COMPANY PROFILES AND SELECTION SCREEN EVALUATIONS

Prepared for

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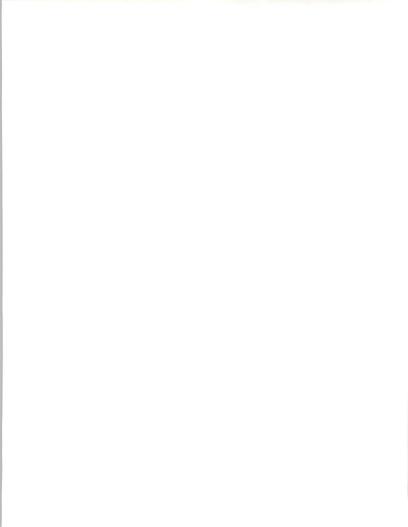
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I. COMPANY IDENTIFICATION

BOLT BERANEK AND NEWMAN, INC.
10 Fawcett Street
Cambridge, MA 02238

A. Key Contacts

Stephan R. Levy, CEO
Michael P. LaVigna, COO

B. Brief Company Description

Bolt Beranek and Newman (BBN) designs, manufactures, sells, and supports products and systems including integrated wide-area digital communications networks, packaged software products, high-performance computers, and computer image generation systems. They also offer research, development, and consulting services in computer, communications, information, and physical sciences.

1. Line(s) of Business

a. Non-Information Services

BBN engages in several information services-related businesses, primarily in the telecommunications environment.

BBN is responsible for the Packet Switching Network for the Defense Data Network, ARPANET, a shared channel satellite communications system.

It designs and develops parallel processors to support the manufacturing, engineering, and chemical/pharmaceutical industries.

b. Information Services

BBN develops applications software packages for intelligent systems, natural languages, data management, and statistical analysis.

The company also develops communications systems and underwater acoustics for natural language interface and systems, simulation/training systems, and graphical data management systems.

II. MANAGEMENT/PERSONNEL

A. Operations

The business is organized into six autonomous operating entities:

- BBN Laboratories encompasses BBN's contract research, development, and consulting activities, offering professional services in the areas of computer communications, information, and physical sciences.

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- BBN Communications is a supplier of private wide-area communications network products and services for government and industry.

- BBN Software Products, formed to develop, market, and distribute statistical software products, is used primarily for manufacturing and research-and-development applications.

- BBN Advanced Computers was formed in 1986 to design and market high-performance parallel processing computers for use in the industrial, science, and engineering markets. Before this time, the parallel processing activities were part of the Labs.

- BBN Delta Graphics develops, markets, and supports simulation, mission management, and animation systems and services.

- A sixth operating entity, BBN Manufacturing, provides the manufacturing facility to support the other subsidiaries.

B. Project Management & Controls

BBN is well known for on-time and within-budget delivery.

C. Culture

The company is known to be a "university with stock options," a culture not unlike AA & Co.

Employees are encouraged to expand their knowledge base with continuing education and the seminars offered by the company and the employees themselves. There is a great deal of "for-credit work" done with the local universities.

There is a high level of communications throughout the company with seminars, newsletters, and quarterly meetings at each subsidiary. Frequent meetings are held with the president addressing the entire work force.

D. Skill Sets

Employees are recruited from the local universities and developed from within the organization. Advanced degrees are a requirement for many of the positions throughout BBN and the subsidiaries. Employees are allowed to move freely between the subsidiaries and the Labs. BBN believes that this opportunity gives real-life experiences to the Lab people. This program also helps keep the products alive by allowing additional developments and enhancements to the products released to the subsidiaries.

BBN's strong communications expertise seems very compatible with AA & Co.'s needs.

E. Level of Personnel

Approximately 1,800 of the 2,500 people have degrees. In the Labs, one-half of the people are fully autonomous. In the speech processing area, one-half of the

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people have Ph.Ds and the others qualify. Many experts in a wide variety of areas are present.

F. R&D/Technology

Much of the technology that is marketed to customers was developed in the Labs under the sponsorship of the federal government or through the limited partnership agreements that BBN has been entering into to fund new developments.

Their work in parallel processors leads the country.

G. Executives

The philosophy of the company has been that of developing people from the inside. Upper management believes in the creativity of their people and depends on this creativity to accomplish many of the projects that they take on with the government and other clients.

III. REPUTATION

A. Type of Contractor

Most of the work that BBN does is in the capacity of a prime contractor or integrator. There are a few subcontracts where they have been involved.

B. Importance of Contracts

Most of the contracts that BBN has with the federal government are of a developmental technology nature. Much of the company's work is done with the Department of Defense. Almost all contracts are of strategic importance.

C. Competitive Bid/Win Ratio

In the area of government developmental work, BBN is usually the sole source of the contract. When contracts have come up for rebids, BBN has won the rebid on the contract.

D. Recent Publicity

BBN is well regarded and known to have technological leadership in the areas of data communications, advanced computers, speech processing, underwater acoustics, and operating systems technology.

IV. MARKET POSITION

A. Market Presence

BBN is committed heavily in the DoD area and very lightly in the commercial area; only 33% of the company's revenues come from the commercial market segment.

Some of BBN's recent contracts include:

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- Defense Data Network—$11.6 million, packet-switching hardware (BBN Communications)
- Treasury Department—Consolidated Data Network, connecting the US Customs Service, IRS, and the Bureau of Alcohol, Tobacco, and Firearms.
- Agreements with DEC, IBM, C. Itoh, and Fuyo Data Processing and Systems Development, Ltd. to market the RS Software in Japan.

B. Market Penetration

Labs occupy a strong position in the areas of artificial intelligence, distributed data base management, network technology, sensor and surveillance technology, acoustics, speech recognition, and capabilities in graphic simulation.

In the area of parallel processing, BBN holds a position of technological leadership.

BBN Communications has approximately 24% of the $350-400 million worldwide private switched network market. In wide-area data communications networks, a new area for BBN, the company has a little over 1% of the market as compared to IBM's 65%.

BBN Software Products has approximately 30% of the $75 million statistical data analysis market (SAS has 25% and SPSS 20%).

BBN has a small (5%) but growing share in the financial services networks area, as demonstrated by the contracts it holds with MasterCard, National Westminster, and Barclays Bank.

C. Federal Image

BBN has a very strong federal image, since approximately 70% of its revenue comes from the federal sector. The company has the reputation for providing the leading-edge technology that the government needs to stay ahead in the area of defense. The government finances much of the research and development that comes out of the BBN Labs.

D. Agency Presence

Most of BBN's work is with the DOD. The government has the reputation for nurturing certain research contractors and then giving them sole source contracts. This seems to be the case with BBN.

E. Commercial Potential

There is tremendous potential for BBN from their communications expertise and engineering skills. It must learn more about the application of technology to real-world problems.

V. PROFESSIONAL SERVICES

A. Project Management Capabilities

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BBN manages projects from the standpoint of a "systems approach." It looks at the situation as a whole and consults with the client to develop the solutions. It also develops the solution with future needs in mind to provide solutions that will be able to respond to the future as well as the present.

B. Network/Comm. Expertise

BBN is considered to be a major supplier of telecommunications hardware and professional services to the DOD.

It was recently awarded a contract through Olivetti/OLTECO to supply a packet switching network to the Italian government (Instituto Nazionale Previdenza Sociale), the social security agency.

C. Engineering

BBN's work on advanced processors is very sophisticated and highly regarded.

Statistical analysis aids are available through the RS series of software products.

D. Ada Programming

BBN recently entered into agreements to make an Ada compiler available for the Butterfly system.

E. Facilities Management

BBN does not seem to have any interest in the FM area.

VI. APPLICATIONS

Much development work has been done in the areas of skill and team training in support of the SIMNET testbed. Delta Graphics had developed algorithms, hardware, and the software necessary to provide realism to training exercises. This work has been done in cooperation with DARPA and the Army. Work in underwater acoustics has supported the Navy in its submarine detection area.

A. SDI

BBN has not, to INPUT's knowledge, engaged directly in SDI work.

B. Mission Critical

Although much of its lab work is of an R&D type, the application targets are critical to the national defense.

C. CIM

BBN has no known experience in CIM.

VII. LEVERAGEABLE RESOURCES

A. Development Tools

As part of the Advanced Computers work, BBN currently offers a utility library (Uniform System) that facilitates application development. Additional aids for debugging, graphics, and performance measurement are scheduled for development.

B. PM Software Tools

BBN does not seem to be doing anything in the project management area at this time.

C. Products

1. Systems

See above information.

2. Applications

Much action is going on in the area of enhancements to the basic RS software. Product options to the RS/1 software include:

- RS/Explore is a statistical advisor that provides a high level of assistance in analyzing and interpreting technical data.
- RS/Discover provides technical professionals with a full range of capabilities to conduct experiments in research, development, and manufacturing.
- QCA Software is a statistical quality-control package to apply rigorous analytical techniques to achieve product quality.

Other software packages from BBN in the data analysis area include the Clintrial software to support data management in the pharmaceutical industry and DataProbe software allowing direct access to data set through time-series analysis and graphics.

D. Facilities

1. Locations

Company headquarters is in Massachusetts, with offices throughout the U.S. Some offices in Europe support DoD contracts. New offices are opening in Japan to support the Japanese market.

2. Computer Centers

Specific information on these resources are not currently known, but INPUT believes these facilities to be quite strong.

3. Network

BBN maintains its own network.

4. R&D Lab

BBN Labs is the foundation for much of the development work that is done. There are many more new products and ideas that are worked on in the labs than are released to the subsidiaries for clients. BBN believes in only releasing products that will do exceptionally well.

5. Manufacturing/Assembly

BBN Manufacturing Corp. provides all of the manufacturing capabilities that are needed by the other subsidiaries. There are also plants in Hong Kong and Livingston (Scotland) that support European customers and provide subassemblies.

VIII. FINANCIAL CHARACTERISTICS

A. Revenue Size

	1987	1986	1985
Sales ($M)	233.8	178.0	138.2

B. Focused Revenue Stream

Approximately 60% of BBN's revenue in 1986 was derived from contracts with the Department of Defense. The company seems to be bringing more of its developments to the commercial sector, as in the software that is targeting the pharmaceutical industry and other industries.

As indicated, much of the work is focused on telecommunications and processor development.

C. General Health

1. Growth

FYE	Growth
1985	23%
1986	28%
1987	24%

The latest quarterly growth compared to the same quarter last year indicates BBN is up 44%.

BBN's constraints for growth and development include its ability to recruit qualified scientists and technicians. The company has overcome its inability to finance new projects by setting up limited partnerships with other firms. Much of its research has been financed under the sponsorship of the federal government.

A few significant contracts with the federal government make up most of the backlog for BBN. Awards and extensions occur randomly throughout the year, and government contracts may extend over a period of time but are funded yearly.

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IX. CONTRACTING DIRECTION

A. Bidding Capability

As indicated, BBN receives many sole-source contracts that it develops into competitive awards. The company's experience in open competition is limited.

B. Fixed-Price vs. Cost-Plus Contracts

Most of BBN's contracts in the federal sector have been the cost-plus contracts. Many of the programs extend for many years but are funded on a yearly basis. The books and records of BBN are also subject to audit by the Defense Contract Audit Agency, which can result in adjustments to contract billings.

Many of the BBN contracts with the federal government have been challenged by competitors over the last few years. These challenges have been deflected based on BBN's service, technology, and the capabilities that it brings to each contract. Many of the questioned contracts came up for rebid and have been awarded to BBN.

The company seems to prefer the cost-plus contracts since they offer more of the flexibility that is needed when dealing with research and development of new products. If the venture is very costly, the client shares in the expense; if it is not, the client saves also.

X. ACQUISITION PROPENSITY

BBN would be a very tough but possible target. The company would need a very friendly parent who was able to strike the right chords of harmony.

(One issue to acquisition is ownership.) As indicated below, BBN is fairly closely held. Its ownership is as follows:

- 2,700 stockholders, 8.9 million shares common outstanding
- 7.5% held by Officers, Directors
- 10% other employees
- 10% Schlumberger—limited to <20%; BBN has right of first refusal on Schlumberger sales.
- 50% Institutions

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Detailed Selection Screen

Target: **Bolt, Beranek & Newman**

Criteria	Low (1)	Evaluation Factors Medium (2)	High (3)	Avg./ Weight	Sco
Management/Personnel			3.0	x 8	24.0
Operations	___ Fair	___ Good	_X_ Well-Discip.		
Project Mgmt./Ctrls.	___ Fair	___ Good	_X_ Strong		
Culture 1	___ Incompat.	___ Overlap	_X_ Compat.		
Skill Sets	___ Incompat.	___ Overlap	_X_ Complementary		
Level of Personnel	___ "Bodies"	___ Competent	_X_ Experts		
R&D/Technology	___ None	___ Implementor	_X_ Creator		
Executives 2	___ Need Help	___ Stand Alone	_X_ Delivers		
Reputation			3.0	x 7	21.0
Type of Contractor	___ Sub	___ Prime & Sub	_X_ Integrator		
Importance of Contracts	___ Minor	___ Mixed	_X_ Major		
Competitive Win Ratio	___ 1:4	___ 1:3	_X_ 1:2		
Recent Publicity	___ Negatives	___ None	_X_ Positives		
Market Position			2.2	x 6	13.2
Market Presence	___ Commercial	_X_ Both	___ Federal		
Market Penetration	___ Surface	_X_ Deep	___ Moderate		
Federal Image	___ Fair	___ Good	_X_ Excellent		
Agency Presence	___ Civil	_X_ Both	___ Defense		
Commercial Potential	___ Weak	_X_ Average	___ Strong		
Professional Services			2.6	x 5	13.0
Project Management	___ Weak	___ Fair	_X_ Very Good		
Network/Comm. Expertise 3	___ Weak	___ Fair	_X_ Very Good		
Engineering	___ Weak	___ Fair	_X_ Very Good		
Ada Programming	___ Weak	___ Fair	_X_ Very Good		
Facilities Management	___ Weak	___ Fair	___ Very Good		

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Application Targets				1.3	x 4	5.2
SDI	_X_ None	___ Heavy	___ Some			
"Mission Critical"	___ None	_X_ Heavy	___ Some			
CIM	_X_ None	___ Heavy	___ Some			

Leverageable Resources				2.2	x 3	6.6
Development Tools	___ None	_X_ Some	___ Integrated			
PM Software Tools	_X_ Fair	___ Good	___ Good/On-time			
Products						
Systems	_X_ Non-SI	___ SI-Related	___ SI Platform			
Applications	___ None	___ "Me Too"	_X_ Unique			
Facilities						
Locations	___ Remote	___ Near Buyer	_X_ Local & Remote			
Computer Center(s)	___ None	___ Fair	_X_ Strong			
Network	___ None	___ Fair	_X_ Strong			
R&D Lab	___ None	_X_ Heavy	___ Present			
Mfg./Assembly	___ None	_X_ Heavy	___ Present			

Financial Characteristics				3.0	x 2	6.0
Revenue Size	___ < $20 M	___ $20-$40 M	_X_ > $40 M			
Focused Revenue Stream	___ Many	___ Some	_X_ Few			
General Health 4	___ Poor	___ Fair	_X_ Good			

Contracting Direction				2.0	x 1	2.0
Bidding Capability	___ Weak	_X_ Fair	___ Very Good			
FP vs. CP Contracts						
Backlog	___ > 50%	___ App. 33%	___ < 25%			
Trend	___ <25%	___ App. 33%	___ > 50%			

Acquisition Propensity	___ Negative	_X_ Okay	___ Ripe	2.0	x 1	2.0

Total Weighted Score: 93.0

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Notes:

1. Culture includes commitment to quality, solid client service, and a career orientation of the staff (low turnover, recruits directly from college, and one-firm employees).

2. If the acquisition is large, company will continue to operate as is. If small, the company will be quickly integrated with AA & Co.

3. Network/communications expertise includes:
   Data Interchange Skills   None
   Connectivity Experience None
   Network Design/Management

4. General financial health considers the following:
   Growth   < Ind.
   Margins   < Ind.
   Liquidity (Current Ratio)   < 1.5:1
   Backlog : Current Rev.   < 1:1
   Wrap Rate (Cost : Markup) 1.0 - 1.5

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I.   COMPANY IDENTIFICATION

DYNAMICS RESEARCH CORPORATION
60 Concord Street
Wilmington, MA 01887

A. Key Contacts

John S. Anderegg, Jr., Chairman
Albert Rand, President and CEO

B. Brief Company Description

Dynamics Research Corporation (DRC), incorporated in 1955, operates in two segments:

The Commercial Digital Sensors and Controls division (generating 10% of revenue) engages in non-IS manufacturing and sale of precision devices.

The Technical Management Services for Defense division (90% of total revenue) provides a range of technical services for the Department of Defense, encompassing data systems development and analyses for major weapons systems to improve accuracy, reliability, and maintainability.

