Code	Company	SIVA2-RP
RGA03-1	AGS INFORMATION SERVICES, Derry, Patrici	1
RGA10-2	ANDERSEN CONSULTING, Davis, Jean	2
RGB29-2	BELLSOUTH CORPORATION, Hornbuckle, Jewel	2
RGB29-3	BELLSOUTH CORPORATION, Cobb, Tim	1
RGB74-1	BT CUSTOMER SYSTEMS, Priestley, John	2
RGC12-30	COMPUTER SCIENCES AUSTRALIA, O'Neile, Mi	2
RGC12-5	COMPUTER SCIENCES CORPORATION, Lepard, G	4
RGD01-100	DIGITAL EQUIPMENT CORPORATION, Sarison,	1
RGD01-25T	DIGITAL EQUIPMENT CORPORATION, Starr, Ge	1
RGD01-26	DIGITAL EQUIPMENT CORPORATION, Theberge,	1
RGD01-27	DIGITAL EQUIPMENT CORPORATION, Marie, Lo	1
RGD01-29	DIGITAL EQUIPMENT CORPORATION, Pittenger	1
RGD01-3	DIGITAL EQUIPMENT CORPORATION, Santarlas	1
RGD01-37	DIGITAL EQUIPMENT CORPORATION, Smith, He	1
RGD01-5	DIGITAL EQUIPMENT INT'L, Quinn, George	1
RGD01-58	DIGITAL EQUIPMENT CORPORATION, Finn, Jac	2
RGD76-1	DATASERV/BELLSOUTH, Carlson, Donna F.	1
RGE06-1	ERNST & YOUNG, Stanford, Alan C.	1
RGE06-10	ERNST & YOUNG, Wilson, David R.	1
RGE06-15	ERNST & YOUNG, Nowak, Elizabeth	1
RGE06-7	ERNST & YOUNG, McCreadie, John	1
RGE06-8	ERNST & YOUNG, Moreau, Raymond G.	1
RGE06-9	ERNST & YOUNG, Seese, Denny	1
RGG01-15	GE CONSULTING SERVICES CORP., Martin, Ea	3
RGG05-15	GRUMMAN DATA SYSTEMS, Evans, Bob	2
RGH04-22	HEWLETT PACKARD, Lee, Rebecca	2
RGH04-36	HEWLETT-PACKARD, Raze, Nasus	1
RGH15-21	HITACHI LTD, Takeda, Kunio	2
RGI01-25	IBM CANADA LTD., Coulter, Robert	1
RGI01-26	IBM CANADA LTD, Peck, Stan	1
RGI01-30	IBM CORPORATION, Fuller, Oscar P.	1
RGI01-30T	IBM CORPORATION, Lintner, W. D.	1
RGI01-44	IBM CORPORATION, Ruckert, Ilse	1
RGJ11-1	JAPAN INFORMATON PROCESSING, Enomoto, Ak	2
RGM72-3	MCI, Ganis, Frank	1
RGN03-75	NCR CORPORATION, Denlinger, V. Garry	2
RGN27-1	NOVELL, INC, Taylor, L. Craig	1
RGN27-2	NOVELL, INC., Theede, Noreen G.	1
RGT08-2	TOSHIBA CORPORATION, Inaba, Motoki	2
RGT11-2	TSC, INC., Rabinowitz, Dan	2
ZINTERCOA	Z..CALIFORNIA INTERNAL, Sales/Mkt Librar	1
ZINTERCOB	Z..CALIFORNIA LIBRARY, Library,	2
ZINTERCOC	Z..INPUT NJ LIBRARY & SALE, Sales Rep (1	2
ZINTERCOE	Z..LONDON, Library,	2
ZINTERCOF	Z..VIRGINIA INTERNAL, RA's, Stock, Libra	2
ZINTERCOG	Z..JAPAN INTERNAL, Imai, Tetsuo	2
ZINTERCOH	Z..INPUT FRANCE, Field Salesperson,	1
ZINTERCOI	Z..VIRGINIA INTERNAL, SI/SO Program Mgr.	1

Quantity

Code	Company	SIVA2-RP
ZINTERCOL	..REGISTER OF COPYRIGHTS, Dep & Acq Div-	2
ZINTERCON	Z..FUTURETECH, Min, Kyung-Soo	1
ZINTERCOW	Z..INTERCOMPANY GERMANY, Solbach, Frank	1
		74

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– REPORT –
PRODUCTION QC SCHEDULE

Program: SISIP Program Year: 1992

Report: SI Vendor Compar. Anal. Project Code: SISIP SIVA2

Author: J. P. Richard QC Performed By: JK

Employee #: 491

		Date Sent	Initial	Date Rcvd	Initial
RESEARCH	1. Author's MSWord Draft to QC	1/15	JPR		
	2. QC'd Draft to Author/Secretary for corrections	1/20	JPR	1/20	JK
	3. Final MSWord Draft to Graphics	1/24	JPR	1/29	KJ
	☒ Printed Written Draft ☒ MSWord Disk ☒ Transmittal Letter ☐ Thank-You Package Letter/Information ☐ Press Release Draft ☐ INPUT/OUTPUT Article Draft ☐ Brochure Draft (to sell report) ☐ Reverse Side of Form Completed				
GRAPHICS	4. First Graphics Draft to Proofreader			6 Feb.	JK
	5. Check Proofread Draft with Author				
	6. First Draft back to Graphics for Corrections			2/12	LW
	(Second Draft to Proofreader if necessary)	2/12	LW	2/13	AS
	(Second Draft to Graphics for Final)	2/13	AS	2/13	LW
	7. Final PageMaker Draft to Proofreader	2/13	LW	14 Feb.	JK
	(Final Draft to Author if necessary)	2/14	LW	2/20	KJSPR
PRODUCTION	8. Final Report/Evaluation Form to Production				
	Report Shipped				
	Thank-you Package Shipped				

