavior, but assume that all computer vendors are like IBM and all marketing representatives are on quota or commission.<sup>26</sup>

## 2-2 Strengths

### 2.2.1 Organization

IBM is the dominant player in the market with the associated benefits of size, stability, and recognition. IBM sets customer expectations through its "IBM Executive Education", "Executive Seminars" and "Executive Calls" that sell "IBM" and "IBM's Vision of Computing."<sup>27</sup>

### 2.2.2 Software

The MVS/ESA (Multiple Virtual Storage/Enterprise Systems Architecture) operating system is geared to large-scale installations, especially those needing processing power, a multi-processing operating environment, and built-in security and integrity. Through APPC/MVS, MVS supports communications between applications and other systems using the SAA interface. It also supports communications between other platforms using SNA LU6.2 protocol, including Common Programming Interface for Communications.<sup>28</sup>

The operating system for small or intermediate systems is VSE/ESA (Virtual Storage Extended/Enterprise Systems Architecture), a batch and transaction oriented operating system, which has evolved from the VSE/SP systems. It can be a primary operating system, running alone or as a guest under VM. A major new feature of VSE/ESA is its ability to develop SAA applications. These are interchangeable with similar MVS applications and promote VSE's affinity with MVS. Yet, VSE/ESA is not an SAA product itself.<sup>29</sup>

VM/ESA (Virtual Machine/Enterprise Systems Architecture) is a user friendly, interactive operating system. The Conversational Monitor System (CMS) used to communicate with VM is easy to use. Programs written using CMS can be submitted with Job Control Language (JCL). VM supports a guest environment. Both MVS and VSE can run as guests under the VM operating system using separate

partitions from VM and appearing as separate machines. VM/ESA is an SAA-compliant system. Its SAA features permit distributed database and interoperability.<sup>30</sup>

Each of the operating systems (MVS, VM, VSE) is designed to address a specific customer type and workload although IBM has two other operating environments. AIX (Advanced Interactive Executive) is IBM's latest mainframe UNIX.<sup>31</sup> And TPF (Transaction Processing Facility) is a low function, high performance system used mainly by major airline reservation systems.<sup>32</sup>

### **2.2.3 Hardware**

The ES/9000 series has a large power range. The ES/9000 has a 100-fold performance range from the smallest model to the most powerful. The ES/9000 series processor performance is 2.0 to 2.2 times the performance of its top-of-the-line ES/3090 Model 600 J in commercial applications, 2.4 to 3.1 times in scalar, and 2.3 to 3.2 times in vector supercomputing performance.<sup>30</sup> For large central servers, IBM has announced the systems complex (sysplex) to provide the growth and high availability required by many enterprises. To provide for more processing power than that offered by a single, large processor complex, IBM will allow users to grow horizontally by "virtually coupling" up to 16 processor complexes (eight announced) as a single processing image -- a sysplex. IBM will utilize a stand-alone, shared expanded storage unit to hold shared data and programs. The sysplex timer synchronizes all time-of-day clocks in the complexes. The sysplex will have access to all the peripheral devices through the ESCON directors.<sup>31</sup> Enterprise System Connection (ESCON) Architecture implements fiber-optic channels to provide significantly higher data rates than traditional data channels. I/O equipment can be located up to 37.2 miles from the processor.<sup>35</sup>

## **2-3 Weaknesses**

### **2.3.1 Organization**

IBM ignores the end-user and can be intimidating and inflexible.<sup>36</sup> IBM marketing representatives are paid commission. This means that they are often more concerned with selling and installing IBM systems within a given year, than providing the customer with the best solution.<sup>37</sup>

### **2.3.2 Software**

The IBM software environment is generally a complex environment. Many subsystems have to be layered on top of the core operating system to gain full functionality. There are many current variants within the same operating system. IBM offers four major operating systems (MVS, VM, VSE, AIX) and it is not a trivial task to move between those operating systems. The system complexity leads to many

job specialities with three times more people are required to run an IBM mainframe than an equivalent VAX system, according to the publication, Computer Economics. All IBM based software tends to be given a premium price and is increasing.<sup>38</sup>

At present, IBM offers ESA versions of all its major mainframe operating systems: MVS, VSE, and VM. Yet, in spite of the availability of these ESA versions, many installations still run the "meat-and-potatoes" versions of these systems and have not yet moved up.<sup>39</sup>

The ES/9000 has no VAX-like system clustering available.<sup>40</sup> They have no software equivalent to the Distributed Lock Manager or the Connection Manager.

### 2.3.3 Hardware

The speed of the ESCON channels is limited by current direct access storage device systems. Some upgrades require substantial modifications to existing equipment.<sup>41</sup>

The 9021 is expensive to buy and expensive to run in terms of software, personnel, energy consumption, space, and plumbing (it's water-cooled). The 9021 requires two operating systems to run a commercial and engineering business - VM and MVS. Systems development is best accomplished for MVS environments using VM to provide acceptable interactive development environment for programmers. True peer-to-peer networking is very difficult to accomplish currently. The 9021 has no good complete CASE offerings yet available and application backlog is a major concern in these environments. Most IBM systems are designed around SNA -- IBM's proprietary hierarchical networking architecture. Non-IBM systems often do not connect or have limited function in this environment.<sup>42</sup>

Existing 9121 customers have a difficult choice when they need to expand. Customers faced with a move to 9021 systems when CPU power requirements exceed the 9121 range require a complete change of machine and much complexity such as installation of water cooling, additional floor space, etc.<sup>43</sup>



## 2-4 Product Profile ES/9000

### 2.4.1 IBM 9021 Models

The IBM 9021 FS series machines are the most advanced and powerful water-cooled members of the ES/9000 family.<sup>44</sup> The most common operating systems for these models are MVS, VM, AIX, and TPF.

**Table 2 IBM 9021 FS Series Performance**

Model	Processors	Mips <sup>45</sup>	Digital Competitor
9021-520	1	47	VAX 9000-420 or VAX 6000-620
9021-640	2	90	VAX 9000-430 or VAX 6000-630
9021-660	2	91	VAX 9000-430 or VAX 6000-630
9021-740	3	130	VAX 9000-440 or VAX 6000-650
9021-820	4	166	VAXcluster
9021-860	5	202	VAXcluster
9021-900	6	235	VAXcluster



The IBM 9021 J series machines are the older water-cooled members of the ES/9000 family. The most common operating systems for these models are MVS, VM, AIX, and TPF.

**Table 3 IBM 9021 J Series Performance**

Model	Processors	Mips	Digital Competitor
9021-330	1	20	VAX 6000-610
9021-340	1	23.5	VAX 6000-610
9021-500	2	45	VAX 6000-620
9021-580	3	65	VAX 6000-630
9021-620	4	83	VAX 6000-630
9021-720	6	117	VAX 6000-650

### 2.4.2 IBM 9121 Models

The IBM 9121s are the air-cooled, mid-range mainframes of the ES/9000 family.<sup>46</sup> The most common operating systems are VSE, VM, MVS, AIX, and TPF.