1. Line(s) of Business

a. Non-Information Services

DRC manufactures digital encoders, precision-patterned glass and metal measuring devices, and microprocessor-driven controls. Digital encoders are used to measure rotary, angular, or linear movement. Precision-patterned glass and metal products include precision measuring scales, reticles, and optical pick-offs for computer peripheral equipment. Digital readout devices and microprocessor-based controllers are normally retrofit to existing machine tools.

These products are used for a wide variety of applications that require precise measuring or control of motion or position. Markets for these products include computer peripheral and office equipment manufacturing, robotics, machine tools, and other automated production processes.

These products are primarily for sale to commercial customers and are sold through a direct sales force, distributors, and OEMs.

b. Information Services

DRC provides professional and technical services, chiefly to the Department of Defense. Services include: engineering, analysis, data base design and management, third-party vendor evaluations, and systems acquisition management.

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The business mix is in four areas:

Computer Information Systems

A typical project involves the development of software to collect, analyze, store, and retrieve information regarding the location, design configuration, maintenance status, and performance test history of the individual component parts of major weapons systems. The F-16 aircraft Centralized Data System and the Trident Integrated Data System are two examples.

Software Engineering

DRC provides quality evaluation services for such programs as the Air Force JSTARS and Peacekeeper and the Navy's Trident Navigation System.

Logistics Support Analysis

This business area provides services to ensure the incorporation of operation and support considerations into various development projects. In one aspect, DRC provides simulation analyses of system reliability, cost effectiveness, and user interaction. The company's work with the SDI Organization and a subcontract on the Air Force Integrated Tactical Warning and Assessment (ITWA) program are examples. These are C3I services, a strategic direction for DRC.

Human Factors

DRC is a leader in the application of the Army's MANPRINT methodology in weapons systems design. MANPRINT matches the design of a system to the skills and capabilities of the people who will operate and maintain it. DRC's application of MANPRINT to work on the development of the Blackhawk helicopter and a recent contract with the Army to create MANPRINT standards for all Army procurements attest to the importance of this area.

II.   MANAGEMENT/PERSONNEL

A. Operations

DRC recently installed new applications software systems that will help increase efficiencies.

As of December, 1986 DRC reported an employee count of 1,041. This figure has risen to approximately 1,200 as of September, 1987.

Operations appear to be well run and well disciplined.

B. Project Management & Controls

With few projects encountering cost overruns and a line of business that develops and implements standards.

C. Culture

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This is an engineering environment (the founders were from the MIT Lab and many employees are from MIT). As such, there is compatibility with AA & Co. in the sense of discipline, but less in the sense of business practices.

INPUT has no information on employee turnover or commitment to the company.

D. Skill Sets

DRC employs a large number of engineers from various disciplines such as civil, mechanical, electrical, optical, etc. These skills would appear to be complementary.

E. Level of Personnel

Over 99% of DRC's employees have bachelor degrees, 30% have masters, and approximately 20% have doctorates. There are experts in such disciplines as standards and human engineering.

F R&D/Technology

DRC is a creator of methodologies applicable to technology but is primarily an implementor in that the company develops systems to bring methods and standards to life.

G. Executives

Executives appear to be technically competent and business-wise but may not have the image of the AA & Co. Partner.

III. REPUTATION

A. Type of Contractor

DRC has both prime contracts and subcontracts. With few exceptions, it is not an integrator.

B. Importance of Contracts

Services are provided for an extensive array of Defense programs including complex weapons systems, communications systems, and large-scale information systems.

The Defense group evaluates the total cost and projected effectiveness of proposed weapons systems. This information enables the military to improve the reliability and performance of parts and systems, reduce inventories, lower operating costs, and more accurately assess proposed weapons systems.

For the SDI Organization DRC performs the important role of ensuring that operating and support considerations are considered during all phases of SDI development.

Contracts are important in the sense that DRC is a procurement "watchdog."

C. Competitive Bid/Win Ratio

DRC has been both winning repeat business and gaining new customers. The competitive bid/win ratio is unknown.

D. Recent Publicity

Recent publicity, all positive, includes contract awards such as the five-year, $40 million subcontract from Computer Technology Associates (CO) for work on the Air Force System Design and Analysis (SDAS) contract. SDAS will provide support for the acquisition of an Integrated Tactical Warning and Assessment (ITWA) capability. This is a major C3I contract for DRC.

DRC was also awarded a two-year, $10 million contract with the Navy to build a number of accelerometer test stations and their associated spares for Trident submarine guidance systems.

IV. MARKET POSITION

A. Market Presence

Eighty-nine percent of FY 1986 sales were to the federal government. This market has grown steadily for DRC since 1982 when it contributed 77% of the sales.

Foreign sales accounted for less than 1% of total sales in FY 1986.

DRC has no presence in commercial information services.

B. Market Penetration

The number of Defense contracts has ranged between 110 and 150 during the last five years. DRC appears to have a broad customer base within a defined niche.

C. Federal Image

Image within DoD is excellent.

D. Agency Presence

DRC is primarily a DoD contractor although it does have civil agency contracts as well. Contracts include:

1. Air Force—F-16 aircraft operations and maintenance support system that collects information from bases around the world and tracks the operational status of each F-16 and more than 100,000 separate parts

2. Air Force—Technical Engineering and Management Support (TEMS), a $27 million follow-on earned through a competitive bid

3. Navy—Polaris-Poseidon-Trident submarine missile and navigation systems, including the Trident Integrated Data System (TIDS), which tracks the guidance systems and their parts, allowing Navy personnel to evaluate failure trends of gyroscopes and accelerometers

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4. SDI Organization—a two-year, $9.4 million contract for a logistics support program

5. Army—two contracts related to MANPRINT, the Army's method for weapons systems development. One is to provide projections of personnel and training requirements involving the Blackhawk helicopter. The other, a three-year contract, is for the creation of MANPRINT standards for Army procurement procedures.

E. Commercial Potential

Though DRC appears to have no interest in commercial professional services markets, its understanding of training requirements through the MANPRINT program appears to have interesting possibilities in the commercial world.

DDAS, discussed below, could solve many of the computer integration and communications problems faced by large organizations.

DRC's ability to track the operational status of aircraft and spare parts could be attractive to commercial airlines.

With little commercial experience, however, a transfer to this market would be difficult.

V.   PROFESSIONAL SERVICES

A. Project Management Capabilities

DRC appears to have limited large-scale systems development, project management capabilities.

B. Network/Comm. Expertise

The Artificial Intelligence Group recently demonstrated a new product, Distributed Data Access System (DDAS), which allows PC/AT users to transparently access large data bases from a mixed array of mainframes using Englishlike commands.

C. Engineering

In addition to its strong systems engineering capabilities, DRC's Commercial segment applies techniques in photography, photolithography, metal evaporation, etching, electroforming, and glass cutting.

D. Ada Programming

DRC has developed software for assessing the quality of software written in Ada. In fact, DRC was responsible for establishing the DoD's standards for Ada.

E. Facilities Management

DRC operates the F-16 Centralized Data System as well as similar systems for the Navy.

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VI. APPLICATIONS

   A. SDI

      As noted above, DRC has penetrated the SDI Organization. In its first contract
      it will perform advanced logistic support analyses (studies to identify potential
      operational and supply problems) of all systems.

   B. Mission Critical

      Much of DRC's work relates to "mission critical" projects, but the company has
      limited applications development experience on such projects.

   C. CIM

      Again, its Commercial segment manufactures for the CIM market, but DRC has
      no direct experience in CIM applications systems.

VII. LEVERAGEABLE RESOURCES

   A. Development Tools

      DRC has developed a computer-based system that automatically evaluates the
      quality of software programs and determines how well they adhere to
      predetermined standards. This system is used by DRC to provide software
      quality evaluation services for the Air Force (JSTARS and Peacekeeper) and
      Navy (Trident Navigation System).

      Another product, Logistics Analysis Work Station, is a simulator of life-cycle
      cost factors used by both the Air Force and the SDI Organization.

   B. PM Software Tools

      DRC does not appear to have project management tools that would be applicable
      to systems integration work.

   C. Products

      1. Systems

         DRC's Ada software evaluation product could be applied to SI projects for
         the military. DDAS also appears to be quite applicable, as is the Logistics
         Analysis Work Station product.

      2. Applications

         DRC's craft and parts tracking system is a large-scale transaction processing
         system.

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D. Facilities

   1. Locations

     In addition to the headquarters location, DRC leases space in four other
     locations in Wilmington, MA. It also has a location in Andover, MD, and
     ten other locations. In general, all locations are near the buyer.

   2. Computer Centers

     No information is available on DRC's equipment.

   3. Network

     DRC does not maintain a private network.

   4. R&D Lab

     Engineering labs are maintained for use in development of standards and
     methodologies. A full-scale lab associated with MANPRINT is in
     operation.

   5. Manufacturing/Assembly

     The Commercial segment has precision manufacturing capabilities.

VIII. FINANCIAL CHARACTERISTICS

A. Revenue & Income: Size & Growth

Note: Fiscal year ends December 31.

	1987(3Q)	1986	1985
Revenue ($M)	60.9	75.2	62.3
Growth (%)	15.0	20.7	17.4
Net Income (%)	3.8	3.3	3.5

B. Focused Revenue Stream

Not only is DRC focused on the military, but on systems development and
assessment within the military.

C. General Health

For the latest five years, growth was 29.6% in sales and 68.9% in net income.

Through the first three quarters of FY 1987 net income was up 41% to $2.3M
and earnings per share were up 39%. Management attributes this to revenue
growth from projects awarded over the last two years, their ability to control
costs, and a lower tax rate. It is also the result of an 83% decrease in interest
expense. Increases in Defense contracts were partially offset by decreases in
the sale of Encoder and Metrigraphic products as a result of a continued
downturn in the capital equipment industries.

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The funded backlog at the end of FY 1986 was $49.6 million, an increase of 13% over FY 1985. As of September, 1987, the backlog stood at $29 million. The unfunded backlog is approximately $100 million.

Management forecasts solid growth through the remainder of the current fiscal year.

DRC is at risk for at least $16 million in annual revenue from its contract with the Air Force, which is attempting to build an in-house capability to cover services currently provided by DRC.

IX. CONTRACTING DIRECTION

A. Bidding Capability

Repeat business through competitive bids and the addition of new customers both suggest a solid bidding capability.

B. Fixed-Price vs. Cost-Plus Contracts

Approximately 75% of current and backlog contracts are fixed-price or time and material contracts.

X. ACQUISITION PROPENSITY

Except for a relative entering the business, the original founders are still in control and likely to be interested in "cashing out."

IV & V and related work is very solid -- and very attractive. But, the need for independence may dictate that DRC not bid on some development jobs. These restrictions should be carefully assessed.

Seventeen percent of this publicly traded company is closely held.

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Detailed Selection Screen

Target: **Dynamics Research Corp.**

Criteria	Low (1)	Evaluation Factors Medium (2)	High (3)	Avg./ Weight	Score
Management/Personnel				2.6 x 8	20.8
Operations	___ Fair	___ Good	_X_ Well-Discip.		
Project Mgmt./Ctrls.	___ Fair	___ Good	_X_ Strong		
Culture 1	___ Incompat.	_X_ Overlap	___ Compat.		
Skill Sets	___ Incompat.	___ Overlap	_X_ Complementary		
Level of Personnel	___ "Bodies"	___ Competent	_X_ Experts		
R&D/Technology	___ None	_X_ Implementor	___ Creator		
Executives 2	___ Need Help	_X_ Stand Alone	___ Delivers		
Reputation				2.3 x 7	16.1
Type of Contractor	___ Sub	_X_ Prime & Sub	___ Integrator		
Importance of Contracts	___ Minor	_X_ Mixed	___ Major		
Competitive Win Ratio	___ 1:4	___ 1:3	___ 1:2		
Recent Publicity	___ Negatives	___ None	_X_ Positives		
Market Position				2.6 x 6	15.6
Market Presence	___ Commercial	___ Both	_X_ Federal		
Market Penetration	___ Surface	_X_ Deep	___ Moderate		
Federal Image	___ Fair	___ Good	_X_ Excellent		
Agency Presence	___ Civil	___ Both	_X_ Defense		
Commercial Potential	___ Weak	_X_ Average	___ Strong		
Professional Services				2.2 x 5	11.0
Project Management	___ Weak	_X_ Fair	___ Very Good		
Network/Comm. Expertise 3	___ Weak	_X_ Fair	___ Very Good		
Engineering	___ Weak	_X_ Fair	___ Very Good		
Ada Programming	___ Weak	___ Fair	_X_ Very Good		
Facilities Management	___ Weak	_X_ Fair	___ Very Good		

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Application Targets				3.0	x 4	12.0
SDI	___ None	___ Heavy	_X_ Some			
"Mission Critical"	___ None	___ Heavy	_X_ Some			
CIM	___ None	___ Heavy	_X_ Some			

Leverageable Resources				2.1	x 3	6.3
Development Tools	___ None	_X_ Some	___ Integrated			
PM Software Tools	_X_ Fair	___ Good	___ Good/On-time			
Products						
Systems	___ Non-SI	_X_ SI-Related	___ SI Platform			
Applications	___ None	___ "Me Too"	_X_ Unique			
Facilities						
Locations	___ Remote	_X_ Near Buyer	___ Local & Remote			
Computer Center(s)	___ None	___ Fair	___ Strong			
Network	_X_ None	___ Fair	___ Strong			
R&D Lab	___ None	___ Heavy	_X_ Present			
Mfg./Assembly	___ None	___ Heavy	_X_ Present			

Financial Characteristics				3.0	x 2	6.0
Revenue Size	___ < $20 M	___ $20-$40 M	_X_ > $40 M			
Focused Revenue Stream	___ Many	___ Some	_X_ Few			
General Health 4	___ Poor	___ Fair	_X_ Good			

Contracting Direction				2.0	x 1	2.0
Bidding Capability	___ Weak	_X_ Fair	___ Very Good			
FP vs. CP Contracts						
Backlog	_X_ > 50%	___ App. 33%	___ < 25%			
Trend	___ <25%	___ App. 33%	_X_ > 50%			

Acquisition Propensity	___ Negative	___ Okay	_X_ Ripe	3.0	x 1	3.0

Total Weighted Score: 92.8

INPUT

Notes:

1. Culture includes commitment to quality, solid client service, and a career orientation of the staff (low turnover, recruits directly from college, and one-firm employees).

2. If the acquisition is large, company will continue to operate as is. If small, the company will be quickly integrated with AA & Co.

3. Network/communications expertise includes:
   Data Interchange Skills   None
   Connectivity Experience None
   Network Design/Management

4. General financial health considers the following:
   Growth   < Ind.
   Margins   < Ind.
   Liquidity (Current Ratio)   < 1.5:1
   Backlog : Current Rev.   < 1:1
   Wrap Rate (Cost : Markup)   1.0 - 1.5

INPUT

I. COMPANY IDENTIFICATION

SRA INTERNATIONAL, INC.
2000 15th Street North
Arlington, VA 22201

A. Key Contacts

William K. Brehm, Chairman of the Board
Dr. Ernst Volgenau, President and CEO
Sara L. Volgenau, Secretary/Treasurer

B. Brief Company Description

SRA provides a range of professional technical services from strategic planning and requirements analysis through systems development. SRA develops system solutions for resource management, command and control crisis management, telecommunications, artificial intelligence, and weapon systems.

SRA's approach is very "holistic" in that it views systems in the broadest sense, as a combination of people, machines, and resources.

1 Line(s) of Business

a. Non-Information Services

SRA is not engaged in any non-information services business at this time.

b. Information Services

- Full professional services capabilities (defining requirements, preparing specifications, developing programs, and implementing systems).

- SRA is at the forefront of automated logistics support systems.

- Application Areas

  - Resource Management—have developed new statistical techniques and mathematical models to help solve resource management problems

  - Command & Control—developing innovative systems in Ada, a new standard machine-independent language.

  - Crisis Management—developing a real-time tracking system, TRANSCOM, to pinpoint location of radioactive shipments via computer generated map displays.

  - Telecommunications—SRA has built a telecommunications group that is now one of the best in the country.

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- Artificial Intelligence—developing computer-based "expert" systems, utilizing a natural language, for solving real-world problems.

- Weapons Systems/Logistics Support—becoming a leader in automating logistics for earth-based systems through its work on CALS, Computer-Aided Logistics Support.

II.   MANAGEMENT/PERSONNEL
      A. Operations

      Under the direction of Edward Legasey, Senior VP and General Manager, projects are typically completed on time and within budget.

      1. Some of the segments composing SRA include:

          a. Advanced Systems Group
              • Artificial Intelligence Department

          b. Engineering Systems Group
              • Telecommunications Systems Engineering Division

          c. National Systems Group

          d. Defense Systems Group

          e. Systems Analysis Group

      B. Project Management & Controls

      In over eight years of operation, SRA has never been terminated from a contract for poor performance or had a customer fail to exercise a contract option. This track record is the result of both capable personnel and strong management controls.