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– REPORT –
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Spine: (1 Line) _____

(Binder spine may have 2 lines)

Estimated number of pages: <100 ☐

100-150 ☐

150-200 ☐

>200 ☐

Executive Overviews:
No. required for Thank-You packages: _____

Program Manager Approval: _____ Date: _____

FULFILLMENT/PRODUCTION PLEASE COMPLETE:

1. REPORTS: Fulfillment _____
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   TOTAL _____

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To ensure that the highest standards of report quality are maintained, INPUT would appreciate your assessment of this report. Please take a moment to provide your evaluation of the usefulness and quality of this study. When complete, simply fold, staple, and drop in the mail. Postage has been pre-paid by INPUT if mailed in the U.S.

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   - ☐ New product development
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3. Please indicate extent report used and overall usefulness:

	Extent		Usefulness (1=Low, 5=High)				
	Read	Skimmed	1	2	3	4	5
Executive Overview	☐	☐	☐	☐	☐	☐	☐
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Alert you to new opportunities or approaches	☐	☐	☐	☐	☐
Cover new areas not covered elsewhere	☐	☐	☐	☐	☐
Confirm existing ideas	☐	☐	☐	☐	☐
Meet expectations	☐	☐	☐	☐	☐
Other _____	☐	☐	☐	☐	☐

6. Which topics in the report were the most useful? Why? _____

_____

7. In what ways could the report have been improved? _____

_____

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_____

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SYSTEMS INTEGRATION COMPETITIVE ANALYSIS

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U.S.A.

U.S. Systems Integration Program
(SISIP)

Systems Integration Competitive Analysis

SIVA2 • 510 • 1992

Contents

Vendor Profiles

COMPANY PROFILE

Grumman Data Systems

1. Key Contacts

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Daniel G. Terry
Vice President
Grumman Data Systems
6862 Elm Street
McLean, VA 22101
(703) 760-0100

2. Background and Current Status

Grumman Data Systems (GDS) provides systems integration (SI) services and support primarily to select customer organizations within the Department of Defense (DoD), the National Aeronautics and Space Administration (NASA), and other federal civil agencies. It also provides these services to state and local governments and provides third-party maintenance to all market segments. GDS has been in the federal systems integration market for six years and has over 450 employees located in McLean, Arlington, and Springfield, VA. Other SI employees are located in facilities in Dayton, OH; Houston, TX; Huntsville, AL; San Diego, CA; Colorado Springs, CO; and Honolulu, HI.

To date, GDS has made no overt attempt to enter or promote itself in the commercial SI market; however, a GDS spokesman indicated that GDS is currently planning to enter that market in the 1991 time frame.

3. Organization and Market Participation

Grumman Data Systems Corporation is a subsidiary of the Grumman Corporation of Bethpage, Long Island, NY and, as such, furnishes all internal systems integration and information processing resources for the corporation and all divisions. The Grumman Corporation operates both domestically and internationally.

GDS presently employs some 1,800 professional systems engineers, computer programmers, analysts, communication specialists, and management and support personnel who are dedicated to or available for assignment to systems integration projects. GDS has an established track record in the federal market. Details are presented in Exhibit GDS-1.

EXHIBIT GDS-1

Parameters of Grumman's SI Business

Full-time federal SI staff	820
Additional SI skilled personnel	880
Projects started or completed since 1987	12
1989 revenues from systems integration	$187M

GDS is a matrix management corporation. Strategic and long-range planning for participation in the SI market is centralized at the Grumman Data Systems headquarters in Bethpage, NY. The company's program and engineering management and contract review functions are also centralized responsibilities of GDS. Marketing and other aspects of the company are managed on a decentralized basis.

GDS presently dedicates about 40% of its resources to external SI ongoing programs and 40% to internal Grumman Corporation accounts. The remaining 20% is divided among management, marketing, legal/administrative, IR&D, and system development functions. GDS is committed to maintaining state-of-the-art technology and employing an experienced workforce to address the entire range of systems integration services.

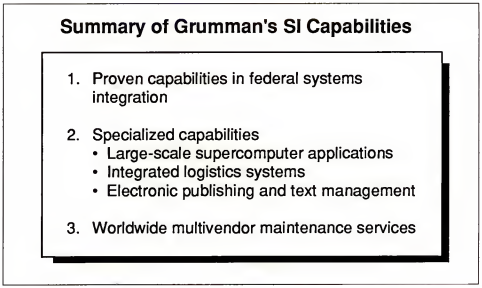
4. SI Capabilities Summary

GDS is a hardware-independent systems integrator offering the full range of expertise and skills required to deliver a complete information system to fulfill specific customer, operational, and management requirements. A summary of GDS' SI capabilities is provided in Exhibit GDS-2. In the federal market, GDS offers SI system services and support in three application areas:

- Automatic data processing (ADP) and computing systems
- DoD logistics and industrial modernization systems
- Command, control, communications and intelligence systems

GDS has significant expertise in designing customized solutions for large-scale supercomputer systems. To date, it has designed and installed three CRAY and two IBM large-scale scalar-vector processing systems for DoD and NASA customers. Other specific skills include image processing, simulation, mathematical modeling, advanced LAN networking, and intelligent workstations.