**Table 4 IBM 9121 Performance**

Model	Processors	Mips <sup>47</sup>	Digital Competitor
9121-190	1	8	VAX 6000-510
9121-210	1	12	VAX 6000-510
9121-260	1	16	VAX 6000-610
9121-320	1	20	VAX 6000-610
9121-440	2	30	VAX 6000-610
9121-480	2	38	VAX 6000-620
9121-490	2	38	VAX 6000-620
9121-570	3	57	VAX 6000-620
9121-610	4	74	VAX 6000-630

### 2.4.3 IBM 9221 Models

The IBM 9221s are the air-cooled, small, inexpensive mainframe.<sup>48</sup> The most common operating system is VM.

**Table 5 IBM 9221 Performance**

Model	Processors	Mips <sup>49</sup>	Digital Competitor
9221-120	1	2	VAX 3300/VAX 3100e
9221-130	1	3	VAX 3300/VAX 3100e
9221-150	1	5	VAX 4000-200
9221-170	1	6.5	VAX 4000-300
9221-200	2	10	VAX 6000-510

## 2-5 How Digital Wins Against the Enterprise System

Digital generally wins against the Enterprise Systems when the customer have certain requirements. One of those requirements is to have high availability through dual-hosting and cluster technology. Another is when the vendor has fault-tolerant, floating point, vectorized, and real-time offerings. A customer will choose Digital when they require superior integrated client-server and LAN management capabilities and multivendor integration, interoperability, and service support. Digital has OSF, OSI and POSIX compliance.<sup>50</sup>

If a customer requires ease of system operation and system management and the power and efficiency of Digital software development and software maintenance environments, the customer will choose Digital. When environmental issues are a concern, a customer will choose Digital because of Digital's highly efficient use of floorspace, electricity, and cooling resources.<sup>51</sup>



## 3 IBM AS/400 SYSTEMS

### 3-1 How IBM Sells the AS/400 Systems

Eighty percent of all IBM AS/400 (Application System/400) systems are sold to customers by IBM's Value-Added Resellers (VARs).<sup>52</sup> These resellers are considered key to IBM's direct sales personnel if they are to reach their personal sales and revenue goals.<sup>53</sup> IBM currently refers to organizations with which it has complementary marketing relationships as "Business Partners". A complementary marketing organization is "any non-IBM organization that provides end users information handling solutions that use or rely upon an IBM offering." Complementary marketing organizations may hold multiple relationships with IBM, and some may offer application products that compete with IBM.<sup>54</sup>

IBM's marketing representatives use a flexible approach in dealing with IBM "partners" so that the customer receives the best IBM solution available. One of IBM's stated operational goals is "solving our customers' information handling problems with the primary source of solutions coming from IBM directly and then the firm's Business Partners if the correct solution is not available directly from IBM."<sup>55</sup>

There are two broad categories for complementary marketing organizations: Business Partners and Reference Organizations. IBM Business Partners generally have contractual marketing relationships with the company.<sup>56</sup> Reference Organizations generally do not have a defined contractual relationship with IBM, but may be called upon to assist the firm as it seeks solutions and services for customers' requirements. The types or firms in this category are: Software and Service Organizations, Financing Institutions, Systems Integrators, Common Carriers, Consulting Organizations, and Facilities Managers.<sup>57</sup>

IBM defines its Business Partner relationships as follows:

#### 3.1.1 Industry Remarketers (IR)

Industry Remarketers are independent firms that buy designated products from IBM and add value with their own industry-specific offerings. These remarketers then market, install and otherwise support the IBM products, including IBM software. IRs set their own prices and terms and conditions, and are responsible for providing hardware, software and ongoing support. Hardware support includes installation planning and customer set-up assistance for IBM equipment. Software support involves distribution, application installation and program service and updates. Ongoing support consists of both marketing and technical assistance as they pertain to its offering.<sup>58</sup>



### **3.1.2 Application Specialists (ASs)**

Application Specialists are organizations that generally operate within a local area and have expertise in one or more industries. ASs are selected, contracted, assigned and paid by local IBM branch offices to assist IBM marketing personnel in marketing and installing IBM hardware, along with either IBM or their own software. ASs may also engage in joint marketing activities with IBM. ASs identify customer's requirements, develop an appropriate solution proposal featuring IBM products and secure a customer's agreement. ASs demonstrate products and arrange meetings between qualified prospects and IBM representatives for executing applicable IBM agreements. ASs also provide accurate technical and operational advice to customers before, during and after installation of IBM products and assist IBM in the role of providing ongoing support to the customer.<sup>59</sup>

ASs do not take title of IBM product inventory but instead receive CPU revenue-based fees for their marketing efforts.<sup>60</sup>

### **3.1.3 Authorized Installation Specialists (IS) and Authorized Project Application Specialists (PAS)**

Authorized Installation Specialists and Authorized Project Application Specialists are Business Partners who IBM looks to when the role of the Application Specialist does not fit. The Installation Specialist is used when a branch has obtained an order and requires assistance with only installation activities in a certain account situation. For the Project Application Specialist IBM looks for a Business Partner who will provide long-term assistance in the sell cycle and with pilot installation support.<sup>61</sup>

The ISs are expected to provide customer assistance, including installation planning, systems assurance, education planning and advice on customer responsibilities; as well as post-install support activities including system operation, preventive service, IBM maintenance, system management and problem determination. Because this assistance is less than that provided by Application Specialist, the IS receives fees based on a lower percent of the IBM revenue.<sup>62</sup>

The Project Application Specialist is a variation of the AS Business Partner for large and intermediate accounts. PASs are expected to provide assistance in the sales cycle and with installation support. PASs may also be called upon to do custom demonstrations, convert and demonstrate the existing application and perform other investment marketing activities. Because these marketing situations may require up-front investment on the part of the PAS, IBM may advance the PAS up to 50% of the base fees and a share in the financial risk. Additionally, the PAS relationship may extend up to 24 months for any specific marketing situation in consideration of longer sales effort required for large account customers.<sup>63</sup>

### **3.1.4 Industry Application Specialists (IASs)**

Industry Application Specialists are regional or national organizations that com-



bine marketing and installation capabilities with specific industry expertise and vertical application software. Some may support IBM application software while others may offer specific skills in such areas as system connectivity or competitive conversions. Once selected, IBM Industry Marketing works closely with the firm to develop market exposure. The decision to use an IAS is made by the local IBM branch office, which also pays the fees.<sup>64</sup>

IASs are expected to provide the same marketing and support services as do local Application Specialists but on a regional or national basis. An IAS may sell and install all products approved under a customer contract. This may include any product available to ASs as well as IBM's ES/9000. IASs may also sell their own software products to complement the IBM hardware and software solution.<sup>65</sup>