      C. Culture

      SRA owes its success to three primary attributes: honesty and service; outstanding employees; and its teamwork style of management (working with its clients, not just for them).

      SRA seems to be a very close, personal company.

      SRA appears to have a culture very similar to AA & Co. Employee tenure is long and the resulting attrition rate is one of the lowest in the industry.

      The company's training style is to put smart young staff alongside experienced ones "because the only way to learn it is to do it."

      D. Skill Sets

      INPUT believes that the technical level of SRA's staff is such that there will be considerable overlap with AA & Co.

E. Level of Personnel

As the following categorization of staff by degree and area of specialization attests, SRA employs many individuals who are experts in selected disciplines.

By degree:

6% -- Ph.D
48% -- MA/MS
40% -- BA/BS
6% -- Other

By specialization:

48% -- Engineering/Computer Science
14% -- Math/Economics
32% -- Social Sciences
6% -- Other

F. R&D/Technology

As evidenced by many of the contracts, specifically its AI efforts, SRA is a frequent creator of technology.

G. Executives

INPUT has no current insights into the caliber of executives. The company does seem to have a very stable management team.

III. REPUTATION

A. Type of Contractor

While SRA has had both prime and subcontractor experience, it is developing an advanced systems integration capability. The company plans to invest heavily in SI activities in the hope that the SI earnings will constitute over 50% by 1992. CALS is one of the first large systems integration projects for SRA.

Examples of subcontracts include work with TRW on the implementation of the integration of the AWIS program for the Army and with GTE for Peacekeeper launch control system and Mobile Subscriber Equipment program for the Army.

B. Importance of Contracts

Several of SRA's awards include key development arenas. CALS, Reserve component Automation System (RCAS), and AWIS are three examples.

C. Competitive Bid/Win Ratio

With an award rate on competitive bids of over 50% in 1987, SRA has proven its winning image.

D. Recent Publicity

SRA cited by *Inc.* magazine as one of the nation's fastest-growing companies.

IV. MARKET POSITION

A. Market Presence

SRA does primarily federal, defense-related projects. SRA has a joint venture with the Gartner Group to provide telecommunications strategic planning for commercial clients. INPUT believes that the relationship with Gartner could prove to be extremely beneficial to SRA, but so far, for unknown reasons this relationship has not proven to be fruitful.

B. Market Penetration

Penetration seems to be moderate, perhaps as the result of large key contracts.

1. Clients/Projects include:

   a. Air Force—$5 million, to support modification of C2 system

   b. Primary exercise support contractor for the Joint Chiefs of Staff

   c. U.S. Joint Deployment—$11.7 million, for Joint Operation Planning and Execution System

   d. Department of Treasury—developed a departmentwide telecommunications architecture.

C. Federal Image

INPUT knows of no agencies that do not speak positively of SRA. Treasury officials with whom we spoke regarding SRA's involvement in the Treasury's telecommunication plan use many superlatives.

D. Agency Presence

Although primarily a DoD contractor, SRA has held contracts with civil agencies.

E. Commercial Potential

Telecommunications planning could be a very leverageable commercial skill.

V. PROFESSIONAL SERVICES

A. Project Management Capabilities

SRA has never been terminated from a contract for poor performance or had a client fail to exercise a contract option.

SRA has coupled a top-down integrated design concept with an understanding of operational detail for project success.

B. Network/Comm. Expertise

SRA is building a reputation for understanding the computer and communications systems needed by large organizations. It has significant experience in multivendor environments with proprietary networks and designing and providing solutions to complex telecommunications problems. Key to this capability is its ability to design communications network models to analyze numerous alternatives before recommending an optimal architecture.

C. Engineering

SRA's engineering skills fall more on the side of design as opposed to fabrication. The company does have new statistical techniques and original mathematical models to help solve resource management problems.

D. Ada Programming

SRA has Ada experience as evidenced by its AWIS contract, the largest contract of its type for software development using Ada.

E. Facilities Management

Other than a contract with the Air Force Ballistic Missile Office, SRA does not appear to have any strong interest in this area.

VI. APPLICATIONS

A. SDI

SRA is involved in developing complex systems such as AWIS, the Army's strategic command and control system, which involves widely dispersed computers, communications, and data bases.

B. Mission Critical

SRA is involved in the design and, in some cases, the development of mission critical systems for the federal government.

C. CIM

This is not an application target at this time.

VII. LEVERAGEABLE RESOURCES

A. Development Tools

Telecommunications modeling tools are employed that perform sophisticated analyses. They are able to prototype systems in weeks, rather than months.

INPUT

B. PM Software Tools

INPUT has not uncovered any tools, but SRA's success rate implies that such tools are extensively used.

C. Products

SRA generally engages only in custom development.

D. Facilities

1. Locations

Six offices are operated in the U.S., with an additional office in West Germany. Each is located near the buyer.

2. Computer Centers

As of the end of FY 1986, SRA had the following ADP equipment: Symbolics 3670, MicroVAX, VAX 11/750, high-resolution graphics system, and approximately 100 personal computers. They also are implementing a state-of-the-art networked electronic publishing system.

3. Network

SRA has not implemented its own network.

4. R&D Lab

SRA does not maintain a technical laboratory.

5. Manufacturing/Assembly

No facility is maintained.

VIII. FINANCIAL CHARACTERISTICS

A. Revenue size is as follows:

1987—$29.5 million   1986—$19.0 million   1985—$14.26 million

B. Focused Revenue Stream

SRA is completely focused on professional services, with a strong focus on telecommunications.

C. General Health

SRA has earned a compounded annual growth rate over 60% for the last five years. Year-to-year growth has been 33% for 1987, 61% for 1986, and 85% for 1985. These outstanding results have been attained through larger contracts and receipt of maximum fees on cost-plus contracts and higher profits on fixed-price contracts.

INPUT

Income before taxes increased by 58% to $1.3 million for FY 86.

Though cash decreased from FY 85 to FY 86, SRA's ability to meet short-term obligations stayed about the same, as the ratio of current assets to current liabilities fell slightly from 1.43 FY 86 to 1.29 FY 87. Working capital increased by $346,000 to approximately $2.1 million. SRA used approximately $1 million to purchase property and equipment—primarily automated data processing equipment.

SRA expects to finance anticipated growth through internally generated funds and the use of a $4 million bank line of credit.

They have a current backlog of $40.0 million, greater than 2:1.

IX.   CONTRACTING DIRECTION

A. Bidding Capability

In 1986, SRA was awarded contracts for over $45.0 million, winning 88% of the contracts that it bid on. For 1987, the company was awarded contracts of over $53.0 million.

B. Fixed-Price vs. Cost-Plus Contracts

INPUT has not been able to determine the percentage of fixed-price versus cost-plus contracts. We do believe that SRA has the project management capability to successfully complete large fixed-price contracts.

Emphasis on cost controls has led to reduced indirect costs and to operation within budget on virtually all contracts.

X.   ACQUISITION PROPENSITY

This is an attractive target from nearly all perspectives. SRA has the skills and the reputation and would bring a new, dynamic revenue string to AA & Co.

Given the cultural compatibilities, we believe SRA would be very receptive to discussions with AA & Co.

Detailed Selection Screen

Target: **SRA International, Inc.**

Criteria	Low (1)	Evaluation Factors Medium (2)	High (3)	Avg./ Weight	Score
Management/Personnel				2.8	x 8 22.4
Operations	___ Fair	___ Good	_X_ Well-Discip.		
Project Mgmt./Ctrls.	___ Fair	___ Good	_X_ Strong		
Culture 1	___ Incompat.	___ Overlap	_X_ Compat.		
Skill Sets	___ Incompat.	_X_ Overlap	___ Complementary		
Level of Personnel	___ "Bodies"	___ Competent	_X_ Experts		
R&D/Technology	___ None	___ Implementor	_X_ Creator		
Executives 2	___ Need Help	___ Stand Alone	___ Delivers		
Reputation				2.5	x 7 17.5
Type of Contractor	___ Sub	_X_ Prime & Sub	___ Integrator		
Importance of Contracts	___ Minor	_X_ Mixed	___ Major		
Competitive Win Ratio	___ 1:4	___ 1:3	_X_ 1:2		
Recent Publicity	___ Negatives	___ None	_X_ Positives		
Market Position				2.6	x 6 15.6
Market Presence	___ Commercial	___ Both	_X_ Federal		
Market Penetration	___ Surface	___ Deep	_X_ Moderate		
Federal Image	___ Fair	___ Good	_X_ Excellent		
Agency Presence	___ Civil	_X_ Both	___ Defense		
Commercial Potential	___ Weak	_X_ Average	___ Strong		
Professional Services				2.2	x 5 11.0
Project Management	___ Weak	___ Fair	_X_ Very Good		
Network/Comm. Expertise 3	___ Weak	___ Fair	_X_ Very Good		
Engineering	___ Weak	_X_ Fair	___ Very Good		
Ada Programming	___ Weak	_X_ Fair	___ Very Good		
Facilities Management	_X_ Weak	___ Fair	___ Very Good		

INPUT

Application Targets						2.3	x 4	9.2
SDI	___ None	___ Heavy	_X_ Some					
"Mission Critical"	___ None	___ Heavy	_X_ Some					
CIM	_X_ None	___ Heavy	___ Some					

Leverageable Resources					1.6	x 3	4.8
Development Tools	___ None	___ Some	_X_ Integrated				
PM Software Tools	___ Fair	_X_ Good	___ Good/On-time				
Products							
Systems	_X_ Non-SI	___ SI-Related	___ SI Platform				
Applications	_X_ None	___ "Me Too"	___ Unique				
Facilities							
Locations	___ Remote	_X_ Near Buyer	___ Local & Remote				
Computer Center(s)	___ None	_X_ Fair	___ Strong				
Network	_X_ None	___ Fair	___ Strong				
R&D Lab	_X_ None	___ Heavy	___ Present				
Mfg./Assembly	_X_ None	___ Heavy	___ Present				

Financial Characteristics				2.7	x 2	5.4
Revenue Size	___ < $20 M	_X_ $20-$40 M	___ > $40 M			
Focused Revenue Stream	___ Many	___ Some	_X_ Few			
General Health 4	___ Poor	___ Fair	_X_ Good			

Contracting Direction				3.0	x 1	3.0
Bidding Capability	___ Weak	___ Fair	_X_ Very Good			
FP vs. CP Contracts						
Backlog	___ > 50%	___ App. 33%	___ < 25%			
Trend	___ <25%	___ App. 33%	___ > 50%			

Acquisition Propensity	___ Negative	___ Okay	_X_ Ripe	3.0	x 1	3.0

Total Weighted Score: 91.9

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Notes:

1. Culture includes commitment to quality, solid client service, and a career orientation of the staff (low turnover, recruits directly from college, and one-firm employees).

2. If the acquisition is large, company will continue to operate as is. If small, the company will be quickly integrated with AA & Co.

3. Network/communications expertise includes:
    Data Interchange Skills   None
    Connectivity Experience None
    Network Design/Management

4. General financial health considers the following:
    Growth   < Ind.
    Margins   < Ind.
    Liquidity (Current Ratio)   < 1.5:1
    Backlog : Current Rev.   < 1:1
    Wrap Rate (Cost : Markup)   1.0 - 1.5

INPUT

I.   COMPANY IDENTIFICATION

INTERMETRICS, INC.
733 Concord Ave.
Cambridge, MA 02138

A. Key Contacts

Joseph A. Sapanaro, President
Frederick H. Martin, Vice-President Corporate Development

B. Brief Company Description

Intermetrics is a software company that designs, develops, and markets computer software services and products for the U.S. Department of Defense, NASA, and commercial customers. The company specializes in system engineering, software development, and software engineering tools for real-time applications in communications, navigations, avionics, command and control, and signal processing. The services provided by Intermetrics are sold on a custom contract basis, and the company also offers a series of standard software products.

  1. Line(s) of Business

    a. Non-Information Services

       Intermetrics is only involved in Information Services.

    b. Information Services

  1. Avionics Software Systems include software for NASA's space shuttle program, such as designing and building the HAL/S programming language and software for the space shuttle on-board computers.

  2. Signal processing software include software for airborne computers used in antisubmarine warfare.

  3. Communications software systems includes software for the Navstar Global Positioning.

  4. Software for embedded microprocessors used in the manufacture of such products as VLFI chips.

  5. Custom integrated software development environment such as PASCAL, C, and VAHSIC.

II.   MANAGEMENT/PERSONNEL

A. Operations

The company has recently been reorganized into three business groups. They are as follows:

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- Defense Systems. These systems encompass the following business areas:

  · Antisubmarine software
  · Signal processing
  · Helicopter software
  · Communications

- Aerospace Systems. These systems encompass the following:

  · Space shuttle
  · Space station
  · Navigation
  · Aircraft avionics

- Software systems (software tools). These products include:

  · Languages and compilers
  · Custom software development
  · Standard embedded software products

B. Project Management & Controls

C. Culture

The corporate personality is highly technical and is an extension of the Boston-area academic environment. Management attempts to attract and motivate skilled software development personnel through a combination of providing attractive financial incentives and an environment that can be viewed as professional and encouraging creativity in various types of software development. Top management seems to be bottom line oriented, as evidenced by the recent reorganization and concurrent spin-off of unprofitable or less-profitable product lines.

D. Skill Sets

Employees are recruited from both the local New England universities as well as competitor organizations. Skills are primarily oriented toward software development, as influenced by the highly technical/engineering environment within the company's chosen market segments.

E. Level of Personnel

Of the company's approximately 500 employees, approximately 80% hold college degrees. Approximately 7% of the total employees hold doctorate degrees and 25% of the total employees hold masters degrees.

F. R&D/Technology

A substantial portion of the company's business involves development projects related to the federal government or, secondarily, commercial customers. Most of the R&D of the company is funded by provision in various government contracts for these types of activities. However, in the past, Intermetrics has

INPUT

utilized significant amounts of its own funds for the development of proprietary, commercial software products.

G. Executives

The executive group consists of relatively mature individuals, ranging in age (in 1986) from 43 years of age to 61 years of age. They have all been with the company in various positions for seven years or more. The majority of the existing executive officer group have been with the company since its founding in 1969.

III. REPUTATION

A. Type of Contractor

AT&T Technologies Inc. (AT&T - TI) currently owns approximately 333 shares of Intermetrics common stock. As part of this stock purchase agreement, AT&T has committed to purchasing up to $40 million of software services from Intermetrics during the time period 1985-1990. This, in effect, makes Intermetrics and AT&T-TI partners in software development projects.

Intermetrics acts generally as a subcontractor to the prime contractor in developing various types of complex systems for the federal government, primarily the DoD.

B. Importance of Contracts

The majority of Intermetrics revenues are generated through the development of applications software for NASA and the Department of Defense systems.

C. Competitive Bid/Win Ratio

D. Recent Publicity

Intermetrics has been announced as a subcontractor for the development of real-time space flight software for the space shuttle program and as a subcontractor for the development of software for the NASA space station program.

IV. MARKET POSITION

A. Market Presence

Department of Defense
NASA
AT&T
IBM
Commercial manufacturers (government contractors and others)

1. Marketing/Sales

Intermetrics Marketing/Sales focus includes the following areas:

- Expansion of Navy business
- Increasing joint business with AT&T

35

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- Increasing presence in development of aerospace systems
- Expanding commercial custom software tool business
- Increasing the marketing of the company's standard software products

2. Clients/Projects

- NAVSTAR Global Positioning system
- Space station software
- Antisubmarine warfare modular signal processor
- Development of the Light Airborne Multipurpose System (LAMPS) for the U.S. Navy
- Development of software for the National Air Traffic Control System, in partnership with AT&T
- Development of Ada compiler systems

B. Market Penetration

In fiscal year 1986, 76% of the company's revenues were from the federal government and its defense and aerospace contractors. Direct contracts with the federal government accounted for 42% of the company's revenues.

Rockwell International, a prime contractor, generated approximately 9% of the company's revenues in fiscal year 1986.

C. Federal Image

From the amount of work that Intermetrics does for the government, it would seem that Intermetrics has a very good federal image.

D. Agency Presence

The majority of Intermetrics work is with the Department of Defense and Department of Defense contractors.

E. Commercial Potential

Intermetrics is attempting to leverage its government-related expertise into the commercial marketplace, primarily with joint arrangements with hardware manufacturers and other distribution channels that can assist Intermetrics in penetrating the commercial marketplace.

V. PROFESSIONAL SERVICES

A. Project Management Capabilities

1. Implementation Practices

a. Internal Activities

B. Network/Comm. Expertise

In conjunction with AT&T, Intermetrics is developing software for the U.S. Air Traffic Control Systems future secure voice system:

- Intermetrics has a contract with the Defense Communications Agency to provide testing of the evaluation services on the Defense Data Network System.

- The company has a contract with the Department of Defense as an independent evaluator for the software in the Worldwide Military Command and Control System.