EXHIBIT GDS-2



GDS experience and expertise—gained over the past thirty years designing and developing information processing systems for Grumman—gives it a leading position in the defense logistic modernization market. Its expertise includes production and maintenance management, scheduling, manufacturing resource planning, overhaul/repair management, decision support systems, networking, and telecommunications.

GDS also has considerable experience in the design, development, and installation of turnkey hardware and software systems. Other experience includes facility management, training, multivendor third-party maintenance, and information conversion.

5. Marketing Strategy and Approach

GDS marketing uses a focused approach to the federal government market. It does not try to be all things to all people; rather, it concentrates its marketing efforts on customer organizations where Grumman has established a reputation either through present or past contracts or through previous concentrated marketing efforts. It normally pursues SI programs in the $100 million-plus category. Smaller efforts are usually made as a team member or subcontractor. Expansion of existing contracts is also a major marketing endeavor. In 1990, more emphasis will be put on marketing systems integration and professional services in the federal civil agency market. Expansion of GDS' activities in the upgrade and replacement of multivendor hardware, software, and third-party maintenance can be expected in both the federal and commercial markets.

GDS considers Electronic Data Systems Corporation, Computer Sciences Corporation, Planning Research Corporation, Science Applications International Corporation, Boeing Computer Services, TRW, Inc., and Lockheed major professional services competitors, and IBM, Amdahl

Corporation, Unisys, and Digital Equipment Corporation major hardware competitors. A GDS spokesman stated, however, that those listed as competitors today could well be teaming partners tomorrow.

Although GDS, as a hardware independent SI contractor, does not form long-term alliances with particular hardware vendors, its success to date has been based on its use of CRAY, IBM and DEC equipment. GDS continues open dialogue with all major hardware vendors and obtains agreements on a program-by-program basis, based upon its assessment of customer requirements.

a. Positioning and Promotion

GDS has positioned itself as a major SI contractor for the federal government. GDS brings its customers specialized experience and capabilities it has developed internally for the Grumman Corporation and from previous government programs.

GDS promotes itself through national advertising in trade publications and through professional/technical trade shows. However, like most other industry participants, GDS relies on customer referrals and industry word of mouth as a more effective means of identifying and capturing new business.

b. Customer Base/Specific Projects

GDS identified several systems integration projects recently undertaken. These projects include:

Air Force—Depot Maintenance Management Information System (DMMIS)

Air Force—Headquarters System Replacement Program (HSRP)

SPAWAR/USMC—Automated Tactical Air Command Center (ATACC)

NASA/JSC—Supercomputer System (SCS)

BDM/Army—Phase I Computer-Aided Logistics System (CALS)

These examples reflect the diversity of technology that GDS employs, and its experience in the federal government market.

6. Summary and Future Direction

INPUT's impression of Grumman Data Corporation's strengths and weaknesses as an SI vendor is presented in Exhibit GDS-3. GDS has demonstrated that it has the financial and technical resources to be a

strong competitor in the federal SI market and could transfer those resources to the commercial marketplace, particularly if it focuses on using existing specialized capabilities.

EXHIBIT GDS-3

Grumman's SI Strengths and Weaknesses

Strengths	Weaknesses
Defense agency experience	Limited civilian agency experience
Specialized technical & application expertise	Commercial experience limited to state and local government
Project management capabilities	
Financial strength/reputation	

A problem GDS may face as it moves into the federal civil agency SI market is its background and reputation as a defense and aerospace contractor. GDS may also have some difficulty adapting to commercial market contracting practices.

Since GDS relies on solicitation for most of its SI business, it will become increasingly important that it develop a strong marketing and sales strategy for the federal civil agencies and commercial markets.

COMPANY PROFILE

Bechtel Information Technology

1. Key Contacts

Mr. H. W. Howard
Vice President & Manager
Bechtel Information Technology
P.O. Box 3965
San Francisco, CA 94119

2. Background and Current Status

Bechtel has been a world leader in engineering and construction for more than 80 years. Operating on a worldwide basis, the company has demonstrated the capability to undertake major projects from airports to bridges with competent project management and the ability to estimate and absorb risk.

As might be expected, over the past decade the company has been increasingly involved with the systems aspects of facilities and other projects that have come under its management. As these aspects of the company's engineering projects have become more critical, Bechtel has built a substantial set of in-house capabilities in the area of information systems and has developed (almost out of necessity) several areas of information systems expertise unique to its primary line of business.

Bechtel has been undertaking specialized SI projects since about 1970. The company is presently in the process of determining its future approach to the market. Whether Bechtel will invest the resources required to leverage its current position and experience is still in question. Certainly, Bechtel has the capabilities and financial resources to do so. The real issue is how far the parent organization will want to stray from its traditional lines of business in order reap the potential profits available from leveraging its systems capabilities.

3. Organization and Market Participation

The primary focus for Bechtel's participation in the SI marketplace is Bechtel Information Technology, under the leadership of Bill Howard. (At the moment there is no dedicated organization to support the external effort.) Bill has been the primary thrust for formulating a business plan that could make Bechtel a major player in specialized markets.

His current organization provides centralized information services to Bechtel's other lines of business, in addition to bidding and executing SI projects outside of the Bechtel family of businesses. Despite the split

focus, Bechtel has a significant number of personnel dedicated or available to participate in systems integration and has an established track record in the business. Details are presented in Exhibit BEC-1.