### **3.1.5 Territory Agent (TAs)**

Territory Agents are Business Partners that are assigned territories by branch offices to take the lead role in selling selected mid-range products to first-time users of IBM systems and to existing small business customers. Territories are established by the branch and may be industry specific, geographic, a combination of both, and named accounts. TAs are the primary interface between IBM and the customers within this territory, making them responsible for both marketing and support. Territory Agents are expected to serve as the primary interface between IBM and the customer in the assigned territory and to develop a marketing plan according to guidelines provided by IBM. This plan would include quantification of the prospect/product potential, marketing strategy, marketing programs and resources and training requirements for the current year. TAs must maintain, at a minimum, a number of full-time employees specified in the territory supplement to perform marketing assistance activities in a TAs specific territory. These employees must successfully complete an in-depth training program or demonstrate equivalent professional experience. TAs also provide ongoing sales, installation and technical support for the customer and maintain a high level of customer satisfaction.<sup>66</sup>

In addition to the above responsibilities, TAs must agree to perform some specific marketing assistance activities. TAs present IBM agreements to prospects for signing and deliver the agreements to IBM for acceptance. They submit order entry information for qualified prospects on forms provided by IBM, review order records for accuracy and submit order changes when required. TAs also assist IBM in resolving customer claims.<sup>67</sup>

A Territory Agent may sell and install any products approved under contract but special emphasis is placed upon the AS/400, ES/9370 and 4300 series products.<sup>6</sup>

### **3.1.6 Designated Agents**

Designated Agents are Application Specialists that, at the request of the local IBM branch, assume the sales, installation and support lead in a specific account. The

AS is selected to be a DA by IBM Industry Marketing or the IBM regional and/or area offices. The selection is based on the firm's skills, resources and solutions to assume the lead role. The fees paid to DAs are higher than those paid for all other complementary relationships except for TAs.<sup>69</sup>

A DA is expected to develop and conduct marketing programs, become the primary customer contact for IBM products and present IBM agreements, all in support of their sales activities. On the installation side, DAs would develop installation plans for IBM products and perform backlog management reviews and changes. In the post-installation effort, they would assist IBM in accounts receivable and claims resolution, problem determination and problem resolution.<sup>70</sup>

### **3.1.7 Cooperative Software Suppliers (CSSs)**

Cooperative Software Suppliers enter into contracts to have IBM sell the CSS's application solutions along with IBM hardware and software. The IBM marketing representative can quote CSS prices, along with CSS terms and conditions, as well as take orders for the product without CSS direct involvement. Or, where appropriate, the CSS and IBM can work together to close the sale.<sup>71</sup>

These suppliers retain complete control over their products, providing IBM with the prices, terms and conditions, and product descriptions to be used during marketing activities. CSSs continue to own their products and set all terms and conditions, including prices and quantity discounts. CSSs provide IBM with the information to represent their products and to qualify customers. They retain the final authority to accept or reject any product order. CSSs may make joint sales calls with IBM as well as continue to market the product on their own. Finally, CSSs hold the primary responsibility to provide warranty and post-sales support, not IBM.<sup>72</sup>

## **3-2 Strengths**

### **3.2.1 Organization**

The AS/400 is the fastest growing midrange system. Since its 1988 introduction, the price of an entry-level AS/400 processor has decreased by a factor of three. The customer installed base has increased by a factor of six.<sup>73</sup> Solutions for the AS/400 are based on System/36 and System/38 technology. Since migration is key in the AS/400 product line, software solutions developed for other IBM systems or other AS/400 systems may be transferred to the AS/400 with minimal program modifications. Approximately 10,000 applications have been added through IBM's Business Partners and its own Advanced Applications Laboratory which incorporates advanced solutions into software packages at an affordable price.<sup>74</sup>



### 3.2.2 Software

The OS/400 operating environment has been designed to run exclusively on the AS/400 family of computers. In addition to running applications written specifically for IBM's AS/400, OS/400 can execute many applications migrated from the IBM System 34, 36, and 38. As well as maintaining a moderate level of System 3X support, the IBM Cross System Product/Application Execution (CSP) function in OS/400 allows execution of applications generated on a System/370 under CSP. Extensive adherence to SAA and object-oriented design on the operating system makes the OS/400 very easy to administrate and interface into existing SAA platforms. Call-level programming interfaces into the OS/400 system enable programmers to create extensions to the system function calls, as well as to the system applications themselves.<sup>75</sup>

Identical for all AS/400 models, OS/400 is easily installed and maintained, and offers a function-rich application development platform for its users. OS/400 tools provide users, operators, and programmers with a menu-driven system that controls displays and printers under an integrated relational database. These tools differentiate the AS/400 from other systems, such as the S/390 or any UNIX-based system, by incorporating systems management, network management, and interactive support capabilities. By integrating these functions into the operating system, savings are realized in the costs of staffing, training, and supporting the installation.<sup>76</sup>

### 3.2.3 Hardware

The new AS/400 systems all incorporate the latest IBM technologies including the 16Mb chip, the advanced billion-byte 3.5-inch disk drive, and the AS/400 N-Way multiprocessor architecture which puts multiple AS/400 processors together to improve system performance.<sup>77</sup> Other factors contributing to the strength of the AS/400 product line are the field upgradability between the series and the upward migration capabilities from IBM S/3X systems.<sup>78</sup>

## 3-3 Weaknesses

### 3.3.1 Organization

IBM ignores the end-user and can be intimidating and inflexible.<sup>79</sup> IBM marketing representatives and IBM Agents are paid commission. This means that both are often more concerned with selling and installing IBM systems within a given year, than providing the customer with the best solution.<sup>80</sup>

### 3.3.2 Software

The AS/400 uses a closed proprietary operating system and database. Interoperability between the AS/400 and UNIX environments has taken a back seat to PO-



SIX and DCE compliance. Although IBM states it has expanded its openness, no statement of direction is forthcoming on whether IBM will shift its focus to bridge the AS/400 and UNIX worlds. IBM announced that the OS/400 operating system would now support industry and international connectivity standards including OSI, TCP/IP, ISDN, and SAA. However, these enhancements are minimally functional or still under development.<sup>81</sup>

### 3.3.3 Hardware

Because the IBM AS/400 system platform is developed for the commercial application marketplace, some constraints have to be accepted. The AS/400 has several commercial application characteristics that hinder its ability to perform well as a direct processor of either numerically or graphically intensive application environments. In large part, this is due to the AS/400's current architecture optimization for transaction processing.<sup>82</sup>

Although N-Way architecture puts multiple AS/400 processors together to improve system performance, the Series' connectivity capabilities with other hardware platforms are still limited. Although field-upgradability is a major strength, a disadvantage occurs when customers prepare to upgrade from a low-end 9402 or mid-size 9404 to a high end 9406. An additional investment in new disk drives is required due to the change in chassis design from modular to rack mountable. The customers' hard disk storage is not protected because of the incompatibility of the disks across the product line.<sup>83</sup>

### 3-4 Product Profile AS/400

#### 3.4.1 IBM AS/400 Models

The IBM AS/400 is IBM's small to mid-sized business computer series that replaces the System/36 and System/38.