C. Engineering

D. Ada Programming

Intermetrics was one of the initial contractors involved in the specification and development of the Ada programming language.

- Under contract to the Air Force, Intermetrics designed and developed an Ada integrated environment for the IBM 370.

- Intermetrics has prepared an Ada documentation system (Byron).

E. Facilities Management

Intermetrics does not seem to be in the FM market.

VI. APPLICATIONS

A. SDI

B. Mission Critical

From the type of work that is done with the DoD, Intermetrics is involved in Mission Critical projects.

C. CIM

VII. LEVERAGEABLE RESOURCES

A. Development Tools

- Ada integrated environment
- PASCAL assembly language generation tool
- VHDL

B. PM Software Tools

C. Products

Though the company's systems and applications are custom developed under contract to specific agencies of the federal government and government

subcontractors, the expertise developed within the context of these contracts can readily be applied to other types of contracts, primarily within the Department of Defense and secondarily within other government and commercial organizations.

D. Facilities

   1. Locations

      Huntington Beach, California
      Texas
      Seattle, Washington
      Warminster, Pennsylvania
      Cambridge, Massachusetts
      San Diego, California
      Dayton, Ohio
      Woodbury, New York
      Reston, Virginia
      Bethseda, Maryland

   2. Computer Centers

   3. Network

   4. R&D Lab

      Cambridge, Massachusetts

   5. Manufacturing/Assembly

VIII. FINANCIAL CHARACTERISTICS

A. Revenue Size

Fiscal year 1987—$47.7 million
First quarter fiscal year 1988—$11.3 million

B. Focused Revenue Stream

Intermetrics' revenue is focused as follows:

Aerospace systems—25%
Defense systems—40%
Software systems—35%

C. General Health

Fiscal year 1987 was a profitable year for Intermetrics, following an unprofitable year in 1986. The corporation divested itself of unprofitable products, and this action caused the return to profitability.

In fiscal year 1987, the company's profit margin was 1.3%, following a fiscal year 1986 profit margin of -11.5%.

INPUT

At the end of fiscal year 1987, the company's liquidity was 1.7.

With the divestiture of the unprofitable products, Intermetrics seems to be back on the road to profitability.

IX.   CONTRACTING DIRECTION

A. Bidding Capability

B. Fixed-Price vs. Cost-Plus Contracts

1. Backlog

2. Trend

X.   ACQUISITION PROPENSITY

The company has numerous deep technical capabilities and a large reservoir of highly experienced talent, together with a good reputation in its chosen marketplaces.

It is INPUT's opinion that as long as the company focuses on known market segments it will continue to do well, growing in both revenues and profitability. Based on our knowledge of management intent, we feel comfortable that the corporation will not venture from familiar market segments.

The corporate plan for Intermetrics includes improving profitability by expanding into current markets and identifying and moving into new markets that are consistent with existing and developing capabilities. The company is also planning to expand the software tool product line into the commercial marketplace.

Detailed Selection Screen

Target: **Intermetrics**

Criteria	Low (1)	Evaluation Factors Medium (2)	High (3)	Avg./ Weight	Score
Management/Personnel				2.7 x 8	21.6
Operations	___ Fair	_X_ Good	___ Well-Discip.		
Project Mgmt./Ctrls.	___ Fair	_X_ Good	___ Strong		
Culture 1	___ Incompat.	___ Overlap	_X_ Compat.		
Skill Sets	___ Incompat.	___ Overlap	_X_ Complementary		
Level of Personnel	___ "Bodies"	___ Competent	_X_ Experts		
R&D/Technology	___ None	___ Implementor	_X_ Creator		
Executives 2	___ Need Help	___ Stand Alone	_X_ Delivers		
Reputation				2.7 x 7	18.9
Type of Contractor	___ Sub	_X_ Prime & Sub	___ Integrator		
Importance of Contracts	___ Minor	___ Mixed	_X_ Major		
Competitive Win Ratio	___ 1:4	___ 1:3	___ 1:2		
Recent Publicity	___ Negatives	___ None	_X_ Positives		
Market Position				2.2 x 6	13.2
Market Presence	___ Commercial	_X_ Both	___ Federal		
Market Penetration	___ Surface	_X_ Deep	___ Moderate		
Federal Image	___ Fair	___ Good	_X_ Excellent		
Agency Presence	___ Civil	_X_ Both	___ Defense		
Commercial Potential	___ Weak	_X_ Average	___ Strong		
Professional Services				2.2 x 5	11.0
Project Management	___ Weak	_X_ Fair	___ Very Good		
Network/Comm. Expertise 3	___ Weak	___ Fair	_X_ Very Good		
Engineering	___ Weak	_X_ Fair	___ Very Good		
Ada Programming	___ Weak	___ Fair	_X_ Very Good		
Facilities Management	_X_ Weak	___ Fair	___ Very Good		

INPUT

Application Targets					2.3	x 4	9.2
SDI	___ None	___ Heavy	_X_ Some				
"Mission Critical"	___ None	_X_ Heavy	___ Some				
CIM	___ None	_X_ Heavy	___ Some				

Leverageable Resources					3.0	x 3	9.0
Development Tools	___ None	_X_ Some	___ Integrated				
PM Software Tools	___ Fair	_X_ Good	___ Good/On-time				
Products							
Systems	___ Non-SI	___ SI-Related	_X_ SI Platform				
Applications	___ None	___ "Me Too"	_X_ Unique				
Facilities							
Locations	___ Remote	_X_ Near Buyer	___ Local & Remote				
Computer Center(s)	___ None	___ Fair	_X_ Strong				
Network	___ None	_X_ Fair	___ Strong				
R&D Lab	___ None	___ Heavy	_X_ Present				
Mfg./Assembly	_X_ None	___ Heavy	___ Present				

Financial Characteristics					2.3	x 2	4.6
Revenue Size	___ < $20 M	___ $20-$40 M	_X_ > $40 M				
Focused Revenue Stream	___ Many	_X_ Some	___ Few				
General Health 4	___ Poor	_X_ Fair	___ Good				

Contracting Direction					2.3	x 1	2.3
Bidding Capability	___ Weak	___ Fair	_X_ Very Good				
FP vs. CP Contracts							
Backlog	___ > 50%	_X_ App. 33%	___ < 25%				
Trend	___ <25%	_X_ App. 33%	___ > 50%				

Acquisition Propensity	___ Negative	_X_ Okay	___ Ripe	2.0	x 1	3.2

Total Weighted Score: 91.8

INPUT

Notes:

1. Culture includes commitment to quality, solid client service, and a career orientation of the staff (low turnover, recruits directly from college, and one-firm employees).

2. If the acquisition is large, company will continue to operate as is. If small, the company will be quickly integrated with AA & Co.

3. Network/communications expertise includes:
   Data Interchange Skills   None
   Connectivity Experience None
   Network Design/Management

4. General financial health considers the following:
   Growth   < Ind.
   Margins   < Ind.
   Liquidity (Current Ratio)   < 1.5:1
   Backlog : Current Rev.   < 1:1
   Wrap Rate (Cost : Markup)   1.0 - 1.5

INPUT

I.   COMPANY IDENTIFICATION

TITAN
9191 Towne Centre Drive
La Jolla Gateway, Suite 600
San Diego, CA 92122

A. Key Contacts

B. Brief Company Description

1. Titan develops and manufactures military computers and memory systems

2. Line(s) of Business

   a. Non-Information Services

      • Electronics and Materials

         - Manufacture of computers, memory systems, electronic
            subsystems, meteor burst communications equipment, ferrite
            powders, and castings.

   b. Information Services

      • Systems

         - Provides advanced technology design and development, system
            deployment, and operational and test support.
         - C3I Systems
         - System Integration
         - AI
         - Software Development
         - Strategic Defense Initiative
         - Systems Engineering
         - Applied Technology

      • Technologies

         - Identifying, exploring, and developing new technology to support
            the other two segments of the company. Three-fourths of the work
            is DoD, DoE, and NASA contracts; the rest was for the prime
            contractors of those companies.
         - Electro-Optics
         - Pulsed-Power
         - Computational Fluid Dynamics and Applied Mechanics

II.   MANAGEMENT/PERSONNEL

A. Operations

   1. Organization

B. Project Management & Controls

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INPUT

    C. Culture

    D. Skill Sets

    E. Level of Personnel

    F. R&D/Technology

    G. Executives

        1. Chief Operating Officer Reputation

III. REPUTATION

    A. Type of Contractor

        1. Partners
        2. Subcontractor Role

    B. Importance of Contracts

        1. Applications

    C. Competitive Bid/Win Ratio

        1. As a Prime
        2. As a Subcontractor

    D. Recent Publicity

IV. MARKET POSITION

    A. Market Presence

        1. IS Targets

            a. Industries

            b. Geographics (Domestic vs. International)
                • Domestic
                  - Most of work done for the U.S. government.
                • International
                  - Flood control project for the government of Egypt.

        2. Marketing/Sales
        3. Clients/Projects

    B. Market Penetration

    C. Federal Image

        1. Defense
        2. Civil

VIII. FINANCIAL CHARACTERISTICS

    A. Revenue Size

    B. Focused Revenue Stream

    C. General Health

        1. Growth
        2. Margins
        3. Liquidity
        4. Backlog/Current Revenue Ratio
        5. Wrap Rate (Cost + Markup)
        6. Financials
            a. Planned/Projected Revenue
              - First half 1987 EPS down 30% on weak margins
            b. Profitability

IX. INPUT EVALUATION

    A. Capabilities

    B. Success

    C. Open Issues

        1. 11% closely held
        2. Acquisition Propensity
            a. August, 1987—sold stake in two Canadian castings firms as part of
               restructuring
            b. July, 1987—acquired Advanced Digital Systems, a leader in Navy
               satellite systems
            c. March, 1987—bought Pulse Sciences, manufacturer of microwave
               systems

X. RECOMMENDATIONS

XI. MISCELLANEOUS

    A. Corporate Objectives

INPUT

Detailed Selection Screen

Target: **The Titan Corp.**

Criteria	Low (1)	Evaluation Factors Medium (2)	High (3)	Avg./ Weight	Score
Management/Personnel				2.6 x 8	20.8
Operations	___ Fair	_X_ Good	___ Well-Discip.		
Project Mgmt./Ctrls.	___ Fair	_X_ Good	___ Strong		
Culture 1	___ Incompat.	___ Overlap	_X_ Compat.		
Skill Sets	___ Incompat.	___ Overlap	_X_ Complementary		
Level of Personnel	___ "Bodies"	_X_ Competent	___ Experts		
R&D/Technology	___ None	___ Implementor	_X_ Creator		
Executives 2	___ Need Help	___ Stand Alone	_X_ Delivers		
Reputation				2.7 x 7	18.9
Type of Contractor	___ Sub	_X_ Prime & Sub	___ Integrator		
Importance of Contracts	___ Minor	___ Mixed	_X_ Major		
Competitive Win Ratio	___ 1:4	___ 1:3	___ 1:2		
Recent Publicity	___ Negatives	___ None	_X_ Positives		
Market Position				2.6 x 6	15.6
Market Presence	___ Commercial	_X_ Both	___ Federal		
Market Penetration	___ Surface	___ Deep	_X_ Moderate		
Federal Image	___ Fair	___ Good	_X_ Excellent		
Agency Presence	___ Civil	___ Both	_X_ Defense		
Commercial Potential	___ Weak	_X_ Average	___ Strong		
Professional Services				2.2 x 5	11.0
Project Management	___ Weak	_X_ Fair	___ Very Good		
Network/Comm. Expertise 3	___ Weak	___ Fair	_X_ Very Good		
Engineering	___ Weak	___ Fair	_X_ Very Good		
Ada Programming	_X_ Weak	___ Fair	___ Very Good		
Facilities Management	___ Weak	_X_ Fair	___ Very Good		

INPUT

Application Targets				1.7	x 4	6.8
SDI	___ None	_X_ Heavy	___ Some			
"Mission Critical"	___ None	_X_ Heavy	___ Some			
CIM	_X_ None	___ Heavy	___ Some			

Leverageable Resources				2.5	x 3	7.5
Development Tools	___ None	_X_ Some	___ Integrated			
PM Software Tools	___ Fair	___ Good	___ Good/On-time			
Products						
Systems	___ Non-SI	___ SI-Related	_X_ SI Platform			
Applications	___ None	___ "Me Too"	_X_ Unique			
Facilities						
Locations	___ Remote	___ Near Buyer	_X_ Local & Remote			
Computer Center(s)	___ None	_X_ Fair	___ Strong			
Network	___ None	_X_ Fair	___ Strong			
R&D Lab	___ None	___ Heavy	_X_ Present			
Mfg./Assembly	___ None	_X_ Heavy	___ Present			

Financial Characteristics				3.0	x 2	6.0
Revenue Size	___ < $20 M	___ $20-$40 M	_X_ > $40 M			
Focused Revenue Stream	___ Many	___ Some	_X_ Few			
General Health 4	___ Poor	___ Fair	_X_ Good			

Contracting Direction				2.3	x 1	2.3
Bidding Capability	___ Weak	___ Fair	_X_ Very Good			
FP vs. CP Contracts						
Backlog	___ > 50%	_X_ App. 33%	___ < 25%			
Trend	___ <25%	_X_ App. 33%	___ > 50%			

Acquisition Propensity	___ Negative	_X_ Okay	___ Ripe	2.0	x 1	2.0

Total Weighted Score: 90.9

INPUT

Notes:

1. Culture includes commitment to quality, solid client service, and a career orientation of the staff (low turnover, recruits directly from college, and one-firm employees).

2. If the acquisition is large, company will continue to operate as is. If small, the company will be quickly integrated with AA & Co.

3. Network/communications expertise includes:
   Data Interchange Skills   None
   Connectivity Experience   None
   Network Design/Management

4. General financial health considers the following:
   Growth   < Ind.
   Margins   < Ind.
   Liquidity (Current Ratio)   < 1.5:1
   Backlog : Current Rev.   < 1:1
   Wrap Rate (Cost : Markup)   1.0 - 1.5

INPUT

I. COMPANY IDENTIFICATION

SCIENCE APPLICATION INTERNATIONAL CORPORATION
1200 Prospect Street
La Jolla, California 92037

A. Key Contacts

Buzz Hennefin, Manager—Federal Market Planning

B. Brief Company Description

Science Application International Corporation (SAIC) was founded in 1969 as Science Applications Inc. The company offers a diversified set of research and engineering services. Historically the company has offered technical services in the fields of applied sciences, military software development and application, and military systems. More recently, the company has expanded into the areas of energy, environment, and health. SAIC also engages in the custom assembly of special-purpose computer systems and the manufacture of a small number of high-technology products.

1. Line(s) of Business

a. Non-Information Services

SAIC engages in a variety of non- or quasi-information services such as:

Evaluation of certain Department of Defense strategies
Large optics technology
Policy analysis
Development and design of integrated circuits
Underwater acoustics
Artificial intelligence
Machine vision
Nuclear utility risk assessment
Analysis of nuclear waste storage
Testing of alternative energy technology
Hazardous waste management
Inspection of waste-water plant systems
Marine science
Space environment R&D
Development of a national training center for the U.S. Army
Military force planning
Human performance research
Military test range operations
Meteorology services
Education programs
Utility plant services
Health studies
Development of flat panel displays

INPUT

b. Information Services

SAIC's information services—related businesses include:

SDI software research
Command and control systems
Radiation simulation
Software for undersea surveillance systems
Software for machine vision development
Programming services relating to the development of Ada
Medical information systems
Software development for spaceborne sensor data management
Space defense command and control system data network development
Development in integration of communications systems for the U.S. Navy
Development of a computer system for pipeline control
Development of a digital feed water control for a nuclear power station
Development of a fingerprint identification system for the Federal Bureau of Investigation
Computerized testing of communication and navigation systems for the U.S. Navy
Computerized analytical systems for the Department of Energy
Development of a variety of software tools including a series of software tools related to Ada

II. MANAGEMENT/PERSONNEL

A. Operations

The company is divided into five basic operating divisions:
- Aerospace systems
- Defense Technology
- Engineering and Software sciences
- National Security Studies and Systems
- Communications systems

Each appears to be a good, well-disciplined operation.

B. Project Management & Controls

SAIC sells its expertise in project management and control to its clients, primarily the federal government. In turn, SAIC applies the same project management and controls to its own internal projects and contracts. As an example, in 1986, SAIC had over 2,000 contracts awarded and over 2,000 contracts in process at the end of calendar year 1986.

C. Culture

The corporation stresses a combination of an academic environment and financial incentives. The academic environment is typified by a technology council, internal to the company, that presents employees with cash awards for publications in scientific journals. The financial rewards are typified by the fact that 80% of the employees own stock in the company.

INPUT

As of the end of fiscal year 1986 (12/31), the company had 6,833 employees. Of these employees 58% had over ten years of experience with the company and an additional 23% had between five and ten years of experience with the company.