EXHIBIT BEC-1

Parameters Of Bechtel's SI Business

Full time commercial SI staff	200
Average additional commercial staff	200
Full-time federal SI staff	6
Average additional federal staff	200
Projects started or completed since 1987	10 - 20
Annual revenues from systems integration	$40M

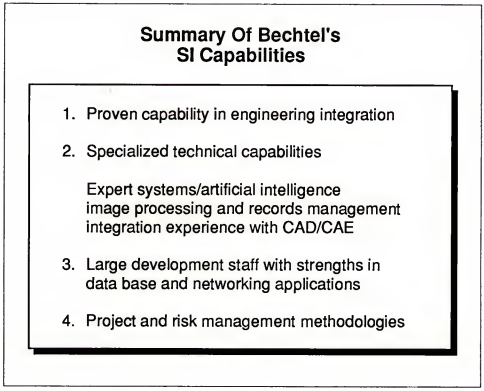
Strategy and long-range planning for participation in the SI market are centralized at Bechtel. All remaining aspects of the business are either shared by the central organization with decentralized units or managed totally on a decentralized basis. Consistent with the management of the company's primary business, project management and implementation are handled on a decentralized basis.

Bechtel deploys about 70% of the resources available for systems integration in development and implementation, about 10% in project management, 10% in hardware/software acquisition, 5% in sales, and the remainder in management and administration. In that sense, it operates with a profile similar to those of professional services companies active in the market.

4. SI Capabilities Summary

As shown in Exhibit BEC-2, Bechtel's primary capabilities lie in two areas, project management and technical skills. The company has strong systems development resources, including a programming staff in excess of 500 and a variety of specialized technical capabilities that are clearly applicable to Bechtel's selected market niches. (See Section 5 for market niche information.) These capabilities include:

EXHIBIT BEC-2



- Significant specialized capability in image processing and records managment developed through Bechtel's work with the utilities and nuclear industries. This is clearly an area where Bechtel has unique skills that have already lead to outside contracts.
- Strengths in CAD/CAE that have already been applied to a number of SI projects.
- Substantial investments in the area of expert and advanced systems. The company currently owns Technology Applications, Inc., which has a professional staff of 40 focused in this area that, when combined with its in-house organization, amounts to a total of 80 professionals in the expert systems area.
- Over 100 professionals dedicated to networking and telecommunications, and proven data base skills with IMS, DB2, and Oracle.

Finally, Bechtel has developed unique tools and a methodology that it believes gives it a competitive advantage in the areas of project and risk management.

5. Marketing Strategy and Approach

The primary motivators for Bechtel's participation in the SI market are not surprising considering the company's background. Bechtel sees an opportunity to make profit from the management, design, and implementation of major integration efforts as its primary objective. In addition, Bechtel is under increasing pressure to respond to current customer demands that represent 90% of the company's SI business. Finally, Bechtel sees substantial opportunities in the follow-on business of systems operations.

Bechtel's market orientation is primarily vertical and evolved from the company's traditional lines of business. Primary targets are in the process manufacturing and government sectors as follows:

- Utilities
- Petrochemical industries
- Food processing
- Mining and metals
- Federal government
- State and local government

Although Bechtel would not comment specifically on competition, INPUT believes that in the markets Bechtel has selected, it is likely to be up against IBM, DEC, EDS, and Computer Sciences on a regular basis. Its participation in the utilities market will also make it a competitor of CDC.

Bechtel does make use of alliances in the execution of its SI engagements, but has no formal program for the development of long-term formal relationships. Long accustomed to assembling the right subcontractors for getting its traditional business done, Bechtel is probably quite effective in obtaining and managing subcontractor/alliance relationships on a contract-by-contract basis.

a. Positioning and Promotion

Bechtel positions itself as strong in project management capabilities and heavy on technical expertise, leveraging the many specialized capabilities outlined in Section 4. In the vertical industries that it has selected, it can also argue its industry expertise. In addition, the company promotes its strong financial position and proven track record for design and integration in the construction business.

The company makes use of public seminars, direct mail, advertising, and trade publications in promoting its capabilities. However, like most other market participants, Bechtel finds that client referrals and industry

word of mouth are the most effective means of identifying and capturing new opportunities; the company has become disenchanted with bidding blind on RFPs for clients with which it has no relationship.

b. Customer Base/Specific Projects

The only project that Bechtel would comment on was recently signed with the Securities Exchange Commission (SEC). The project will utilize Bechtel's technology and experience with records management to handle over 12 million records per year.

6. Summary and Future Directions

Clearly Bechtel has the financial and technical resources to be a strong niche competitor in the systems integration market. The company has also assembled an impressive array of specialized technical skills and proven expertise in areas that should make it the vendor of choice for a significant subset of integration projects in its target industries.

The primary problems that Bechtel must face have to do with commitment to business and marketing. Specifically, although Bechtel Information Technology seems clearly committed to moving forward in the systems integration market, the powerful Bechtel management committee seems more tentative about SI business prospects. For the strategy to succeed, Bechtel's top management will need to make the fledgling information services business operate on an equal footing with the other major operating divisions. To date, this equality has not happened. As a result:

- Many of the critical skills and capabilities described previously are scattered throughout the corporation's existing major business units and must be assembled on a project-by-project basis in order to bid and fulfill an SI engagement. It's not clear that the other operating divisions are willing to give an equal priority to Bechtel Information Technology's needs.

- It also appears that to some degree the existing major business units may see SI as an opportunity to leverage their internal systems expertise as a secondary line of business, thus in effect competing with Bechtel Information Technology for SI market opportunities.

Marketing is another area in need of development. At present, some 90% of Bechtel's SI opportunities have come from its existing clients, which is typical of a reactive market posture. Clearly there needs to be more development of a proactive marketing and sales strategy.