**Table 6 IBM AS/400 Performance**

Model	Processors	Rel Perf <sup>84</sup>	Digital Competitor
9402-E02	1	1.5	VAX 3100
9402-E04	1	1.9	VAX 3100
9402-E06	1	2.6	VAX 3100
9404-E10	1	2.6	VAX 3100
9404-E20	1	3.5	VAX 3100M80 or VAX 4000-300
9404-E25	1	4.2	VAX 4000-300
9406-E35	1	3.4	VAX 4000-300
9406-E45	1	4.8	VAX 4000-300
9406-E50	1	6.4	VAX 4000-500 or VAX 6000-510
9406-E60	1	10.2	VAX 4000-500 or VAX 6000-510
9406-E70	1	14.2	VAX 4000-500 or VAX 6000-610
9406-E80	2	25.2	VAX 6000-610
9406-E90	3	34.4	VAX 6000-620

### 3-5 How Digital Wins Against the AS/400

Digital generally wins against the AS/400 when the customer has certain requirements. When the customer needs networked and distributed processing requiring

remote databases, two-phase commit, and dynamic data dictionary they will choose Digital. Digital has products that offer access to IBM mainframe applications or databases. Digital offers high availability through dual-hosting and cluster technology. Digital also has fault-tolerant, floating point, vectorized, and real-time offerings. If a customer requires superior integrated client-server and LAN management capabilities Digital has solutions along with multivendor integration, interoperability, and service support. And Digital offers OSF, OSI and POSIX compliance today.<sup>85</sup>



## 4 IBM RS/6000 SYSTEMS

### 4-1 How IBM Sells the RS/6000 Systems

As with the AS/400 product line, the IBM marketing strategy for the RS/6000 (RISC System/6000) relies heavily on IBM's Value-Added Resellers (VARs).<sup>86</sup> In the United States and Canada, Industry Remarketers (IRs) can sell RS/6000s or AS/400s and they cannot be Territory Agents. In Europe, IRs do not sell AS/400s. In the United States and Canada, Territory Agents (TAs) only sell AS/400s, and cannot be IRs. In Europe TAs sell only AS400s.<sup>87</sup>

#### 4.1.1 Personal Computer Dealers (PCDs)

Personal Computer Dealers are firms that have been approved to buy selected products from IBM and then remarket them under their own terms and conditions. PCDs add value by having a local sales staff and by selling, installing and supporting these products. PCD resellers typically maintain an inventory of these PC products and are able to provide a fast and efficient response to end user orders.<sup>88</sup>

#### 4.1.2 Dealer Associated Remarketers (DAR)

Dealer Associated Remarketers are firms that have industry application solutions that are interested in marketing and installing their solutions with the IBM Person System/2 platform. DARs have an arrangement with IBM-authorized PCDs whereby they obtain PS/2 products directly from the dealer and market them to end users. DARs provide a value-added enhancement that is an industry offering. This enhancement may be software, hardware or a combination of both. DARs must be sponsored by an IBM-authorized PCD and IBM must approve the value-added enhancement.<sup>89</sup>

Typically, PCDs and DARs remarket PS/2s and related IBM software products. There are instances where they may remarket PC RTs, RS/6000s, System/36 PCs and AS/Entry machines.<sup>90</sup>

## 4-2 Strengths

### 4.2.1 Organization

IBM introduced the first version of the AIX operating system in January 1986. Since then, various other versions have been announced, usually associated with one of its other computing platforms. Until 1990, when IBM announced the RS/6000 and AIX Version 3, IBM was not regarded as a major UNIX player.<sup>91</sup>

During its five years in the marketplace, IBM has demonstrated its firm commitment to the pursuit of open system standards with AIX. The recent adoption of Sun Microsystems Network File System (NFS), for use on AIX and versions of MVS, clearly demonstrates IBM's strong desire to participate in the open-system, vendor-independent, UNIX environment. The IBM decision to procure Novell's NetWare for support by both OS/2 and AIX/6000 further demonstrates how far IBM is willing to go to ensure that AIX meets its broad based connectivity goals.<sup>92</sup>

#### 4.2.2 Software

The AIX operating system is IBM's version of UNIX. AIX (Advanced Interactive Executive) runs on IBM products (RS/6000, System/390, PS/2, and RT System) and a few micro-channel compatible (non-IBM) machines. It is the only operating environment produced by IBM that runs on all three classes of computers that IBM produces (desktop, mini, and mainframe). Strict adherence to the AT&T Systems V Interface definition ensures a standard programming interface for developing programs that can operate on all classes of IBM hardware. The AIX operating system provides the workstation or "traditional" distributed single-system user with responsive, preemptive, and deterministic multitasking and multiuser capabilities. The availability of X-Window software on the RS/6000 and PS/2 versions of AIX provides for a graphical user interface (GUI) on IBM's small and midrange classes of computers.<sup>93</sup>

With the introduction of the RS/6000, IBM announced AIX Version 3. AIX Version 3 includes the Bourne and Korn shells, 4.3 BSD from Berkeley Software Distribution, and the C shell. It also contains several IBM enhancements including improved security, optimized compilers, improved system and file management, and virtual memory management. Additional enhancements include realtime and distributed network processing, System Network Architecture (SNA) connectivity, and interoperability with IBM SAA.<sup>94</sup>

AIXwindows Environment/6000 is a mouse-and-icon graphical user interface based on the Open Software Foundation's technically oriented OSF/Motif. It supports enhanced X-Windows and a Graphic Library compatible with Silicon Graphics' GL interface.<sup>95</sup>

AIX NextStep Environment/6000 is another optional window-oriented graphical user interface and programming environment support on the RS/6000. It is compatible with NextStep from NeXT, Inc., and is more commercially oriented than AIXwindows.<sup>96</sup> Database Management Systems are available through several of IBM's Business Partners, including Ingres Corp., Data Access Corp., Informix Software, Oracle, Progress Software Corp., Servio Corp., Sybase, Inc., and Unify Corp.<sup>97</sup>

AIX Version 3 for RS/6000 provides networking facilities for TCP/IP (over IBM Token-Ring Networks, Ethernet LANs, X.25 packet-switching networks, and asynchronous links) and Network File System (NFS) (over IBM Token-Ring Networks and Ethernet LANs).<sup>98</sup> In October 1991, IBM claimed that over 3,000 core applica-



tions and 10,000 applications were available for the RS/6000.<sup>99</sup>

### 4.2.3 Hardware

The RS/6000 family is based on IBM's Performance Optimization With Enhanced RISC (POWER) second-generation Reduced Instruction Set Computer (RISC) architecture.<sup>100</sup>

In 1991, IBM released full disclosure reports that showed the RS/6000 as the price/performance leader for UNIX systems for both the Transaction Processing Performance Council (TPC) TPC-A and TPC-B benchmarks. The TPC-a Benchmark measures multiuser transaction processing, while TPC-B Benchmark represents a multitasking database application.<sup>101</sup>