D. Skill Sets

A breakdown of the professional personnel by academic degree is as follows:

Sciences—44%
Engineering—24%
Business, economics, law—18%
Humanities, social sciences—14%

E. Level of Personnel

SAIC's management recognizes the need to attract and retain highly skilled and technically oriented employees. The majority of the company's employees are professional employees. Of these:

- 14% have a doctorate
- 33% have a masters
- 53% have a bachelor degree

Seventy-four percent of the company's employees were categorized as technical and professional personnel.

F. R&D/Technology

SAIC's research-and-development activities are diverse and extensive. In fact, SAIC's R&D capabilities are its primary function. Therefore, SAIC should be viewed as a large, diverse R&D laboratory.

G. Executives

INPUT has been unable to evaluate the management team sufficiently, but believes they are solid.

III. REPUTATION

A. Type of Contractor

SAIC acts as both a prime contractor and a subcontractor, with emphasis on the role of the integrator.

B. Importance of Contracts

The majority of the contracts that SAIC has are with a variety of federal government agencies, with major emphasis within the Department of Defense. Almost all of this work is done on a contract basis.

INPUT

Some of the contracts include:

- Technical support contractor for the group that designed the racing yacht *Stars and Stripes*
- Involvement in the Strategic Defense Initiative (SDI)
- War planning activities with the Strategic Air Command
- Development of a command control communication system for an unnamed foreign government

C. Competitive Bid/Win Ratio

D. Recent Publicity

Publicity, mostly regarding recent awards, has been positive.

IV. MARKET POSITION

A. Market Presence

SAIC holds contracts with both federal and commercial clients, with emphasis on the former. Among the key targets are:

- Department of Defense
- Department of Energy
- Nuclear industry
- Foreign governments
- NASA

B. Market Penetration

With over 2,000 contracts in-house at any one time, the following list is meant to be a small sample of the overall contracts in progress within SAIC:

- Department of Defense
- SDI system architecture
- Defense Communications Agency, planning support development
- Department of Defense, studies related to the applicability of the Ada programming language
- U.S. Navy hardware and software support related to antisubmarine warfare programs
- U.S. Army installation of a composite health care medical information system
- NASA planning for the conduct of space lab missions

C. Federal Image

SAIC has a very high profile and strong image within the DoD.

It is equally high and strong within other non-DoD federal agencies.

INPUT

D. Agency Presence

SAIC has a strong agency presence in both DoD and civil agencies. Below are some of their more deeply rooted targets.

- Department of Defense
- NASA
- EPA
- DOE
- HHS

E. Commercial Potential

Approximately 90% of SAIC's revenues currently are generated from within the federal government. The other 10% are primarily generated through contract work with the utility industry, primarily nuclear-energy-related projects. There does not seem to be any emphasis in SAIC in redirecting significant resources away from the federal government into other market areas.

V. PROFESSIONAL SERVICES

A. Project Management Capabilities

A significant amount of SAIC's contract work is in project management or the evaluation, on a third-party basis, of other firms' project management practices.

B. Network/Comm. Expertise

A variety of DOD projects have been completed and are underway within the context of providing data interchange between complex military systems.

Concurrently, SAIC also has a variety of projects underway and completed within the context of implementing and evaluating connectivity between a variety of military systems.

C. Engineering

As reflected in the facts that SAIC's professional personnel are 24% engineers and SAIC has developed and is developing a number of products such as plasmascopes and militarized portable computers, coal ash monitoring systems, etc., it is apparent that SAIC is heavily engineering oriented with a high degree of expertise in this area.

Key areas include:

Robotics expertise, developed for the Defense Nuclear Agency
Seismic research, developed to monitor nuclear test ban treaties
Artificial intelligence
Military training capabilities
Development of aircraft training simulators
Image exploitation, developed for ARPA
Development of a nuclear emergency response system for a nuclear power company
Risk assessment, developed for the Electric Power Research Institute

D. Ada Programming

SAIC has produced a variety of Ada-based programming tools and has a high degree of expertise in Ada programming.

E. Facilities Management

SAIC has little FM experience.

VI. APPLICATIONS

A. SDI

SAIC has a long-term contract for definitional and architectural studies related to SDI. Also, SAIC is a co-contractor with the German-led MBB consortium related to European SDI architecture.

B. Mission Critical

Much of SAIC's work, especially for DoD, is strategic.

C. CIM

SAIC has no apparent CIM experience.

VII. LEVERAGEABLE RESOURCES

A. Development Tools

Development tools are present but not notable.

B. PM Software Tools

Project management tools are in place.

C. Products

1. Systems

SAIC has a variety of leverageable systems products:

- Integrated circuits for military aerospace systems
- Plasmascope flat panel computer displays
- Model 1177 grids, etc.
- A condenser leak detection system for the nuclear power industry
- Ada programming tools

2. Applications

Applications software products include:

- Aircraft training simulators
- A coal analysis system
- A stack-monitoring system for the nuclear energy industry
- An automated luggage inspection system

INPUT

D. Facilities

    1. Locations

      - Corporate headquarters: San Diego, California

      - Key locations:

        Albuquerque, New Mexico
        Atlanta, Georgia
        Boston, Massachusetts
        Chicago, Illinois
        Colorado Springs, Colorado
        Dayton, Ohio
        Denver, Colorado
        El Paso, Texas
        Las Vegas, Nevada
        Los Angeles, California
        Norfolk, Virginia
        Oak Ridge, Tennessee
        Omaha, Nebraska
        Orlando, Florida
        San Francisco, California
        Santa Barbara, California
        Tucson, Arizona
        Washington, DC

    2. Computer Centers

      Centers are well equipped and state of the art.

    3. Network

      SAIC does have a network, but further details are not available.

    4. R&D Lab

      As noted above, SAIC has a heavy emphasis on R&D lab work.

    5. Manufacturing/Assembly

      SAIC does have fabrication and manufacturing capabilities as. noted above.

VIII. FINANCIAL CHARACTERISTICS

A. Revenue Size

Fiscal year ends 1/31.

Revenues: FY 1987: $599,663,000
         FY 1986: $532,717,000

B. Focused Revenue Stream

By revenue source:

- National Security: $405,249,000
- Energy, Environment and Health: $147,179,000
- Products and Other: $44, 893,000
- Interest Income: $2,342,000
- Total: $599,663,000

C. General Health

The company has grown from $420 million in revenues in FY 1985 to $533 million in FY 1986 to almost $600 million in revenues in FY 1987.

In FY 1986 the pretax margins were 5.5% and after-tax margins 3.0%. In FY 1987 the pretax margins were 5.9% and after-tax margins 3.0%.

At the end of FY 1987, current assets were $166,099,000.
Total current liabilities were $101,160,000.

IX.   CONTRACTING DIRECTION

A. Bidding Capability

With numerous contracts, SAIC's bidding capability is apparently very good -- and very active.

B. Fixed-Price vs. Cost-Plus Contracts

1. Backlog

2. Trend

X.   ACQUISITION PROPENSITY

The company has been in business for almost twenty years (founded in 1969) and has grown consistently and profitably over these years.

SAIC is an extremely large and diverse applied-science corporation. Its 2000-plus on-going contracts in a variety of areas, some of which are extremely esoteric, indicate its diverse capabilities as viewed by the federal government, especially the Department of Defense.

It is important to note that the company is privately held, with the majority of the stock owned by employees and affiliated other personnel.

Apparently the senior management of SAIC tends to continue to expand the organization within the context of its existing markets and market strategy.

So, though SAIC has many attractive features, INPUT does not believe it could be easily acquired.

Detailed Selection Screen

Target: **Science Applications International Corp.**

Criteria	Low (1)	Evaluation Factors Medium (2)	High (3)	Avg./ Weight	Score
Management/Personnel				2.7	x 8 21.6
Operations	___ Fair	_X_ Good	___ Well-Discip.		
Project Mgmt./Ctrls.	___ Fair	___ Good	_X_ Strong		
Culture 1	___ Incompat.	___ Overlap	_X_ Compat.		
Skill Sets	___ Incompat.	___ Overlap	_X_ Complementary		
Level of Personnel	___ "Bodies"	___ Competent	_X_ Experts		
R&D/Technology	___ None	___ Implementor	_X_ Creator		
Executives 2	___ Need Help	_X_ Stand Alone	___ Delivers		
Reputation				3.0	x 7 21.0
Type of Contractor	___ Sub	___ Prime & Sub	_X_ Integrator		
Importance of Contracts	___ Minor	___ Mixed	_X_ Major		
Competitive Win Ratio	___ 1:4	___ 1:3	___ 1:2		
Recent Publicity	___ Negatives	___ None	_X_ Positives		
Market Position				2.2	x 6 13.2
Market Presence	___ Commercial	___ Both	_X_ Federal		
Market Penetration	___ Surface	_X_ Deep	___ Moderate		
Federal Image	___ Fair	___ Good	_X_ Excellent		
Agency Presence	___ Civil	_X_ Both	___ Defense		
Commercial Potential	_X_ Weak	___ Average	___ Strong		
Professional Services				2.4	x 5 12.0
Project Management	___ Weak	___ Fair	_X_ Very Good		
Network/Comm. Expertise 3	___ Weak	___ Fair	_X_ Very Good		
Engineering	___ Weak	___ Fair	_X_ Very Good		
Ada Programming	___ Weak	_X_ Fair	___ Very Good		
Facilities Management	_X_ Weak	___ Fair	___ Very Good		

INPUT

Category	Option 1	Option 2	Option 3	Score	Weight	Total
Application Targets				1.7	x 4	6.8
SDI	___ None	_X_ Heavy	___ Some			
"Mission Critical"	___ None	_X_ Heavy	___ Some			
CIM	_X_ None	___ Heavy	___ Some			
Leverageable Resources				2.6	x 3	7.8
Development Tools	___ None	_X_ Some	___ Integrated			
PM Software Tools	___ Fair	_X_ Good	___ Good/On-time			
Products						
Systems	___ Non-SI	___ SI-Related	_X_ SI Platform			
Applications	___ None	___ "Me Too"	_X_ Unique			
Facilities						
Locations	___ Remote	___ Near Buyer	_X_ Local & Remote			
Computer Center(s)	___ None	___ Fair	_X_ Strong			
Network	___ None	_X_ Fair	___ Strong			
R&D Lab	___ None	_X_ Heavy	___ Present			
Mfg./Assembly	___ None	___ Heavy	_X_ Present			
Financial Characteristics				1.7	x 2	3.4
Revenue Size	___ < $20 M	___ $20-$40 M	_X_ > $40 M			
Focused Revenue Stream	_X_ Many	___ Some	___ Few			
General Health 4	___ Poor	___ Fair	_X_ Good			
Contracting Direction				3.0	x 1	3.0
Bidding Capability	___ Weak	___ Fair	_X_ Very Good			
FP vs. CP Contracts						
Backlog	___ > 50%	___ App. 33%	___ < 25%			
Trend	___ <25%	___ App. 33%	___ > 50%			
Acquisition Propensity	_X_ Negative	___ Okay	___ Ripe	1.0	x 1	1.0

Total Weighted Score: 89.8

INPUT

Notes:

1. Culture includes commitment to quality, solid client service, and a career orientation of the staff (low turnover, recruits directly from college, and one-firm employees).

2. If the acquisition is large, company will continue to operate as is. If small, the company will be quickly integrated with AA & Co.

3. Network/communications expertise includes:
   Data Interchange Skills   None
   Connectivity Experience   None
   Network Design/Management

4. General financial health considers the following:
   Growth   < Ind.
   Margins   < Ind.
   Liquidity (Current Ratio) < 1.5:1
   Backlog : Current Rev.   < 1:1
   Wrap Rate (Cost : Markup) 1.0 - 1.5

INPUT

I.   COMPANY IDENTIFICATION

TELOS CORPORATION
3420 Ocean Park Blvd.
Santa Monica, CA 90405

A. Key Contacts

Howard H. Metcalf, President and CEO
Phil Schaefer, Executive Vice-President
Richard Brewer, Senior Vice-President, President, Consulting Services
Division

B. Brief Company Description

Telos Corporation is a diverse computer services company offering
engineering, professional, and technical expertise to government and
commercial clients in the areas of computer software systems and maintenance
of hardware and peripherals.

1. Line(s) of Business

a. Non-Information Services

Telos can also provide full maintenance capabilities for a wide range of
hardware and peripheral equipment. These services to over 90
accounts, under more than 350 contracts, account for approximately
14% of revenue.

b. Information Services

In the area of computer software systems, Telos provides design,
implementation, and support of software and complete computer
systems. This area is divided into technical services for programming,
development, and support; and consulting services, providing software
engineers, systems analysts, and programmers on a contract basis. The
Consulting Services division of Telos provided 86% of revenue in
1987.

II.   MANAGEMENT/PERSONNEL

A. Operations

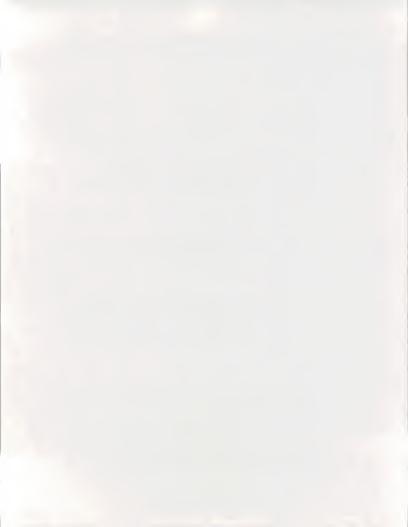The top management of Telos believes in a hands-on management style, without
many layers of bureaucracy.

B. Project Management & Controls

Telos has solid experience in managing projects and, in particular, facilities.

It has an extensive repeat business, due in part to a track record of meeting
schedules and delivering the projects. Telos has been involved in the LCSE
project at Ft. Sill for over 11 years.

INPUT

C. Culture

Telos is not a "body shop," but it is not an AA & Co., either.

D. Skill Sets

Telos is highly skilled in terms of maintaining a variety of manufacturers' equipment.

E. Level of Personnel

The employees of Telos number in the area of 1,400 people. Approximately 135 technicians are employed by the Hardware Services division and 400 by the Consulting Services division.

Skills are more aligned to the technical side, rather than the business side. These skills would seem to complement AA & Co.

F. R&D/Technology

Little R&D capability

G. Executives

Howard Metcalf, president and CEO, has developed a considerable reputation, first at PRC and SDC and then at RAND.

III. REPUTATION

A. Type of Contractor

Telos holds more prime contracts than subcontracts. Approximately 89% of the company's revenues were from contracts or subcontracts with agencies of the federal government.

B. Importance of Contracts

Telos has more than 100 consulting clients supported on-site by the Consulting Services division from ten regional offices nationwide. These clients include: Boeing, Hughes, Lockheed, Raytheon, Unisys, Data General, Nissan, and various other commercial and governmental entities.

C. Competitive Bid/Win Ratio

In the defense and space business, Telos has won approximately 30% of its bids. In the hardware area, it wins about 50% of its bids.

D. Recent Publicity

Recent publicity included the renewal of the Ft. Monmouth contract for $27.7 million and the Ft. Sill contract for $18.2 million to supply software services for LCSE field artillery systems. There was also a contract with the Jet Propulsion Lab for $6.5 million for engineering support services over the next three years.

IV. MARKET POSITION

A. Market Presence

Telos holds contracts in both the federal and commercial markets. Most of the work that it does for the U.S. government is for defense and space-shuttle programs, amounting to approximately 48% of revenue in 1987.

Some of its clients/projects include:

U.S. Army:
- Life Cycle Software Engineering for C3 at Ft. Sill, OK, and Ft. Monmouth, NJ
- TACFIRE—Tactical Fire Direction and Command and Control System
- AFATDS—Advanced Field Artillery Tactical System, the replacement for TACFIRE for the 1990s
- Multiple Launch Rocket System, Battery Computer System, and Digital Message Device to allow communications

NASA, Jet Propulsion Lab: software systems for deep-space and satellite programs

US Air Force, MILSTAR: satellite communications

Delco Systems Operations: microprocessor instrument displays

Hughes Aircraft: defense-related contracts

Boeing: U.S. Army AOA project

Space Flight Operations Center: telemetry system to support flight project workstations

Hardware maintenance contracts include:
- U.S. Air Force—Langley AFB
- U.S. Navy—Norfolk Naval Base, Portsmouth Naval Hospital, Portsmouth Shipyard, Fort Lee, and Fort Eustis
- U.S. Army—Letterkenny, New Cumberland, Tobyhanna, Blue Grass Army Depot, Red River, TX.

B. Market Penetration

Telos seems to have penetrated the market of hardware maintenance contracts with the federal government.

C. Federal Image

Telos has an excellent federal image as evidenced by the awards and repeat business that it receives from the government.

Outside of work with NASA, Telos has limited civil experience.

D. Agency Presence

Telos appears to be more involved with the civil areas of the government, rather than the defense areas.