INPUT's impression of Bechtel's strengths and weaknesses as a systems integration vendor are presented in Exhibit BEC-3.

EXHIBIT BEC-3

Bechtel's Strengths and Weaknesses in SI

Strengths	Weaknesses
Existing client base	Commitment to business
Specialized Technical Expertise	Marketing/sales strategy
Project management capabilities	
Financial strength/ reputation	

COMPANY PROFILE

Computer Sciences Corporation

1. Key SI Contacts:

Federal Systems Integration

Mr. A. E. Nashman
Group President, Systems Group
3160 Fairview Park Road
Falls Church, Virginia 22042

Commercial Systems Integration

Mr. Paul J. Crowley
President, CSC Consulting
5 Cambridge Center
Cambridge, Mass. 02142

Mr. James A. Champy
Senior Vice President, Consulting Group
Cambridge, Mass.

Mr. John M. Thompson
Chairman, CSC European Operations

Corporate (Federal or Commercial)

Mr. Mel Bergstein
Senior Vice President, Systems Integration
5 Cambridge Center
Cambridge, Mass. 02142

2. Description of Principal Business

Computer Sciences Corporation is a nearly pure computer services organization. It manufactures minimal amounts of equipment, primarily specialized communications interfaces in low volume. It promotes itself as a leading systems integrator and software developer. The company also provides specialized proprietary services to markets such as finance, healthcare, claims processing, network management and income tax processing. CSC also provides remote computing services to private industry and government.

Exhibit CSC-1 includes CSC's revenues for fiscal year 1990, which ended March 31, 1990. As can be seen, the majority of revenues (65%) was from the systems group, which provides systems and services to the federal government.

EXHIBIT CSC-1

Fiscal Year 1990* Revenues by Business Segment

Business Segment	Revenues ($M)	Percent
Systems Group	966.2	65
CSC Consulting	276.0	18
Industry services	258.2	17
Total	1,500.4	100

* Fiscal Year Mar. 31, 1989 - Mar. 31, 1990

In addition to sustained growth in this traditional business area, CSC is making a major thrust to expand its business into the commercial market through its consulting and industry services groups, which represented 35% of its fiscal year 1990 business. These services include consulting and systems development and integration services for commercial, financial, industrial and international clients. Also included are consumer credit, health and insurance processing services, and a segment which provides income tax processing services.

3. CSC Competitive Position

CSC has been very successful with its federal systems and services and professional services businesses, where it has provided requirements analysis, software development, systems engineering and integration, and communications and facilities management, primarily to its major customer, the U.S. federal government. The company has historically had a very high success rate, winning over 60% of bids, although in calendar year 1989, its win rate declined to 57%. It also has a strong base of multiyear mega-contracts, generally contracts with a total value in excess of $100 million, which fuel the company's traditionally strong growth rates. CSC reports that in fiscal 1989 it won eight such awards with total contract values in excess of $1.7 billion, in addition to scores of smaller contracts. In fiscal 1990 it did not have its customary success in winning these large "mega-contracts."

CSC had not played a major role in the commercial professional services market before 1987, when it announced a goal of attaining 50% of its profits from commercial business by 1992, based on increasing its

commercial revenues to 40% of the total. The company also announced at that time that it had $200 million to spend on acquisitions to augment its existing commercial business. It has made several significant acquisitions to implement this strategy, including Computer Partners, Index Group, CIG-Intersys and others,which will be described in Section 5.

In January 1989, it sold a majority interest in Infonet, its worldwide public network subsidiary, to a group of European and Pacific telecommunications administrations to strengthen Infonet's position as an international communications service. In 1990, it sold its remaining Infonet interest to MCI. CSC had an extremely successful fiscal 1990, with revenues growing 15%, 22% from continuing operations, and net earnings 15%. Its federal revenues grew significantly (11%), despite a fiscally constrained federal market. The nonfederal segments of CSC's revenues grew from 29% to 34% of total revenues, as can be seen in Exhibit CSC-2.

EXHIBIT CSC-2

CSC Fiscal Year Revenues by Major Market

Market Segment	Percent of Total Revenues	
	1989	1990
Federal government	71	66
Commercial	20	21
State and local government	3	3
International	6	10

INPUT believes that a cornerstone of CSC's commercial thrust will be systems integration. It will combine its federal systems integration experience with the consulting and vertical marketing expertise gained through its existing commercial processing services businesses and acquisitions. It can also be expected that CSC will continue to look for acquisition candidates to broaden its commercial capability and geographic coverage.

CSC indicated that its calendar year 1989 systems integration revenues were $400 million, distributed as shown in Exhibit CSC-3.

EXHIBIT CSC-3

CSC Systems Integration Revenues 1988

Business Component	$ Millions
Federal	325
Commercial	75

4. Markets Served

CSC has expertise in tax, credit, health and insurance processing through its processing services offerings. CSC Partners (formerly Computer Partners) provides vertical market expertise primarily in manufacturing, distribution, finance, insurance, retail, publishing, utilities and state and local government. Cleveland Consulting adds depth in consulting in logistics and operations management. CIG-Intersys provides European experience in retail banking as well as in the other vertical industry markets in which CSC claims strength. The company is leveraging this experience by focusing its systems integration activities on the vertical industries identified in Exhibit CSC-4.

Exhibit CSC-4 also identifies specific functional markets that CSC is pursuing. Its focus on these markets is a result of its technology expertise, gained from participating in many large federal programs.