## 4-3 Weaknesses

### 4.3.1 Organization

Although IBM has not yet decided to include AIX under the SAA umbrella, the provision of LU6.2, LU6.2 (APPC), and a host of other network and mainframe connectivity capabilities clearly indicates the trend toward bridging the communications gap between AIX and other proprietary IBM SAA platforms.<sup>102</sup>

### 4.3.2 Software

IBM's AIX is IBM's own proprietary UNIX. It is unclear how and when IBM will support OSF/1.<sup>103</sup>

AIX is a complicated environment to use, maintain, and administer. AIX only runs on IBM products and IBM enhancements are not standardized across versions of AIX. There is no SAA-compliant database system that runs under AIX and it has limited interoperability with other IBM products.<sup>104</sup> To date, no plans have been made to provide OfficeVision on AIX, as many mail, calendar, and database utilities are standard parts of the AIX and UNIX operating system toolset.<sup>105</sup>

It is difficult to integrate SNA Services for connectivity to IBM's own mainframes. The RS/6000 currently gains its database capability only from third-party products. The company's high-availability strategy is aimed at clustering a limited number of RS/6000 servers over a high-speed link and enabling failover as well as shared database access. IBM offers neither automatic hardware failure detection nor dynamic reconfiguration. It lacks basic functional enhancements for distributed environments, such as remote power operation, remote program loading and remote software maintenance.<sup>106</sup>



### 4.3.3 Hardware

The RS/6000 needs considerable tuning to accommodate many of the third-party database management systems.<sup>107</sup>

## 4-4 Product Profile RS/6000

### 4.4.1 IBM RS/6000 POWERserver Models

The RS/6000 is designed for engineering, scientific, and technical applications (intensive numerics computing, graphics, chemistry, connectivity, fluids, mathematics, structures, technical text, and visualization). IBM also hopes to capture the commercial computing market with the AIX NextStep interface and a wide variety of commercial application software.<sup>108</sup>

Table 7 IBM RS/6000 POWERserver Performance

Model	Type	SPEC	SPEC Int <sup>109</sup>	DECsystem Competitor*
220	Desktop	25.9	17.5	5000 Model 25
320H	Desktop	43.4	21.8	5000 Model 133
340	Desktop	56.6	28.8	5900
350	Desktop	71.4	36.2	
520H	Deskside	43.5	21.8	5000 Model 133
530H	Deskside	59.9	29.9	5900
550	Deskside	75.9	36.8	
560	Deskside	89.3	43.8	
930	Rack Mount	43.4	21.8	5000 Model 133
950	Rack Mount	75.8	36.8	
970	Rack Mount	100.3	49.3	

\* Competitive ranking based on SPEC Integer

## **4-5 How Digital Wins Against the RS/6000**

Digital is committed to OSF/1, an openly licensed UNIX operating system supported by scores of hardware and software vendors and customers.<sup>110</sup>

Network Application Support (NAS) is the leader in multivendor integration. NAS is open. It is based on standards and integrates UNIX, DOS, OS/2, MAC, VMS, and IBM's proprietary systems.<sup>111</sup>

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**Hewlett-Packard Company**  
**A Competitive Review**

Bryan Czarnecky  
GIS Consulting  
June 18, 1992

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# 1 HEWLETT-PACKARD COMPANY

## 1.1 Corporate Overview

Hewlett-Packard is engaged worldwide in the design, manufacture and service of a broad array of precision electronic instruments and systems for measurement, analysis and computation. HP offers integrated systems solutions to specific customer problems. Founded in 1939 by William R. Hewlett and David Packard, HP currently has more than 428 sales and service offices in 103 countries worldwide.<sup>1</sup> Its total revenues for last fiscal year topped \$14 billion.<sup>2</sup> HP generated \$10.2 billion in total computer system and sales revenues, (including systems, workstations, peripherals and software).<sup>3</sup>

## 1.2 HP's Computing Vision

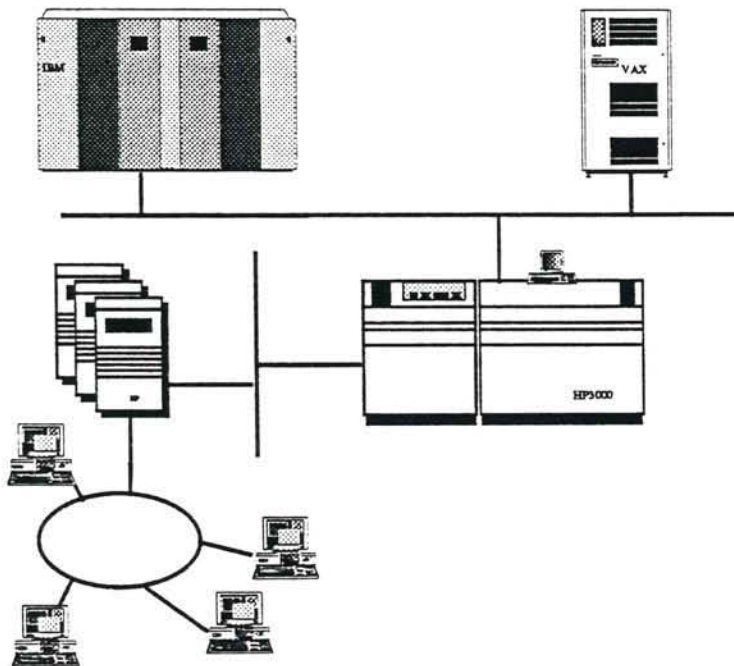
HP presents its computing environment in a simple model. The framework is three columns of technology (HP's Precision Architecture, Desktops and Networking), bridged by a computing environment called HP NewWave.<sup>4</sup> The broadest way of looking at NewWave is as a General Computing Concept designed to provide a networked environment of co-operating multi-platform systems and applications accessible through a uniform user interface.<sup>5</sup>

Committed to the idea that users prefer the freedom to assemble multivendor systems according to their needs, HP has supported open systems for many years, as is evident from the large number of standards bodies with which it is involved. These include the Open Software Foundation, X/Open, IEEE, the Network Management Forum, and ANSI. Over 300 HP staff worldwide work full time on standards and committees and many of its products have been adopted as industry standards. HP OpenView Network Management Server, HP Network License System (NetLS), and HP Software Distribution Utilities, for example, have been adopted for the Open Software Foundation's Distributed Management Environment (OSF/DME).<sup>6</sup>

The Open Software Foundation's Distributed Computing Environment (OSF/DCE) will be supported by all of the HP workstations and midrange environments (HP-UX, Domain/OS, OSF/1, and MPE/iX). OSF/DCE provides an industry standard for networking. It allows end users to access enterprise-wide resources and data from a desktop PC or workstation regardless of where on the network that information is held or on what kind of system it is stored. HP has endorsed Transarc Corporation's OLTP technology -- a foundation for transaction processing within open, distributed, client/server computing environments. Transarc is designed to comply with standards such as X/Open's distributed transaction processing model and XA interface.<sup>7</sup>