E. Commercial Potential

Telos has had consistent growth in the area of hardware maintenance, due to its ability to maintain the hardware of multiple manufacturers. Except for subcontracts with defense contractors, its commercial potential may be limited. With the acquisition of DMA, the company is increasing its chances in the commercial areas.

V. PROFESSIONAL SERVICES

A. Project Management Capabilities

Telos has solid experience in managing projects and facilities. It is this experience that helps the company keep the contracts on the repeat business.

B. Network/Comm. Expertise

Telos has one project with the JPL for the Deep Space Network. There is very little evidence of any additional network or communication expertise.

C. Engineering

Telos does not appear to be involved in any engineering at this time.

D. Ada Programming

There is no evidence of any involvement in Ada programming at this time.

E. Facilities Management

Although Telos has locations in 31 states, much of its work is done at the customer's site.

Telos has experience in multivendor environments that aid the company in being awarded many of its contracts.

VI. APPLICATIONS

A. SDI

Telos has been involved in strategic and tactical systems for the Army and the Navy. The Army projects include the provision of systems and software engineering for the communications LCSE facility at Ft. Monmouth and software support for the field artillery systems at the Ft. Sill LCSE facility. Telos is also involved in the Navy Surface Anti-Submarine Warfare Trainer software support.

INPUT

B. Mission Critical

The hardware services support that Telos provides for Army depots throughout the country is critical to the information needs of the Army.

VII.   LEVERAGEABLE RESOURCES

A. Development Tools

B. PM Software Tools

C. Products

Telos has an excellent reputation for being able to maintain the equipment of many manufacturers. It has leveraged this ability into many major contracts with the government and will continue to do so with its objective to expand its hardware services capabilities.

D. Facilities

1. Locations

Although Telos has offices in 31 states and recently opened an office in Vienna, VA, most of its work is done at the client's location.

2. Computer Centers

3. Network

Telos' network expertise seems to be limited to the JPL's Deep Space Network project.

4. R&D Lab

5. Manufacturing Facility

With the recent acquisition of DMA, Telos is expanding and will be able to leverage DMA's existing capabilities of hardware repair and sales of equipment and engineering services to major customers nationwide.

VIII. FINANCIAL CHARACTERISTICS

Fiscal Year	1987	1986	1985
Revenue ($M)	78.8	69.2	54.8
Growth	14%	26%	49%
Margins	5,122	3,033	2,384
Liquidity	1.7	1.75	1.0

INPUT

For the first six months of fiscal 1988, revenues were up 19% over the same time period last year. The total backlog was up to $106.8 million as compared to a 1987 year end backlog of $71.4 million.

The acquisition of DMA is consistent with Telos' objectives to expand and diversify the hardware services business.

IX. CONTRACTING DIRECTION

A. Fixed-price vs. Cost-Plus Contracts

A substantial portion of Telos' revenue is derived from time-and-materials (41.5%) and cost-reimbursement contracts (39.5%), under which revenue is recognized as the services are performed. Under certain long-term, fixed-price contracts (15.3%) and fixed-rate (3.7%) contracts, revenues are recorded using the percent-of-completion method of accounting. Maintenance contracts are on a fixed monthly fee basis.

X. ACQUISITION PROPENSITY

Telos, a publicly traded company, has 3.5 million shares outstanding, 43% closely held by officers and directors of the company. Since Telos is coming off a strong year with prospects bright for 1988, a strong case would need to be made for the benefits of an acquisition. The recent acquisition of DMA suggests that Telos was in an acquisition mode itself. The company will now be concentrating its efforts on future strategies and integrating DMA into Telos.

A strong customer base and attractive success rates makes Telos a company to be further investigated.

Detailed Selection Screen

Target: **TELOS**

Criteria	Low (1)	Evaluation Factors Medium (2)	High (3)	Avg./ Weight	Score
Management/Personnel				2.3 x 8	18.4
Operations	___ Fair	___ Good	_X_ Well-Discip.		
Project Mgmt./Ctrls.	___ Fair	___ Good	_X_ Strong		
Culture 1	___ Incompat.	_X_ Overlap	___ Compat.		
Skill Sets	___ Incompat.	___ Overlap	_X_ Complementary		
Level of Personnel	___ "Bodies"	_X_ Competent	___ Experts		
R&D/Technology	_X_ None	___ Implementor	___ Creator		
Executives 2	___ Need Help	_X_ Stand Alone	___ Delivers		
Reputation				2.3 x 7	16.1
Type of Contractor	___ Sub	_X_ Prime & Sub	___ Integrator		
Importance of Contracts	___ Minor	_X_ Mixed	___ Major		
Competitive Win Ratio	___ 1:4	_X_ 1:3	___ 1:2		
Recent Publicity	___ Negatives	___ None	_X_ Positives		
Market Position				1.8 x 6	10.8
Market Presence	___ Commercial	_X_ Both	___ Federal		
Market Penetration	_X_ Surface	___ Deep	___ Moderate		
Federal Image	___ Fair	_X_ Good	___ Excellent		
Agency Presence	___ Civil	_X_ Both	___ Defense		
Commercial Potential	___ Weak	_X_ Average	___ Strong		
Professional Services				2.7 x 5	18.5
Project Management	___ Weak	___ Fair	_X_ Very Good		
Network/Comm. Expertise 3	___ Weak	_X_ Fair	___ Very Good		
Engineering	___ Weak	___ Fair	___ Very Good		
Ada Programming	___ Weak	___ Fair	___ Very Good		
Facilities Management	___ Weak	___ Fair	_X_ Very Good		

INPUT

Application Targets					2.3	x 4	9.2
SDI	___ None	___ Heavy	_X_ Some				
"Mission Critical"	___ None	___ Heavy	_X_ Some				
CIM	_X_ None	___ Heavy	___ Some				

Leverageable Resources					1.3	x 3	3.9
Development Tools	_X_ None	___ Some	___ Integrated				
PM Software Tools	_X_ Fair	___ Good	___ Good/On-time				
Products							
Systems	___ Non-SI	___ SI-Related	___ SI Platform				
Applications	_X_ None	___ "Me Too"	___ Unique				
Facilities							
Locations	___ Remote	___ Near Buyer	_X_ Local & Remote				
Computer Center(s)	_X_ None	___ Fair	___ Strong				
Network	_X_ None	___ Fair	___ Strong				
R&D Lab	_X_ None	___ Heavy	___ Present				
Mfg./Assembly	___ None	___ Heavy	_X_ Present				

Financial Characteristics					2.7	x 2	5.4
Revenue Size	___ < $20 M	___ $20-$40 M	_X_ > $40 M				
Focused Revenue Stream	___ Many	___ Some	_X_ Few				
General Health 4	___ Poor	_X_ Fair	___ Good				

Contracting Direction					2.0	x 1	2.0
Bidding Capability	___ Weak	_X_ Fair	___ Very Good				
FP vs. CP Contracts							
Backlog	_X_ > 50%	___ App. 33%	___ < 25%				
Trend	___ <25%	___ App. 33%	_X_ > 50%				

Acquisition Propensity	___ Negative	_X_ Okay	___ Ripe	2.0	x 1	2.0

Total Weighted Score: 86.3

INPUT

Notes:

1. Culture includes commitment to quality, solid client service, and a career orientation of the staff (low turnover, recruits directly from college, and one-firm employees).

2. If the acquisition is large, company will continue to operate as is. If small, the company will be quickly integrated with AA & Co.

3. Network/communications expertise includes:
   Data Interchange Skills   None
   Connectivity Experience   None
   Network Design/Management

4. General financial health considers the following:
Growth	< Ind.
Margins	< Ind.
Liquidity (Current Ratio)	< 1.5:1
Backlog : Current Rev.	< 1:1
Wrap Rate (Cost : Markup)	1.0 - 1.5

INPUT

I.   COMPANY IDENTIFICATION

BDM INTERNATIONAL, INC.
7915 Jones Ranch Drive
McLean, VA 22102

A. Key Contacts

Earle C. Williams, President and CEO

B. Brief Company Description

BDM International provides diversified professional and technical services in the areas of:

- National defense
- Defense communications
- Industrial and business services
- Energy
- Space programs

These services consist principally of evaluations of military systems and operations under field and laboratory test conditions. The company services also include the analysis of policies, concepts, systems, and programs, as well as the design, development, and integration of computer software instrumentation and hardware. The company also has expertise in various forms of applied research.

1. Line(s) of Business

    a. Non-Information Services

        - Optical/Laser development activities
        - Evaluation of Air Force hardware acquisition programs
        - Arms field testing for the U.S. Army
        - Evaluation of U.S. Air Force missile basing systems
        - Program management for the introduction of high-technology equipment into the U.S. Army
        - Development of fas wells, under contract to the Department of Energy
        - Development of Nuclear Waste Management Programs
        - Astrophysics support for NASA
        - Evaluation of the adequacy of the Department of Defense's test facilities

    b. Information Services

        - Artificial Intelligence development for ARCS
        - Development of conceptual Artificial Neuro Systems (ANS)
        - Attempting to simulate the human brain's processing of information
        - SDI conceptual and analytical support
        - Simulation for SDI Systems Engineering and Technical Assistance (SETA) support
        - Development of computer models in relation to the Joint Command Control and Countermeasures joint test
        - Development of computer software for the ICBM missile program

- Development of a Tactical Level Control System for the U.S. Marine Corps
- Development of an updated U.S. Air Force requirements data base
- Development of a computer model to predict and minimize the effects of electromagnetic interference in high-voltage transmission and distribution stations
- Development of a variety of Computer Integrated Manufacturing (CIM) systems for commercial clients
- Development of an advanced manufacturing system for the Department of Defense
- Development of a historical data base, containing financial information, for management decision support

II. MANAGEMENT/PERSONNEL

A. Operations

BDM is divided into the following business areas:

- National Defense and Security
- Energy Programs
- Space Programs
- Industrial and Business Services
- International Programs

B. Project Management and Controls

C. Culture

The company's orientation is much more in applied technology than in research technology. For example, more than 85% of the company's revenues derive from tests, experiments, design, and analytical services. The majority of the services are directed toward the U.S. Department of Defense and similar organizations within allied nations.

D. Skill Sets

E. Level of Personnel

As of the end of 1986, the company had a total of 3,802 employees, including 209 part-time employees. The majority of these individuals are categorized as professional or technical personnel.

F. R&D/Technology

The company's R&D efforts are primarily oriented toward:

- Artificial intelligence
- Computer architecture
- Infrastructure development
- Data base development
- Optical technology
- Laser technology

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G. Executives

The corporation's management consists of relatively mature and experienced individuals, ranging in age from 36 to 67 years.

- The President of the company has been with the organization for 25 years.
- The other senior executives have been with the organization for periods of time varying from 15 to 25 years.
- On balance, the corporation has very extensive and deep management talent, most of the top management personnel having served the corporation in a variety of capacities prior to their present positions.

III. REPUTATION

A. Type of Contractor

BDM has acted as both prime contractor and subcontractor in the area of DoD contracting. BDM does most of its DoD work as a prime contractor.

B. Importance of Contracts

All of BDM's revenues in FY 1986 were a function of either prime contracts or subcontracts, broken down as follows:

- U.S. Department of Defense,
  prime contracts 78%, subcontracts 10%
- Other U.S. government agencies,
  prime contracts 5%, subcontracts 1%
- Total U.S. government contracts 94%
- International and commercial contracts 6%

C. Competitive Bid/Win Ratio

D. Recent Publicity

BDM records a high contract backlog of $550 million as of September 30, 1987. This may be due to a heavy involvement in the SDI program and an involvement in the development, on a conceptual level, of artificial neural systems.

The retirement of one of the founders, Dr. Bernard J. Dunn, was also announced during 1987.

IV. MARKET POSITION

A. Market Presence

- Support of DARPA strategic computing program
- Development of the potential role of optical beams in artificial neural systems
- Support of the Air Force Weapons Laboratory in developing software to measure the tracking and pointing accuracy of active mirror systems (SDI)
- Development of a simulation model of the Battle Management Command, Control and Communications system
- Involvement in multiple computer integrated manufacturing systems (CIM)
- Development of a historical data base for a major U.S. commercial bank

- Development of an integrated on-line corporate data base for a major insurance corporation
- Development of a computer system for a financial trade association

1. Marketing/Sales

    - The company is more marketing-oriented than other similar high-tech firms. As an example of this, the corporation has established what it refers to as the Individual Marketing Initiative program. This program levies the responsibility on all professional staff members for marketing corporate services.

    - The corporation also purposely seeks small (seed) contracts as a means of entering new market areas.

    - In 1986, the company submitted proposals totalling more than $2 billion.

    - At the end of 1986, the company had a proposal backlog of over $1.3 billion.

2. Clients/Projects

    Clients include the Army, the Air Force, the Royal Saudi Air Force, the Republic of Korea, NASA, and the FAA.

B. Market Penetration

C. Federal Image

1. Defense

The company has a very strong and positive image within the context of the Department of Defense.

2. Civil

In 1986, the company joined the Thomas Edison Applied Information Technology Research Center at the Ohio State University Research Park. This was done at the invitation of the governor of Ohio. The reason for this invitation was to involve BDM in the following areas of study:

- Intelligent user interfaces
- Personal identification technologies
- Expert systems

D. Agency Presence

    - Department of Defense
    - Department of Energy
    - Federal Emergency Management Agency
    - NASA

E. Commercial Potential

   1. Future Directions

- CIM
- Data base Development
- Advanced Manufacturing Systems

V. PROFESSIONAL SERVICES

A. Project Management Capabilities

B. Network/Comm. Expertise

C. Engineering

D. Ada Programming

No specific commentary concerning Ada in any documentation pertaining to BDM

E. Facilities Management

VI. APPLICATIONS

A. SDI

BDM is involved in the following areas in support of SDI:

- Involvement in Battle Management Command Control and Communications
- Developing techniques for improving distributed and parallel data processing
- Data survivability
- Visualization aids
- Optical computing
- Expert systems
- Artificial intelligence

B. Mission Critical

Work in support of SDI and the SETA program could be described as mission critical. This is also true of the following programs:

- Strategic Computing Program
- Artificial Neural Systems
- Interceptor Technology Analysis for the U.S. Army Strategic Defense Command
- Defense Communications (within the context of a variety of military command control and communications systems)

C. CIM

- Planning and developing a CIM system for a major electronics company
- Development of strategies for implementing CIM in the production of silicon wafers and semiconductor products

- Development of a flexible manufacturing system for a automobile/truck manufacturer
- Development of CIM technologies for the maintenance operations of a U.S. commercial airline

VII. LEVERAGEABLE RESOURCES

A. Development Tools

- CIM
- Advanced manufacturing systems
- Emergency planning systems within the context of the Federal Emergency Management Agency
- SDI technology

B. PM Software Tools

C. Products

1. Systems

2. Applications

   - CIM
   - Financial information management systems
   - Advanced manufacturing systems
   - Nuclear waste management techniques

D. Facilities

1. Locations

   - Corporate headquarters: McLean, VA

   - Other key locations:
     Albuquerque, NM
     Dayton, OH
     Columbia, MD
     Huntsville, AL

   - Other facilities in approximately 25 locations throughout the U.S.

   In addition, the company maintains personnel on approximately 20 to 25 military base facilities throughout the U.S. and in Europe and the Far East.

2. Computer Centers

3. Network

   There is no evidence of a BDM network.

INPUT

4. R&D Lab

   - McLean, VA
   - Albuquerque, NM
   - Dayton, OH
   - Columbia, MD
   - Huntsville, AL

5. Manufacturing/Assembly

   No manufacturing or assembly operations

VIII. FINANCIAL CHARACTERISTICS

A. Revenue Size

Note: Fiscal year ends December 31.

FY 1986: $322.2 million
FY 1985: $250.3 million

B. Focused Revenue Stream

- FY 1986: 95% of the company's revenues was derived from the U.S. government;

  · 72.4% of government revenues was attributable to cost-plus fee contracts
  · 7.1% of government revenues was attributable to time and material contracts
  · 20.5% of government revenues was attributable to firm, fixed-price contracts

C. General Health

1. Growth

   During FY 1986, there was a 29% growth in revenue and net income. This growth in revenue compares with a 30.8% growth in 1985.

2. Margins

   - FY 1986 pretax margins = 7.8%; after-tax margin = 4.2%
   - FY 1985 pretax margins = 7.6%; after-tax margin = 4.2%

3. Liquidity

   - FY 1986: 3.0

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IX. CONTRACTING DIRECTION

    A. Bidding Capability

    B. Fixed-Price vs. Cost-Plus Contracts

       The majority of the contracts are cost-plus, especially with the federal government.

X. ACQUISITION PROPENSITY

BDM has extensive experience and potential in the areas of SDI and CIM. It has a small but promising penetration into the commercial financial systems and financial data base areas and extensive penetration into many types of DoD high-technology contracts.

The company's success can be directly measured by its financial growth.

One of the stated objectives of BDM International is to expand its role into non-governmental, non-DoD areas. This goal was established ostensibly to reduce the company's heavy dependence on the Department of Defense.