EXHIBIT CSC-4

SI Market Focus—CSC

Vertical Industry	Functional
Federal government	Networking
State and local government	Office automation
Distribution	Digital image handling
Retail	Facilities management
Finance	Logistics
Insurance	
Telecommunications providers	
Publishing	
Manufacturing	

5. Recent Events

In July 1986, CSC acquired Computer Partners (revenues of approximately $15 million), a professional services firm with offices in the northeast corridor. Computer Partners, now known as CSC Partners, has vertical market expertise in manufacturing, distribution, finance, insurance, utilities, and state and local government.

In October 1988, CSC acquired Index Group, Inc. ($30 million in annual revenues), a leading consulting firm to major U.S. and European companies specializing in the strategic use and management of information technology. This acquisition added a strong senior commercial consulting capability to CSC's strong systems integration credentials.

In April 1989, CSC announced that it would acquire CIG-Intersys, the largest computer services organization in Belgium (1988 revenues of approximately $85 million). CIG also operates in France and the Netherlands, and holds minority ownerships of firms in Argentina and West

Germany. It provides consulting, computer systems and network integration, software engineering, software products, and data processing services. CSC already had European operations in the United Kingdom, Germany, the Netherlands and Belgium. This acquisition strengthens its European market position as well as adding specific European vertical market knowledge.

In May 1989, CSC created a separate commercial and international group, called the Consulting Group, which brought together under one organization: CSC Partners, focused on commercial systems development and integration; Index Group, which works with clients on information technology strategies; European operations, including CIG-Intersys; and Communications Industry Services, a software development organization for telephone company needs. This Group was managed by Thomas Gerrity, former Chairman of the Index Group, and was focused on providing commercial and international customers with a full range of information services. This move focused these organizations, which had reported independently to the Chairman, under a single management and on the commercial and international professional services market.

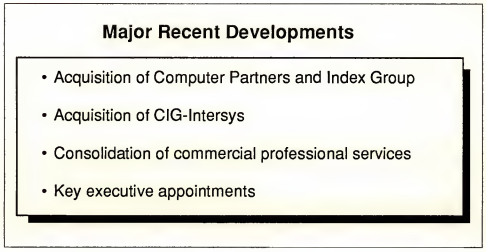
In mid-July 1989, CSC announced that Mel Bergstein, a former senior partner of Andersen Consulting and a well-known and respected industry figure, had joined CSC as a senior executive in the Consulting Group. While with Andersen Consulting, Mr. Bergstein was instrumental in the technical development of development methodologies and products, including FOUNDATION and MACPAC. He was also responsible for the development of a strong sales organization. His reputation and knowledge will assist CSC in future acquisitions, product development, refocusing federal skills and methodologies to commercial markets, and in the overall marketing and sale of CSC's evolving capabilities. This event emphasizes again how serious CSC was and is about penetrating commercial systems integration. In May, 1990 Mr. Bergstein was given corporate responsibility for systems integration reporting directly to Mr. Hoover.

In November 1989, CSC made three additional acquisitions to enhance its commercial capabilities. They were: Cleveland Consulting, LPS Inc., and Inforem Limited.

Cleveland Consulting counsels clients on strategies and effective management of all of the linkages in their supply chain. The activites involved are buying materials and making, moving, and selling products. This Cleveland, Ohio-based firm was purchased from Saatchi and Saatchi when it decided to disband its consulting business.

LPS, Inc. was a privately held professional services firm, based in Minneapolis, which added 140 employees and annual revenues of $9 million in an area where CSC had limited geographic coverage.

EXHIBIT CSC-5



Inforem Limited, based in metropolitan London, provides information technology and consulting, and has developed integrated systems for clients in the financial services, retail and leisure industries. It has annual revenues of about $20 million.

In the first quarter of 1990, CSC acquired Dallas-based LOGIC Inc, a closely held firm providing financial insurance software and services. LOGIC's software systems administer life and disability insurance for credit loans and mortgages insurance for warranty and mechanical breakdown and collateral protection insurance.

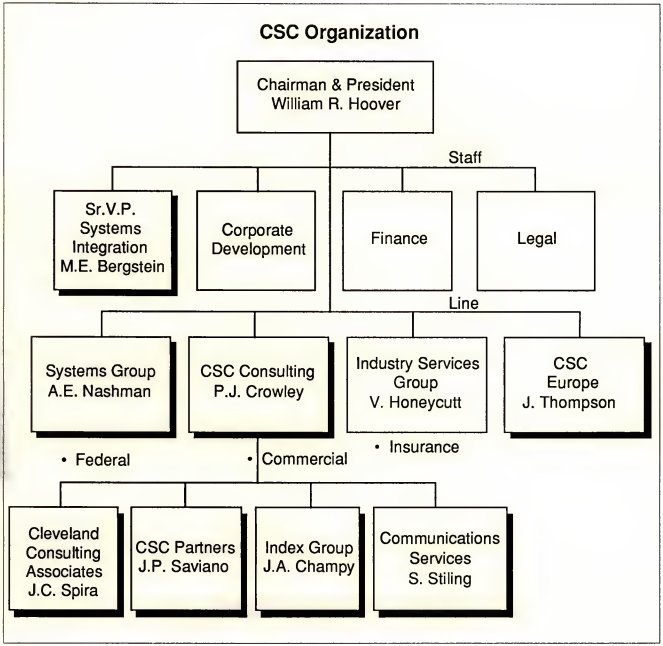
In the first quarter of 1990, CSC also signed an alliance with Digital Equipment Corporation to pursue systems integration business in the distribution and logistics marketplace, as well as integration opportunities within the telecommunications industry.