HP AdvanceNet is HP's long-term strategy for developing, marketing and implementing networks. AdvanceNet supports the OSI reference model and IBM's System Network Architecture (SNA). Novell's NetWare network operating system dominates the PC world, and is beginning to spread to the UNIX environment following agreements between Novell and HP, and with IBM. HP intends to port NetWare to run directly on PA-RISC. This will allow end users to integrate PA-RISC servers into PC-based LANs. It calls for elements of HP NewWave desktop manager and network licensing to be applied to NetWare. It also includes the development of Novell-specific network printing products, such as network interface cards for Ethernet and Token Ring.<sup>8</sup>

## HP's Vision of An Enterprise IT Architecture



Source: Gartner Group



**Table 1 Enterprise IT Architecture**

	<b>DEC</b>	<b>HP</b>
Product Platform	VMS, ACE, OSF/1, SVR4, Windows 3.0, Mac.	UX, MPE
Applications Development	COHESION*	OpenCASE
Repository	CDD/Repository*	
Software License Mgmt.	LMF V 2.0*	NET LS*
Distributed Function	DCE	DCE
Message/Object Broker	ACA*	TaskBroker*
High-volume OLTP	STDL*	Transarc*
Distributed Database	***	***
Global Network	OSI, TCP/IP	OSI, TCP/IP
Network Manager	EMA*	OpenView**
Systems Manager	EMA*	OpenView**
Systems Manager	EMA*	OpenView**
Integrated Office	***	NewWave Office*
Compound Document	CDA*, ODA	NewWave Office*
<p>* Pre-standard proprietary offering available on multiple vendors' platforms in 1992</p> <p>** Based on open standards, but not yet ported to other vendors' platforms in 1992</p> <p>*** Corporate offering has no announced strategy to support other vendors' platforms</p> <p style="text-align: right;">Source: Gartner Group</p>		

## 2 HOW HP SELLS

### 2.1 Direct Sales

HP's direct sales force is focused on selling to large "named accounts". All other business is conducted through indirect channels.<sup>9</sup>

HP has a well trained salesforce, with all sales representatives on a basic 80/20 split commission structure. The sales representative will emphasize consultative selling and profit improvement rather than box and feature selling. When the opportunity is large, the sales representative will use the entire resources of the company to help him sell. In general, even though it is an excellent engineering company, HP has more of a "sales culture" than Digital.<sup>10</sup>

Leasing can play an important part in an HP sale. HP uses it as a powerful sales tool. They will even lease single workstations.<sup>11</sup>

With the general business slowdown the HP Field has come under pressure for cost reduction. Apart from the usual hiring freezes and expense control, there are other aspects of cost reduction. There is a "de-focusing" on major corporate accounts. These accounts will still have a sales representative but not as part of a worldwide program and this sales representative may serve more than one account. HP is reducing as many "non revenue" generating staff as possible. The sales hierarchy is reduced. Former managers of managers are now in first line management and front line sales positions.<sup>12</sup>

### 2.2 Indirect Channels

HP divides its indirect channels into seven categories: Value-Added Resellers (VARs), Original Equipment Manufacturers (OEMs), Software Suppliers, Distributors, Dealers, Rental Companies, and Self-Maintainers. VARs, OEMs and Software Suppliers are known collectively as Value-Added Businesses (VABs). HP has designed support programs for each segment that are offered worldwide, although minor modifications for local conditions are common.<sup>13</sup>

#### 2.2.1 Value-Added Resellers (VARs)

Value-Added Resellers buy HP products, add significant value to the product (usually software) and take primary responsibility for selling to and managing the customer account. VARs typically only support their "value-added" software, passing-through installation and maintenance of HP products to HP Customer Service. Some large VARs also service the HP products they sell.<sup>14</sup>

### **2.2.2 Original Equipment Manufacturers (OEMs)**

Original Equipment Manufacturers buy HP products and integrate them into the OEM's own product. Usually the HP name is not on the finished product sold to the end user. OEMs take total responsibility for selling to, servicing and managing the customer account, although typically HP will provide installation and maintenance support.<sup>15</sup>

### **2.2.3 Software Suppliers (SWS)**

Software Suppliers are companies that market and support their own software solutions, which leverage HP systems. HP markets to and supports its products directly to the end user. Software Suppliers generally market foundation software (e.g., information management packages and application development tools) or specialize in conversion of software to HP systems.<sup>16</sup>

### **2.2.4 Distributors**

Distributors provide an extension of HP's sales force by distributing a specified set of products into designated markets or geographical areas. Wholesale distributors are authorized to resell to other distributors or dealers.<sup>17</sup>

### **2.2.5 Dealers**

Dealers buy and stock HP's high-volume products for resale to end users. Dealers ensure the easy availability of HP products within a designated geography to a broad range of customers in all markets. HP's Vectra PC line and PC peripherals are the primary products sold through dealers. Dealers usually provide direct end user service on the HP products they sell, although they are not required to do so.<sup>18</sup>

### **2.2.6 Rental Companies**

Rental Companies provide service to end-user customers through a local inventory and rental of specific HP products.<sup>19</sup>

### **2.2.7 Self-Maintainers**

Self-Maintainers are HP customers who are prepared to assume the responsibility of managing their own hardware maintenance. Self-Maintainers are typically very large corporations with a significant investment in large HP systems and/or workstations, and other vendors' products.<sup>20</sup>



### 3 HP PRODUCT PROFILES

#### 3.1 HP Systems

HP has two lines of midrange systems which are both designed around the same PA-RISC architecture: the HP 9000 Series 800 and the HP 3000. The hardware for the two systems is essentially identical. It is the operating system and the price that differ.<sup>21</sup>

#### 3.2 HP 9000 Series 800 Models

The HP 9000 Series 800 is a broad range of UNIX machines based on HP's PA-RISC. The HP 9000 Series 800 models are primarily used for commercial transaction processing systems, offering databases, languages, systems management products, and tools.<sup>22</sup>

**Table 2 HP 9000 Performance**

Model	Processors	Mips	TPC-A <sup>23</sup>	Digital Competitor
850	1	14	15.0	VAX 4000-200
855	1	22	24.0	VAX 4000-300
860	1	23	30.0	VAX 6000-510
865	1	53	45.0	VAX 6000-610
870-100	1	53	74.5	VAX 6000-610
870-200	2	100	111.2	VAX 6000-620
870-300	3	150	145.0	VAX 6000-630
870-400	4	200	175.0	VAX 6000-640

### 3.3 HP 3000 Models

The HP 3000 Series is a broad family of commercial computers based on HP's PA-RISC. All systems run MPE, the proprietary HP 3000 operating system. HP 3000 computers are optimized for commercial departmental processing and online transaction processing (OLTP).<sup>24</sup>