A secondary goal has been established to increase the amount of foreign business.

INPUT

Detailed Selection Screen

Target: **BDM International, Inc.**

Criteria	Low (1)	Evaluation Factors Medium (2)	High (3)	Avg./ Weight	Score
Management/Personnel				2.4	x 8 19.2
Operations	___ Fair	_X_ Good	___ Well-Discip.		
Project Mgmt./Ctrls.	___ Fair	_X_ Good	___ Strong		
Culture 1	___ Incompat.	___ Overlap	_X_ Compat.		
Skill Sets	___ Incompat.	___ Overlap	_X_ Complementary		
Level of Personnel	___ "Bodies"	_X_ Competent	___ Experts		
R&D/Technology	___ None	_X_ Implementor	___ Creator		
Executives 2	___ Need Help	___ Stand Alone	_X_ Delivers		
Reputation				2.7	x 7 18.9
Type of Contractor	___ Sub	_X_ Prime & Sub	___ Integrator		
Importance of Contracts	___ Minor	___ Mixed	_X_ Major		
Competitive Win Ratio	___ 1:4	___ 1:3	___ 1:2		
Recent Publicity	___ Negatives	___ None	_X_ Positives		
Market Position				2.4	x 6 14.4
Market Presence	___ Commercial	_X_ Both	___ Federal		
Market Penetration	___ Surface	_X_ Deep	___ Moderate		
Federal Image	___ Fair	___ Good	_X_ Excellent		
Agency Presence	___ Civil	___ Both	_X_ Defense		
Commercial Potential	___ Weak	_X_ Average	___ Strong		
Professional Services				1.6	x 5 8.0
Project Management	___ Weak	_X_ Fair	___ Very Good		
Network/Comm. Expertise 3	___ Weak	_X_ Fair	___ Very Good		
Engineering	___ Weak	_X_ Fair	___ Very Good		
Ada Programming	_X_ Weak	___ Fair	___ Very Good		
Facilities Management	_X_ Weak	___ Fair	___ Very Good		

INPUT

Application Targets				2.3	x 4	9.7
SDI	___ None	_X_ Heavy	___ Some			
"Mission Critical"	___ None	_X_ Heavy	___ Some			
CIM	___ None	___ Heavy	_X_ Some			

Leverageable Resources				2.3	x 3	6.9
Development Tools	___ None	_X_ Some	___ Integrated			
PM Software Tools	___ Fair	_X_ Good	___ Good/On-time			
Products						
Systems	___ Non-SI	_X_ SI-Related	___ SI Platform			
Applications	___ None	___ "Me Too"	_X_ Unique			
Facilities						
Locations	___ Remote	___ Near Buyer	_X_ Local & Remote			
Computer Center(s)	___ None	_X_ Fair	___ Strong			
Network	___ None	___ Fair	___ Strong			
R&D Lab	___ None	___ Heavy	_X_ Present			
Mfg./Assembly	_X_ None	___ Heavy	___ Present			

Financial Characteristics				2.3	x 2	4.6
Revenue Size	___ < $20 M	___ $20-$40 M	_X_ > $40 M			
Focused Revenue Stream	_X_ Many	___ Some	___ Few			
General Health 4	___ Poor	___ Fair	_X_ Good			

Contracting Direction				3.0	x 1	3.0
Bidding Capability	___ Weak	___ Fair	_X_ Very Good			
FP vs. CP Contracts						
Backlog	___ > 50%	___ App. 33%	___ < 25%			
Trend	___ <25%	___ App. 33%	___ > 50%			

Acquisition Propensity	___ Negative	_X_ Okay	___ Ripe	2.0	x 1	2.0

Total Weighted Score: 86.2

INPUT

Notes:

1. Culture includes commitment to quality, solid client service, and a career orientation of the staff (low turnover, recruits directly from college, and one-firm employees).

2. If the acquisition is large, company will continue to operate as is. If small, the company will be quickly integrated with AA & Co.

3. Network/communications expertise includes:
   Data Interchange Skills   None
   Connectivity Experience None
   Network Design/Management

4. General financial health considers the following:
   Growth   < Ind.
   Margins   < Ind.
   Liquidity (Current Ratio)   < 1.5:1
   Backlog : Current Rev.   < 1:1
   Wrap Rate (Cost : Markup)   1.0 - 1.5

INPUT

I. COMPANY IDENTIFICATION

SHL SYSTEMHOUSE
99 Bank Street
Ottawa, Ontario K4P 6B9

A. Key Contacts

Roderick Bryden, Chairman and CEO
Peter Saniford, President

B. Brief Company Description

Since its founding in 1974, SHL has focused on the application of evolving hardware and technology to meet real-world needs of end users. While they have, from time to time, strayed from their core business of providing professional services, they continue to be a key systems integrator to not only the Canadian and U.S. federal governments, but also to worldwide nonprofit organizations and commercial clients as well.

1. Line(s) of Business

a. Non-Information Services

SHL does not engage in any non-information businesses.

b. Information Services

SHL's professional services offerings may be considered "full service," covering all of the following:

- Consulting
- Long-range systems planning
- Requirements definition
- Feasibility studies
- Functional specifications
- Hardware & software evaluation & selection
- Application systems development
- Detailed systems design
- Program development
- User & operations documentation
- Systems integration
- Hardware/software installation
- Software conversion
- User training
- Project management
- Management of systems development projects
- Configuration management
- Quality assurance

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II. MANAGEMENT/PERSONNEL

A. Operations

Though the corporate level dictates certain methodologies, standards, and financial controls, the real operating groups, the branch offices, are fairly autonomous.

B. Project Management & Controls

SHL has formal methods for SI project management that help to ensure prompt delivery. And the company is willing to accept full accountability for that delivery.

C. Culture

Branch managers not only have a team spirit but built-in incentives to share their personnel resources. In this way teams can be quickly formed and delivered to a site for the duration of a project.

Part of the attraction is the opportunity for large salaries at the project manager ($80,000) or branch manager ($100,000 plus) levels.

The company is very oriented toward the individual and his/her development. Each individual is assigned a career and education management advisor as a part of a Career and Education Management program. SHL believes this program links the employee's capabilities and aspirations to the company needs. This orientation has engendered a strong team spirit and resulted in little turnover. A key to having a ready pool is the Information Resource Network, an electronic mail capability through which staff members share ideas, problems and analyses of the latest technology announcements.

D. Skill Sets

SHL has skills across the board, primarily as a result of a unique ongoing training program. In INPUT's view, however, the skills are broad and thin. At best, the skills would seem to overlap with AA & Co.

E. Level of Personnel

The personnel at SHL are mostly university graduates who work at the lower end of the technical spectrum on physical integration. The in-house individuals are not typically "experts," and, in fact, appear to border more on the "body" level with few leaders among the troops.

F. R&D/Technology

SHL is neither a creator of technology nor a hardware engineering firm. Skills appear to be on the planning, software development, and project management side.

G. Executives

The executives, from the chairman to the individual branch managers, are professionals with solid selling skills.

III. REPUTATION

A. Type of Contractor

SHL is in the business of "combining disparate hardware, software, and communications to develop a custom solution that meets a customer's needs."

While SHL has several systems integration contracts, the company is willing to perform either the prime or subcontractor role so long as it has the responsibility for the delivery of the solution.

This attitude has led SHL to relationships with many companies:

SHL is currently bidding a job with IBM. According to SHL, either party could have been the prime, but both parties felt that IBM's name would be better received if IBM was the lead.

Other known partners include Unisys (an eligibility system in the State of Washington), Digital, Hewlett-Packard, Amdahl, Wang, and Tandem.

B. Importance of Contracts

Since its founding in 1974, SHL has concentrated on providing solutions as generalists. Whereas the U.S. market was becoming competitive with contract programmers or turnkey solution providers, SHL's Canadian focus, because of the company's size, forced it to avoid both. It essentially created a market, growing up in a sheltered geographic area with little direct competition.

SHL's focus on smaller jobs that are nonthreatening to MIS/DP managers has been a key to its success. In these jobs it seems possible, even attractive, for SHL to offer an integration effort based on the user's industry knowledge. It is INPUT's experience, however, that larger jobs with larger clients will require both industry and application experience. INPUT does not think larger projects will be readily available to SHL without this knowledge base.

C. Competitive Bid Win Ratio

SHL is believed to have a good track record on competitive bids, primarily because it has a lower cost structure due to the personnel it employs.

D. Recent Publicity

Publicity has all been very favorable, primarily due to SHL's very rapid growth in the U.S. market.

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IV.   MARKET POSITION

A. Market Presence

As of the start of FY 1987 SHL had 204 customers with whom it had contractual relationships. Some of these include:

Aircraft Owners and Pilots Association. $1.75 million over three years to develop and integrate an office automation system.

District of Columbia/Human Services Department. $2.3 million to implement a client determination/eligibility system.

Genstar Stone Products. $2.6 million to design, install, and operate a data processing center in Baltimore.

Hawaii Department of Social Services and Housing. $4.1 million for software development, project management, and training involved with the implementation of an eligibility, financial, and management information system for human services. The system will link 30 offices on the four main islands with the Department's main computer facilities in Honolulu.

U.S. Army. $15 million for systems integration (project unidentified).

U.S. Navy. $8.9 million to configure the Planning, Programming, and Budgeting Systems (PPBS). This is a key contract for SHL in that it involves the development of budgeting systems for all Navy departments and may be worth $40 million over the next 10 years. It is also significant that SHL beat EDS, establishing SHL as a serious contender in the U.S. federal government SI market. SHL bid Digital equipment in this job.

Los Angeles Criminal Justice. $12 million to design, develop, and integrate a criminal justice information system. Columbus and Franklin (OH) Public Library. $1.2 million for the design and implementation of an automated circulation and cataloguing system. This is a Tandem-based, on-line system to accommodate checkouts, renewals, reserves, fees, and overdue accounts for the 1.5-million-volume library.

Eligibility systems in:
Washington, DC
State of Arizona
State of Washington

The lines of business in Canada are similar to those in the U.S. with contracts primarily at the ministries and departments of the federal government.

Non-North American business is centered on the United Nations and other organizations with noncommercial objectives (e.g., Inter-American Development Bank, International Monetary Fund, World Bank).

B. Market Penetration

SHL claims to focus on a "technology" market as opposed to a vertical market or an application. That is, it wants to apply technical solutions, regardless of

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the industry or application. SHL feels that the user knows its business and SHL knows technological application, so systems integration becomes the marriage of the two parties' skills. SHL argues that it is unrealistic to think that there is much transference between unique solutions in the same industry. The ability to transport the solution or the experience only occurs at the second-tier companies. SHL wants to deal with the first-tier organizations.

A key strategy in its recent growth has been acquisition. In 1986, SHL made two small but strategically valuable acquisitions in the U.S.

SHL acquired the federal systems division of YIPCON, a Fairfield (NJ) company, for $5.5 million in cash. The division is an 8-A firm with approximately $10 million in federal revenue. It is essentially a "body shop" in the microcomputer arena with Wang and IBM expertise.

In April, 1986, SHL acquired Capital Systems of Alexandria (VA) for 360,000 shares of SHL (valued at $4 million). CSI, known for its technical and systems software integration knowledge, brought to SHL: 285 employees, $600,000 in profit, $10 million in sales, and contracts with the Department of Treasury, HHS, the Department of Transportation, the Army, and the Navy.

C. Federal Image

Though SHL is interested in larger jobs, its focus has been on smaller jobs ($2-10 million), limiting its image and recognition.

Customer satisfaction is a frequent topic in SHL literature. According to SHL's claims, 75% of its business is from former customers. Its service strategies are designed to establish long-term partnerships with clients.

D. Agency Presence

As indicated above, SHL has contracts with both DoD and civil agencies.

E. Commercial Potential

SHL has developed a series of specialty services that include office automation and eligibility systems. The company has commercial systems integration and is actively marketing to commercial prospects.

V. PROFESSIONAL SERVICES

A. Project Management Capabilities

SHL has very good project management skills and has proven its capability to handle complex integration projects. In one instance, the company believed so strongly in its skills that it was willing to assume the risk of a manufacturer's hardware even though SHL received no direct financial benefit from doing so.

B. Network/Comm. Expertise

SHL sees network integration as a major area of growth and will be making news in the arena in FY 1988. Its Los Angeles Criminal Justice System project involves a unique network that it designed and built.

INPUT

C. Engineering

SHL has apparently been successful at addressing human issues facing the planning and installation of information systems. SHL does not, however, have any technically oriented engineering skills.

D. Ada Programming

No skills in this area are apparent.

E. Facilities Management

To the best of INPUT's knowledge, SHL has not engaged in this business and has no current skills to do so.

VI. APPLICATIONS

A. SDI

No SDI-related projects are known.

B. Mission Critical

Few of SHL's current contracts appear to be strategic in nature.

C. CIM

No CIM experience is known.

VII. LEVERAGEABLE RESOURCES

A. Development Tools

SHL has no tools as such, but it does have the capability to emulate customers' systems in its computer centers, allowing the company to build systems off site.

B. PM Software Tools

SHL's systems development methodology, though strong, is currently paper based and unlikely to be leverageable.

C. Products

1. Systems

No systems software products are available.

2. Applications

SHL has been selling the integration of a welfare eligibility system that was developed by the U.S. government. SHL's role is to use this core application and custom develop the unique aspects required by the customer on the customer's choice of hardware.

D. Facilities

   1. Locations

      SHL tends to have offices near customers' sites.

   2. Computer Centers

      As mentioned above, SHL does have fully equipped development centers.

   3. Network

      SHL has an in-house network used primarily for office communications and personnel education & training.

   4. R&D Lab

      No R&D lab is available.

   5. Manufacturing/Assembly

      No facilities are owned by SHL.

VIII. FINANCIAL CHARACTERISTICS

   A. Revenue Size

      FY 1986 revenue was approximately $105 million (Canadian) while FY 1987 revenue was approximately $190 million. SHL is forecasting an additional 50% growth in FY 1988.

   B. Focused Revenue Stream

      Though SHL claims to have one line of business—systems integration, it is INPUT's opinion that only approximately 65% of its revenue extends from SI-type contracts. The remainder is from contract programming (33%) and facilities management (2%).

   C. General Health

      After two public offerings in 1986, SHL had $60 million in equity. That has been used primarily for bidding larger and larger jobs (in the $10-50 million range). SHL has no debt.

      SHL has a perported $300 million backlog of work.

      SHL has a pretax goal of 15% (or 10% after-tax, based on a 30% tax rate). In FY 1986, its rate was 9.6% pretax, or approximately 6% after tax.

      The professional services piece of SHL's business has been hitting a 30% pretax rate.

INPUT

IX.   CONTRACTING DIRECTION

   A. Bidding Capability

      SHL's solid annual growth suggests that it has a very good bidding capability.
      Specific information is unknown.

   B. Fixed-Price vs. Cost-Plus Contracts

      SHL frequently bids fixed price, indicating its confidence in its methodologies
      and staff. This trend is likely to continue.

X.   ACQUISITION PROPENSITY

   Though SHL is publicly traded on the Toronto and NASDAQ exchanges, much of
   the company is controlled by a few. For example, the chairman not only owns
   shares as an officer but also owns Kinburn Corp., an investment holding company
   that controls nearly 33% of the shares. Other owners include institutions (40%),
   officers/directors (16%), and Equitable Life (6%).

   It would be very difficult to gain control of the company without the cooperation of
   management. The assumption of considerable debt on the part of Kinburn to
   maintain the 33% level of ownership after two public offerings indicates that
   management intends to keep it that way.

   SHL is overvalued on the stock market at 20-25 times earnings. Actual market
   value (i.e., value of shares outstanding) is over $250 million.

   While these reasons suggest that SHL may be very difficult to acquire, it is an
   attractive company and might be willing to discuss such a possibility with a firm the
   caliber of AA & Co.