6. CSC Organization

The CSC organizations that are involved in systems integration are highlighted in Exhibit CSC-6.

SI resources are distributed across three major organizations consisting of a number of divisions and companies. Federal systems integration activities are the responsibility of Alvin Nashman, Group President, Systems Group. Commercial systems integration activities are now the responsibility of Paul Crowley, President of CSC Consulting, and are carried out in CSC Partners, Index Group, Communications Services and Cleveland Consulting. The third organization, headed by John Thompson, has responsibility for developing CSC's European presence. Mel Bergstein, Corporate Vice President of Systems Integration, provides staff focus and guidance for systems integration, pursues corporate-to-corporate alliances, and has responsibility for large account development.

EXHIBIT CSC-6



CSC has an SI staff of over 3,000—2,000 of whom are focused on federal work and more than 1,000 on commercial.

Exhibit CSC-7 is an estimate of how the SI personnel are distributed among functional activities. There is a strong professional services content, with 85% of the resources allocated to project management, systems development and implementation, hardware and software evaluation, and acquisition and hardware engineering.

EXHIBIT CSC-7

CSC Distribution of SI Personnel

Capability	Percent
Management, strategy & planning	5
Legal support/contract administration	5
Project management	15
System development/implementation	50
Hardware/software evaluation/acquisition	15
Hardware engineering	5
Sales	5

CSC has a similar organization philosophy for both federal and commercial SI activities. As indicated in Exhibit CSC-8, most implementation activities are decentralized, though marketing and promotion are done centrally. Strategy and long-range planning are a joint activity with both line and headquarters participation. Account management and sales are performed centrally for federal SI and are both centralized and decentralized for commercial SI.

EXHIBIT CSC-8

Centralization/Decentralization of SI Business Functions

Responsibilities	Commercial	Federal
Strategy and long-range planning	B	B
Marketing and promotion	C	C
Contract review/approval	B	C
Account management/sales	D	D
Project management/control	D	D
Implementation/development	D	D
Hardware/software acquisition	D	D
Systems operations	D	D

(C=Centralized, D=Decentralized, B=Both)

7. SI Business Objectives

CSC is clearly focused on systems integration as a means of changing its revenue and profit mix. As mentioned earlier, CSC's primary objectives for SI are revenue and profit growth, particularly in commercial SI. Commercial SI expansion will be driven by corporate business objectives that include 40% of revenues and 50% of profits being derived from the commercial business. CSC recognizes that industry is looking for business and information consulting and business solutions, and has established a primary objective of responding to these customer demands. Secondary SI objectives are control and expansion of its account base, and developing a follow-on facilities management business. CSC, through a task force headed by Mr. Bergstein, is currently examining increased participation in the systems operations market. The company's objectives do not include significant, if any, hardware or software sales.

8. Internal SI Capabilities Evaluation

CSC's experience, its strong set of technical skills, and its success in federal systems integration positions it well to participate in the commercial SI market. In addition, through acquisition and its processing services activities, it has a base of commercial skills. Brief descriptions of the individual SI capabilities are given below:

a. Business Consulting—These skills, once limited to federal applications, have been expanded to the commercial market through the acquisition of a premier consulting organization, Index Group. The acquisitions of Computer Partners, Cleveland Consulting, CIG-Intersys and other firms also strengthen this area.

b. Design Methodology—CSC has been known traditionally as a competent and capable designer of information solutions. It has and uses CASE products to support its design methodology.

c. Design and Integration, Project Management, Software Development, and Education, Training and Documentation—CSC has been strong in these areas and should be able to transfer these capabilities to commercial opportunities effectively.

d. Packaged Application Software—CSC's primary application software offerings are provided through its Industry Services Group. It had marketed a turnkey system called MAN-FACT II to discrete manufacturers, but sold it in March 1989. CSC also has developed industry-specific software for insurance and tax processing. Its purchase of Logic Inc. strengthens its insurance offerings.

e. Packaged Systems Software, Standard Computer Hardware and Custom Computer Hardware—Computer Sciences manufactures no computer hardware, nor does it develop systems software products. It prefers the flexibility of being able to select the products that are best suited to meet the needs of the current systems problem and that will provide the best solution.

f. Network Management and Operations—CSC has strong network management and operations capability as a result of experience developed through its remote processing businesses, its worldwide Infonet network, and the building of private data networks for the U.S. government. It has participated successfully in large federal network contracts such as the U.S. Treasury and FTS-2000. It is interesting to note that it often works closely with AT&T; announcement of a formal relationship with AT&T has been rumored in the past.

g. Service and Repair—CSC offers system service and repair only as part of its remote processing and network services, or ancillary to its systems integration contracts.

h. Software Maintenance—Since CSC provides limited software products, it has limited software package maintenance capability.

9. SI Strategic Alliances

CSC has historically not made a conscious effort to publicize a broad set of alliances. It believes that development of these alliances would cast doubt on its ability to be truly independent in developing the best solutions for its customers. In its federal SI efforts, CSC has worked with most of the major hardware and software vendors in teaming or prime contractor/subcontractor relationships. The company feels comfortable that it can develop and work whatever relationships are necessary to meet its prime contractor responsibilities.

During late 1989, CSC did begin to announce formal alliances, the first with SP America to market vertical industry solutions, primarily in manufacturing and distribution-related industry segments. In early 1990 it announced an alliance with Digital Equipment to pursue SI opportunities in distribution, logistics and telecommunications.