**Table 3 HP 3000 Performance**

Model	Processors	Mips	TPC-A <sup>25</sup>	Digital Competitor
950	1	14	18.0	VAX 4000-300
955	1	23	30.0	VAX 6000-510
960	1	23	38.0	VAX 6000-610
980-100	1	53	60.0	VAX 6000-610
980-200	2	100	100.0	VAX 6000-620
980-300	3	150	154.0	VAX 6000-630
980-400	4	200	177.0	VAX 6000-640

## 4 HP's STRENGTHS AND WEAKNESSES

### 4.1 Strengths

#### 4.1.1 General

HP is a good and well respected engineering company whose technology rests on a stable foundation of service, quality, reliability and standards.<sup>26</sup> HP is a large and financially strong company who has a large loyal customer base.<sup>27</sup>

#### 4.1.2 Hardware

HP has become a market leader in reduced instruction set computing (RISC) technology, offering RISC-based workstations, servers, and minicomputers aimed at commercial, scientific, technical, and engineering applications. RISC-based systems offer a substantial price/performance advantage compared with traditional CISC (complex instruction set computing) systems.<sup>28</sup>

HP's Precision Architecture RISC (PA-RISC) technology will be at the heart of its future workstation and midrange systems. It has been designed to operate with both high clock speeds and high rate of processing per cycle to provide maximum performance. PA-RISC provides a single scalable architecture and thereby generates systems which attract applications from Independent Software Vendors (ISVs) and thus win customers.<sup>29</sup>

HP is promoting PA-RISC as an industry standard.<sup>30</sup> HP has licensed its PA-RISC technology to Hitachi and Samsung. Hitachi will supposedly work on large CPU's and Samsung on the lowend of the workstation market. HP will "OEM" systems from these vendors and rebadge them. HP has acquired a 10% interest in Sequoia Systems (Fault Tolerant Unix Supplier). The Sequoia Systems product line fills a gap in HP's product line but is incompatible with anything else they have and is very expensive.<sup>31</sup>

#### 4.1.3 UNIX Systems

A fundamental part of HP's open systems strategy is its commitment to the UNIX operating system. HP-UX, the HP version of UNIX, is based on, and compatible with, UNIX Systems Laboratories' UNIX System V operating system. HP-UX complies with X/Open's XPG3, POSIX 1003.1, and the SVID2 interface specifications for portable software applications.<sup>32</sup>

While HP will continue to support and enhance HP-UX, the company believes its future lies with OSF/1 and its decedents, supported by vendors including IBM and Digital. HP's version of OSF/1 will initially run on its PA-RISC workstations



and servers, and then be ported to other HP workstations and multiuser systems.<sup>33</sup>

There are several key elements to HP's open systems or cooperative computing strategy, such as Open Software Environment, OpenView, HP VUE, and NewWave.<sup>34</sup>

The Open Software Environment for programmers and developers is designed to ensure optimal integration of applications, and maximize the productivity of software development staff. The OSE includes two areas of software: a development environment which deals with the generation of applications utilizing computer-aided software engineering (CASE) and a target environment which consists of tools that provide and control the application itself.<sup>35</sup>

OpenView is a vendor-independent system which consists of a range of network and systems management tools which enable systems managers to integrate multivendor local and wide area networks. OpenView uses standards such as X.400 electronic mail, X.500 directory, and File Transfer Access Management (FTAM) services. It is available on a wide range of products including MS-DOS PCs, HP, Sun, and IBM RS/6000 workstations.<sup>36</sup>

To make systems easier to use, HP has developed the HP Visual User Environment (HP VUE), a window-based, menu-driven system for UNIX workstations based on the industry-standard X windows system Version II and the Open Software Foundation's OSF/Motif. VUE supports Motif, OPEN LOOK, and traditional UNIX applications, each of which is identified as an icon and can be executed by a user having no knowledge of where it actually resides on the network. HP VUE includes a context-sensitive help system, graphical and non-graphical customization features, file management, workspace and window management, session and log-in management. Part of the NewWave Computing strategy, HP VUE is also available on Sun SPARCstations.<sup>37</sup>

NewWave is an "object management" open user environment which simplifies the integration of applications. NewWave Computing is a strategy for linking a variety of applications running on different networked computers so that they operate as one completely integrated system.<sup>38</sup>

NewWave is an object-oriented system with an icon/mouse-based graphical user interface (GUI), but it is more than just a graphical desktop environment. NewWave provides a means to integrate software from different vendors such that data can be used independently of the applications which created them and without the need for conversion to new formats. It allows users to create compound documents using data from a variety of different applications, such as graphics, spreadsheets, and word processing packages. In addition to this ability to treat data as "objects," NewWave also features "agents" which can be used to automate repetitive tasks.<sup>39</sup>

NewWave Office is designed to integrate office applications and is available for UNIX and OS/2 servers, for HP's proprietary minicomputer systems, and for MS-DOS and OS/2-based standalone or client PCs.<sup>40</sup>

To attract mainframe users, software from Oracle, Ingres, Icncom (Supra), Soft-



ware AG (Adabas, Natural), and others has been ported to the HP 9000 series. HP also offers a range of software products which simplify migration from an IBM to a UNIX environment, such as VIS/TP from VISystems, used to port a CICS/Cobol environment to a UNIX system and Conveyer from Infosoft, which converts programs written in Cobol to UNIX.<sup>41</sup>

HP SNA and DECnet emulation software provide access to data, files, and application services residing in IBM MVS or VM environments or Digital VAX/VMS environments.<sup>42</sup>

HP software (Case and OpenView) have been licenced to IBM and HP is working with Sun on Object management.<sup>43</sup>

#### 4.1.4 Non UNIX Systems

MPE/iX (Multi-Programming Executive/integrated UNIX) is the proprietary common operating environment across the entire family of HP 3000 systems. It is a general-purpose, multiuser operating system that supports both interactive and batch processing. Over the years, MPE has been continuously tuned and refined for on-line transaction processing (OLTP) applications. Compatibility with previous versions of MPE has long been a hallmark of MPE and the HP 3000. Even programs developed on the discontinued CISC (complex instruction set computing) versions of the HP 3000 can run without recompilation (using compatibility mode emulation).<sup>44</sup>

MPE/iX supports an open environment that provides a wide variety of de facto and industry standards: operating system, user interfaces, networking, databases, development tools, and programming languages. These standards include X/Open's POSIX operating system interface, X-Windows and OSF/Motif graphical user interface (GUI), distributed application services based in the International Organization for Standardization (ISO's) Open Systems Interconnection (OSI) model, ARPA Telnet, IBM's SNA network and SAA applications interoperability, ANSI-standard SQL relational DBMS, industry-leading multivendor CASE tools, and ANSI-standard programming languages.<sup>45</sup>

MPE and HP 3000 systems have been around for 20 years. Thousands of applications and tools compatible with MPE/iX are already on the market. POSIX support opens up much of the application and toolset library for UNIX, adding thousands more software packages to the list of MPE/iX-compatible software.<sup>46</sup>