Among its many relationships, of particular note are those with AT&T and IBM. AT&T is a major CSC customer and CSC has developed a number of projects for and with AT&T, including the major U.S. government communications contract, FTS-2000. CSC has worked with IBM on a variety of programs, the largest being the $3.5 billion FAA award.

Overseas, CSC announced last year a five-year joint marketing agreement with British Telecom.

10. SI Capabilities Summary

Exhibit CSC-9 identifies CSC's major strengths and weaknesses. As a candidate in the commercial SI arena, it has strong experience and technical capabilities. It has a reputation in the federal market as an aggressive competitor and competent integrator. It has broad and strong technical and management skills. It is not committed to a single vendor's hardware and/or software products and, as a result of its recent acquisitions, now has commercial strategic consulting skills and enhanced vertical industry knowledge and experience.

EXHIBIT CSC-9

CSC Competitive Status

Strengths	Weaknesses
Federal SI experience	Geographic coverage
Technical strength	Commercial sales organization and experience
Product vendor independence	
Business consulting skills	

CSC's major weaknesses in the commercial market are its lack of commercial marketing experience and geographic sales and implementation coverage.

11. SI Marketing Strategy

CSC's commercial systems integration strategy is now focused in CSC Consulting and CSC Europe, as indicated in exhibit CSC-10.

EXHIBIT CSC-10

CSC SI Marketing Strategy

- Focus commercial growth on CSC Consulting and CSC Europe
- Focus on strategic consulting, then implementation
- Leverage federal experience
- Build on Partners' and CIG-Intersys' commercial experience

The marketing strategy appears to be built on leveraging the Index Group's strategic consulting reputation and programs. The Index Group has provided high-level education and consulting to both U.S. and European clients. It has a reputation for providing excellent client support in identifying strategic information systems requirements, developing strategic solutions that provide competitive advantage, and addressing mission-critical applications. This capability that Index Group provides is critical to CSC's marketing strategy, as it does not otherwise have access to a large commercial customer base or a large commercial sales force.

From an implementation point of view, CSC's credentials are extremely strong, as it has its federal skill base, CSC Partners, CIG-Intersys and its other acquisitions to call on. As other federal integrators have recognized, CSC will have to train its people to interact effectively with commercial customers, and to modify its federal implementation practices to work effectively in a commercial environment. CSC has, and continues to carefully select, acquisitions and partners to assist in this transition.

12. SI Customer Base

A number of the projects that CSC has won and is implementing are listed in Exhibit CSC-11. They are:

- Dade County Airport—As prime contractor, CSC has been responsible for the automated cargo information system for the airport and seaport of Miami, Florida. Responsibilities include design, implementation, integration, and facility management of the system, including software, communications equipment, and user procedures. The system connects 20 airlines, 15 brokers/forwarders, and the required federal agencies.

- U.S. Air Force—As prime contractor, CSC is providing systems integration services for the Air Force's new Stock Control and Distribution system. CSC's deliverables include the teleprocessing to support transportation and depot processing, retail and maintenance operations, inventory control points, and depot management.

- Cincinnati Gas and Electric—CSC is participating in all phases of the development of a new on-line customer service system that includes subsystems for order entry and tracking, billing, and financial records processing.

- AT&T—CSC maintains, enhances, and develops the circuit provisioning system used nationwide by AT&T to issue and track service orders, maintain an inventory of equipment and facilities, and design long-distance circuits.

- U.S. Treasury Department—CSC is the prime contractor for the design, integration, implementation, and operation and maintenance of the Consolidated Data Network which meets the needs of the various departments of the Treasury. At this date, the major user is the U.S. Customs Service, with the IRS just beginning to phase in. The packet-switched network has 21 backbone nodes, and by the mid-1990s will serve 7,500 locations worldwide and over 65,000 terminals.

- Kennedy Space Center—CSC is the prime contractor responsible for NASA/KSC's office automation system. This system supports all secretarial, professional, and management staffing at KSC.

- Weirton Steel—This five-year project, called IMIS (Integrated Manufacturing Information System), is focused on providing superior customer service through improved inventory control and scheduling and other state-of-the-art manufacturing techniques.

EXHIBIT CSC-11

Examples of CSC's Customers & Contracts

Company/Industry	Project Description
Dade County Airport	Automated Cargo Information System
U.S. Air Force	Stock Control and Distribution
Cincinnati Gas and Electric	Customer Services System
AT&T	Trunk Inventory and Control System
U.S. Treasury Department	Consolidated Data Network
Kennedy Space Center	Office Automation System
Weirton Steel	Manufacturing Information System
Massachusetts Water Resources Authority	Capital Projects Information System

- Massachusetts Water Resources Authority—This project involves the implementation of a major information system to monitor and control the progress of the large capital projects that the Authority will be implementing over the next several years to improve water and sewer systems in 60 communities.

13. Summary and Future Directions

It is clear that CSC has set its sights on becoming a major player in commercial systems integration, and is making significant investments to reach this goal. It has carefully selected and acquired firms that will help it achieve this goal. INPUT believes CSC's strategy, which is built around strategic consulting provided by the Index Group and its solid federal project management skills, is sound. It provides unique commercial consulting experience as well as access to a commercial client base—both capabilities that federal integrators generally lack.

Its string of carefully selected acquisitions provide it with the bridge that is necessary to convert federal experience and skills to commercial application implementation. However, CSC may not yet realize quite how difficult this step is.

INPUT believes that CSC will continue to acquire commercial firms that expand its geographic and vertical industry coverage. On the whole, CSC's strategy seems sound.