High-availability features such as transaction management, automatic powerfail recovery, database logging and recovery facilities, and online diagnostics, are standard on all MPE/iX systems. Optional features such as mirrored disks, auto restart, SPU switchover, and online backup can be purchased to match specific availability and integrity requirements.<sup>47</sup>

MPE/iX supports a wide variety of multivendor networking standards that allow information to be easily distributed and accessed in local area and wide area networks. The operating system is defined so that user capabilities, the account struc-

ture, the file system, and system security are integrated. MPE/iX provides for Department of Defense (DOD) C2 functionality when combined with a user interface package.<sup>48</sup>

MPE/iX supports tightly coupled network (TurboIMAGE) and relational (ALL-BASE/SQL) model native databases as well as many third-party relational databases. HP recently became the first major computer vendor to deliver a production-quality, object-oriented database system (OpenODB).<sup>49</sup>

## 4.2 Weaknesses

### 4.2.1 General

HP is in many different businesses, not just computers. Their standard service is excellent, but they have difficulty doing the complex projects and business consultancy. They are moving away from global account management.<sup>50</sup>

### 4.2.2 UNIX Systems

HP intends to be more conservative than Digital in making a changeover to OSF/1 from HP-UX. HP has a significant amount of value invested in HP-UX and has achieved a strong reputation for its robustness. HP wants to thoroughly test OSF/1 to avoid a possibly damaging backlash from an unstable operating system. In addition, HP wants time to incorporate some of the robust features of HP-UX.<sup>51</sup>

Although the HP 9000 systems can access IBM mainframes and SNA networks, the connections are difficult to implement. HP is due to implement the Advanced Peer-to-Peer Communications (APPC)/LU6.2 protocol interface set, which will enable the HP 9000 to establish sessions with applications on IBM mainframes without running multiple layers of emulation.<sup>52</sup>

Field upgrade options for moving from one HP 9000 to another model have improved, but all are still limited. In most cases, replacing the entire main unit requires more effort and expense than simply replacing or adding a few circuit boards.<sup>53</sup>

The disk mirroring and RAID are only available on a special fiber optic disk interface and they have no Prestoserve.<sup>54</sup>

NewWave client software is currently PC (Windows) based only and there are few applications that are written specifically for NewWave. Additionally, NewWave applications have to be written to a proprietary API.<sup>55</sup>

### 4.2.3 Non UNIX Systems

MPE is a proprietary operating system intended for use solely on HP 3000 computers. Source code for MPE/iX is not available to the user nor is documentation of



system table structure. All access to internals is via the Architected Interface Utility (AIF), a tightly controlled, vendor-supplied mechanism. Neither Ada nor C++ is available for the HP 3000 Series 9XX system from either HP or third-party firms. MPE/iX does not have a bundled E-Mail system. Also, the integrated text editor is a very limited line-oriented editor unsuitable for a development environment. Compilers, E-Mail, and a full-screen editor can be costly options.<sup>56</sup>

While field upgrade options have increased, several upgrade still require reinvestment in the system processing unit. Box swaps are required when moving between product levels.<sup>57</sup>

### **4.3 Software Implementation and Strategies**

Digital has been the leading proponent of the midrange-driven distributed systems approach, similar to HP. However, Digital has invested significantly greater resources and marketing efforts than HP (primary energies invested in the PA-RISC architecture) in core software technologies (i.e., NAS components, including Pathworks) needed to meld distributed systems. HP is expected to diverge philosophically and in practical marketing strategies from Digital on the issue of IT architecture, placing more emphasis on partnerships and less on go-it-alone as is a natural consequence of it's lower profile in large corporate accounts.<sup>58</sup>

**Table 4 Software Implementation and Strategies**

Hewlett-Packard	Digital Equipment
<ul style="list-style-type: none"> <li>• Primary emphasis on hardware revenue generation and growth</li> <li>• Emphasis on help-yourself productivity tools and open systems APIs</li> <li>• Software neutral selling of third party DBMS applications</li> <li>• Balanced but differentiated MPE/iX and HP-UX marketing</li> <li>• Development of mainframe-caliber operating environment of MPE/iX</li> <li>• Lacking in large enterprise account relationships and influence</li> </ul>	<ul style="list-style-type: none"> <li>• Shift to software emphasis as major revenue contributor</li> <li>• Strategic positioning of NAS software as enterprise middleware infrastructure</li> <li>• Primary emphasis middleware infrastructure for multivendor environments</li> <li>• Bias toward VMS in large DEC corporate commercial accounts</li> <li>• High-performance production data center systems</li> <li>• Lacking sales expertise in positioning complex software concepts such as NAS</li> </ul>
<p><b>International Business Machines</b></p>	
<ul style="list-style-type: none"> <li>• Centrally managed corporate repository of critical applications and data</li> <li>• Cooperative processing among SAA-compliant systems on SNA networks</li> <li>• Interoperability with AIX UNIX systems via industry standard interfaces</li> </ul>	

Source: Gartner Group

## 5 HOW DIGITAL WINS AGAINST HP

### 5.1 HP General

In terms of product the VAX has many advantages over HP. HP has nothing that can match Digital's capabilities and experience in VAXcluster technology, dual hosting, or vector processing. Apart from the hardware advantages, Digital's greatest asset against HP is Network Application Support (NAS) software -- HP has nothing like it. NAS is a set of standards-compliant software that reside above the base platform (hardware, O/S, network), providing a consistent interface to support applications running on different platforms.<sup>59</sup> The Pathworks software and PC integration is very strong for Digital. HP relies on Lan Manager or its own version of MSNet called "Resourcing Sharing".<sup>60</sup>

HP's Disk Shadowing, although now available, will only work on a specific fiber optic hardware interface and the nearest they come to "High Availability" is a two CPU failover arrangement.<sup>61</sup>

### 5.2 HP 9000 Models

ULTRIX was rated better by the Gartner Group (Jan 1992) as having substantially more functionality than the average UNIX system. ULTRIX was rated better than HP-UX in PC integration and Client/Server infrastructure. The Pathworks software and PC integration is very strong for Digital. HP has no Prestoserve for I/O performance acceleration.<sup>62</sup>

### 5.3 HP 3000 Models

HP has no OLTP monitor like ACMS. Most HP sites develop their applications on IMAGE, a two level hierarchical database, and not HP Allbase/SQL the relational database. This is because IMAGE gives better performance and is very reliable. Digital has a single Data Dictionary for VMS. On the HP 3000, HP's System Dictionary (the nearest equivalent to CDD+) is infrequently used by HP's customers. There is also more than one data dictionary found on the HP 3000 (HP's Application dictionary, HP's Information Access dictionary and Dictionary/3000). The VMS environment gives the developer a rich CASE environment, which is compatible with ULTRIX platforms. HP has nothing like VAXset tools on the HP 3000. The layered products of VTX and VAXnotes have no HP equivalent on the HP3000. And security is not as strong as VMS.<sup>63</sup>



## ENDNOTES

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