INPUT

Detailed Selection Screen

Target: **SHL Systemhouse Inc.**

Criteria	Low (1)	Evaluation Factors Medium (2)	High (3)	Avg./ Weight	Score
Management/Personnel				2.3 x 8	18.4
Operations	___ Fair	___ Good	_X_ Well-Discip.		
Project Mgmt./Ctrls.	___ Fair	___ Good	_X_ Strong		
Culture 1	___ Incompat.	___ Overlap	_X_ Compat.		
Skill Sets	___ Incompat.	_X_ Overlap	___ Complementary		
Level of Personnel	_X_ "Bodies"	___ Competent	___ Experts		
R&D/Technology	___ None	_X_ Implementor	___ Creator		
Executives 2	___ Need Help	_X_ Stand Alone	_X_ Delivers		
Reputation				2.7 x 7	18.9
Type of Contractor	___ Sub	___ Prime & Sub	_X_ Integrator		
Importance of Contracts	___ Minor	_X_ Mixed	___ Major		
Competitive Win Ratio	___ 1:4	___ 1:3	___ 1:2		
Recent Publicity	___ Negatives	___ None	_X_ Positives		
Market Position				2.3 x 6	13.8
Market Presence	___ Commercial	_X_ Both	___ Federal		
Market Penetration	___ Surface	___ Deep	_X_ Moderate		
Federal Image	___ Fair	_X_ Good	___ Excellent		
Agency Presence	___ Civil	_X_ Both	___ Defense		
Commercial Potential	___ Weak	___ Average	___ Strong		
Professional Services				1.6 x 5	8.0
Project Management	___ Weak	___ Fair	_X_ Very Good		
Network/Comm. Expertise 3	___ Weak	_X_ Fair	___ Very Good		
Engineering	_X_ Weak	___ Fair	___ Very Good		
Ada Programming	_X_ Weak	___ Fair	___ Very Good		
Facilities Management	_X_ Weak	___ Fair	___ Very Good		

INPUT

Application Targets						1.7	x 4	6.8
SDI	_X_ None	___ Heavy	___ Some					
"Mission Critical"	___ None	___ Heavy	_X_ Some					
CIM	_X_ None	___ Heavy	___ Some					

Leverageable Resources				1.6	x 3	4.8
Development Tools	_X_ None	___ Some	___ Integrated			
PM Software Tools	_X_ Fair	___ Good	___ Good/On-time			
Products						
Systems	_X_ Non-SI	___ SI-Related	___ SI Platform			
Applications	___ None	___ "Me Too"	_X_ Unique			
Facilities						
Locations	___ Remote	_X_ Near Buyer	___ Local & Remote			
Computer Center(s)	___ None	_X_ Fair	___ Strong			
Network	___ None	_X_ Fair	___ Strong			
R&D Lab	_X_ None	___ Heavy	___ Present			
Mfg./Assembly	_X_ None	___ Heavy	___ Present			

Financial Characteristics				3.0	x 2	6.0
Revenue Size	___ < $20 M	___ $20-$40 M	_X_ > $40 M			
Focused Revenue Stream	___ Many	___ Some	_X_ Few			
General Health 4	___ Poor	___ Fair	_X_ Good			

Contracting Direction				2.3	x 1	2.3
Bidding Capability	___ Weak	___ Fair	_X_ Very Good			
FP vs. CP Contracts						
Backlog	_X_ > 50%	___ App. 33%	___ < 25%			
Trend	___ <25%	___ App. 33%	_X_ > 50%			

Acquisition Propensity	___ Negative	_X_ Okay	___ Ripe	2.0	x 1	2.0

Total Weighted Score: 81.0

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Notes:

1. Culture includes commitment to quality, solid client service, and a career orientation of the staff (low turnover, recruits directly from college, and one-firm employees).

2. If the acquisition is large, company will continue to operate as is. If small, the company will be quickly integrated with AA & Co.

3. Network/communications expertise includes:
   Data Interchange Skills   None
   Connectivity Experience None
   Network Design/Management

4. General financial health considers the following:
   Growth   < Ind.
   Margins   < Ind.
   Liquidity (Current Ratio)   < 1.5:1
   Backlog : Current Rev.   < 1:1
   Wrap Rate (Cost : Markup)   1.0 - 1.5

INPUT

I. COMPANY IDENTIFICATION

AMERICAN MANAGEMENT SYSTEMS
1777 North Kent St.
Arlington, VA 22209

A. Key Contacts

Ivan Selin, Chairman
Charles Rossotti, President and CEO

B. Brief Company Description

AMS provides professional services for the life cycle of a software system. It has proprietary productivity tools and methodologies that it uses to serve its clients. The company is also very knowledgeable in a number of vertical areas.

1. Line(s) of Business

a. Non-Information Services

AMS does not engage in any significant amount of non-information services business.

b. Information Services

AMS provides professional services (software development, consulting, and education and training), software applications, and processing services such as facilities management and remote processing. These services are provided to the financial services industry, federal government agencies, state and local governments, and energy and telecommunications companies.

II. MANAGEMENT/PERSONNEL

A. Operations

Much of the software development and add-on business is the responsibility of the local staff. There is a very small and elite group of people who concentrate on new market and client development. Everyone in the company knows his or her role within the strict company structure in addition to the tight project management regime.

Employee counts are as follows:

Total—1800
Full-time—1435
Part-time—360
Titled executives—300

B. Project Management & Controls

AMS has a good record of performance against the time and cost schedules through the use of automated tools for project management, control, and

INPUT

tracking of projects. This close tracking of projects and the use of tools is employed to minimize the degree of risk for each project.

C. Culture

The image that is portrayed by the people of AMS is that of a highly technical, professional, and effective development team. AMS has a very conservative approach to business, and its employees do not think of themselves as businesspeople in the usual sense.

D. Skill Sets

AMS has a full set of capabilities to develop applications systems and estimate time and cost accurately, including automated project management life cycle tools.

The company has a strong knowledge of the business niches in its target markets. Projects are completed using a team approach with each person having an integral part in the success of the project.

E. Level of Personnel

AMS has a highly skilled, stable professional staff that can sell repeat business.

Turnover after the first two years of an employee's career is very low, about 3%.

There is recognized industry/applications experts on the staff.

F. R&D/Technology

AMS has developed a set of proprietary applications packages that it enhances and modifies to fit clients' needs for integrated systems. It does not, however, have an image as a creator of technology.

G. Executives

AMS executives are a standalone team that delegates responsibility to the local staff for much of the development and add-on sales. These executives are responsible for the fairly rigid guidelines for seeking new business and overseeing the development work in the federal sector.

III. REPUTATION

A. Type of Contractor

AMS works as a prime contractor in the majority of its business. There has been some work completed as a subcontractor to other companies such as Boeing, Petroleum Services, and GTE.

B. Importance of Contracts

AMS does hold some strategically important contracts, but many contracts could not be so classified.

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C. Competitive Bid/Win Ratio

No information is available on this ratio.

D. Recent Publicity

AMS is frequently in the press, but primarily because of its size, not because of strategically important (positive) developments or negative developments.

IV. MARKET POSITION

A. Market Presence

One of AMS's most important areas is the vertical financial services area. AMS is primarily involved in the credit management and corporate international banking areas, providing software development, consulting, education and training, and software applications.

Other areas of involvement include state and local governments, energy and petroleum, the federal government, and the telecommunications market.

Clients include AARP, MCI, University of Texas, Citicorp, 40 of the top 50 banks in the U.S. and Canada, the U.S. State Department, and the U.S. General Accounting Office.

B. Market Penetration

The philosophy of AMS is to know your market niche and your target companies and penetrate all of the opportunities that are available in that company.

C. Federal Image

1. Defense

AMS provides support in the area of administration and business applications to the Army, Navy, Air Force, and Marine Corps. The company is actively increasing its involvement in the areas of weapons systems acquisition and C3I.

2. Civil

AMS work seems to be heavy into the financial services that can be offered to the government. The company has a very good image delivering the kind of financial management system that areas like the General Accounting Office, the State Department, and the Navy Comptroller's Office need.

D. Agency Presence

As indicated above, AMS is fairly strong in supporting the civil and defense agencies in the their administrative and financial needs.

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E. Commercial Potential

AMS has a lot of potential in expanding to other companies and business areas that can utilize its services. It is the company philosophy to restrict exploration of new business and fully penetrate the client base that it currently possesses.

AMS has a stable presence in the commercial area. With the increased use of integrated systems and CASE software, the future seems a bit unsure. AMS really knows its market niches and exploits them to the fullest.

AMS does not seem to be as future oriented as other firms in the professional services area and is possibly a bit "narrow minded" in its market views.

V. PROFESSIONAL SERVICES

A. Project Management Capabilities

AMS delegates the responsibility for the actual work and the add-on sales to the local staff handling the financial services market. In the federal sector, the development responsibility is delegated to local staff, but there is more top management overview of work.

B. Network/Comm. Expertise

There seems to be little involvement in the area of networks or telecommunications.

C. Engineering

AMS, except for a corporate technology development group responsible for creating a uniform technical infrastructure, is not known for engineering skills.

D. Ada Programming

AMS had entered into an agreement with Software AG to market versions of the AMS applications for Software AG's Adabase data base management system. AMS does not seem to be involved in any other form of Ada programming at this time.

E. Facilities Management

AMS runs a large systems center in Arlington, VA, to support the federal work.

VI. APPLICATIONS

A. SDI

Some of AMS's business and maintenance support of the DoD could be applicable to SDI, but there do not appear to be any direct weapon system programming applications.

B. Mission Critical

AMS's financial systems projects could be classified as mission critical.

C. CIM

No skills in this area are known to INPUT.

VII. LEVERAGEABLE RESOURCES

A. Development Tools

AMS has developed applications modules that it uses to put together the systems that it sells to its customers. This idea of a modularized approach to systems could be adapted to the marketplace in general.

B. PM Software Tools

There is the possibility that the project management system that is used by AMS could be modified and spun off to apply to business project management in general.

C. Products

1. Systems

2. Applications

Credit Management Systems—Automated Credit Application Processing System (ACAPS), Computer Assisted Collection System (CACS), and BANKSERV.

Corporate and International Banking Systems—Letter of Credit System (LCS), Customer Entry System (CES), Collections Processing System (CPS), and Corporate Deposit System (CDS).

Federal Government Agencies—Federal Financial System (FFS)

Government and Educational Systems—Government Financial System (GFS), Local Government Financial System (LGFS), On-line Appraisal and Statistical Information System (OASIS), and Local Education Agency Financial System (LEAFS).

Colleges and Universities—College and University Financial System and Development Information System (DIS)

Energy Companies—SYNERGY product line

D. Facilities

1. Locations

Headquarters and one subsidiary located in Arlington, VA; one other subsidiary located in Ottawa, Canada; 20 other offices throughout the U.S.

2. Computer Centers

   There is a computer center in Arlington to support the federal government.

3. Network

4. R&D Lab

   No R&D lab is available.

5. Manufacturing/Assembly

   AMS is not involved in manufacturing, only software development.

VIII. FINANCIAL CHARACTERISTICS

A. Revenue Size

	1986	1985	1984
Income: (millions)	135.5	112.2	97.0

B. Focused Revenue Stream

AMS has a very focused revenue plan dealing basically with the financial services market, federal government agencies, and state and local governments. The company has a small business in the areas of telecommunications and energy resources.

The expertise and professionalism of the staff resulted in add-on sales that contributed 80% of the total revenue in 1986.

C. General Health

1. Growth

   Growth in 1986 was 21%. Historical growth (1982-1986 AAGR) is 15.8%.

   AMS is working on the assumption that it can continue growth in the area of 20% with the business plans that it has in effect—penetration of the available work with each client and some restricted exploration of new business.

IX. CONTRACTING DIRECTION

A. Bidding Capability

AMS has a very strong bidding "shop."

B. Fixe-Price vs. Cost-Plus Contracts

No information is available on this issue.

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X. ACQUISITION PROPENSITY

AMS is aware that larger firms are reviewing the possibility of acquiring it. Some members of AMS management might strongly oppose an acquisition.

Detailed Selection Screen

Target: **American Management Systems, Inc.**

Criteria	Low (1)	Evaluation Factors Medium (2)	High (3)	Avg./ Weight	Score
Management/Personnel				2.4 x 8	19.2
Operations	___ Fair	___ Good	_X_ Well-Discip.		
Project Mgmt./Ctrls.	___ Fair	___ Good	_X_ Strong		
Culture 1	___ Incompat.	_X_ Overlap	___ Compat.		
Skill Sets	___ Incompat.	_X_ Overlap	___ Complementary		
Level of Personnel	___ "Bodies"	___ Competent	_X_ Experts		
R&D/Technology	___ None	_X_ Implementor	___ Creator		
Executives 2	___ Need Help	_X_ Stand Alone	___ Delivers		
Reputation				2.0 x 7	14.0
Type of Contractor	___ Sub	_X_ Prime & Sub	___ Integrator		
Importance of Contracts	___ Minor	_X_ Mixed	___ Major		
Competitive Win Ratio	___ 1:4	___ 1:3	___ 1:2		
Recent Publicity	___ Negatives	___ None	___ Positives		
Market Position				2.2 x 6	13.2
Market Presence	___ Commercial	_X_ Both	___ Federal		
Market Penetration	___ Surface	_X_ Deep	___ Moderate		
Federal Image	___ Fair	_X_ Good	___ Excellent		
Agency Presence	___ Civil	_X_ Both	___ Defense		
Commercial Potential	___ Weak	___ Average	_X_ Strong		
Professional Services				1.8 x 5	9.0
Project Management	___ Weak	___ Fair	_X_ Very Good		
Network/Comm. Expertise 3	_X_ Weak	___ Fair	___ Very Good		
Engineering	_X_ Weak	___ Fair	___ Very Good		
Ada Programming	___ Weak	_X_ Fair	___ Very Good		
Facilities Management	___ Weak	_X_ Fair	___ Very Good		

INPUT

Application Targets					2.3	x 4	9.2
SDI	___ None	___ Heavy	_X_ Some				
"Mission Critical"	___ None	___ Heavy	_X_ Some				
CIM	_X_ None	___ Heavy	___ Some				

Leverageable Resources					2.1	x 3	6.3
Development Tools	___ None	_X_ Some	___ Integrated				
PM Software Tools	___ Fair	_X_ Good	___ Good/On-time				
Products							
Systems	_X_ Non-SI	___ SI-Related	___ SI Platform				
Applications	___ None	___ "Me Too"	_X_ Unique				
Facilities							
Locations	___ Remote	___ Near Buyer	_X_ Local & Remote				
Computer Center(s)	___ None	___ Fair	_X_ Strong				
Network	___ None	___ Fair	___ Strong				
R&D Lab	_X_ None	___ Heavy	___ Present				
Mfg./Assembly	_X_ None	___ Heavy	___ Present				

Financial Characteristics					3.0	x 2	6.0
Revenue Size	___ < $20 M	___ $20-$40 M	_X_ > $40 M				
Focused Revenue Stream	___ Many	___ Some	_X_ Few				
General Health 4	___ Poor	___ Fair	_X_ Good				

Contracting Direction					3.0	x 1	3.0
Bidding Capability	___ Weak	___ Fair	_X_ Very Good				
FP vs. CP Contracts							
Backlog	___ > 50%	___ App. 33%	___ < 25%				
Trend	___ <25%	___ App. 33%	___ > 50%				

Acquisition Propensity	_X_ Negative	___ Okay	___ Ripe	1.0	x 1	1.0

Total Weighted Score: 80.9

INPUT

Notes:

1. Culture includes commitment to quality, solid client service, and a career orientation of the staff (low turnover, recruits directly from college, and one-firm employees).

2. If the acquisition is large, company will continue to operate as is. If small, the company will be quickly integrated with AA & Co.

3. Network/communications expertise includes:
   Data Interchange Skills   None
   Connectivity Experience   None
   Network Design/Management

4. General financial health considers the following:
   Growth   < Ind.
   Margins   < Ind.
   Liquidity (Current Ratio)   < 1.5:1
   Backlog : Current Rev.   < 1:1
   Wrap Rate (Cost : Markup)   1.0 - 1.5

INPUT

I.   COMPANY IDENTIFICATION

COMPTEK RESEARCH, INC.
Buffalo Technology Campus
110 Broadway
Buffalo, NY 14203

A. Key Contacts

G. Wayne Hawk, Chairman
William K. La Sala, President

B. Brief Company Description

Comptek Research, Inc. provides electronic hardware systems, software, and
technical support for military ships, aircraft, submarines, helicopters, and
ground-based systems.   The majority of Comptek's work in these areas is
oriented toward mission planning and threat warning systems, based on the
detection and analysis of various kinds of electronic missions.

Other Comptek systems, developed for the military, fall into the following
categories:
-    air-to-ground communications
-    resource control
-    intelligence information gathering and dissemination

Comptek systems and software are also used to train military personnel in the
use of various types of electronic systems, as well as to test the accuracy of
existing deployed systems.

1. Line(s) of Business

a. Non-Information Services
    Not applicable

b. Information Services

-    Command, Control, Communications, and Intelligence (C3I)
     systems.   Within this context, Comptek has been a major supplier
     of tactical systems to the U.S. Navy, U.S. Marine Corps, and U.S.
     Air Force. Most of these systems are, by their nature, highly
     communications oriented.
-    Electronic warfare. These systems have, as a common element, a
     high degree of signal analysis functionality. These systems are also
     provided to the U.S. Navy, Air Force, and Marines and are
     basically oriented toward detecting and analyzing threat situations
     and programming a reaction to these threats.
-    Training. Comptek develops operational training systems that
     simulate combat environments for operators of electronic warfare
     systems.
-    Tactical systems. Comptek has been, and continues to be, a
     supplier of technical support and software to the U.S. Navy. This
     support includes providing advanced studies on weapons systems,

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analyses of computer architecture on naval vessels, and the development of software for combat direction systems.
- Manufacturing. Comptek has an electronic components manufacturing capability. This business basically concentrates on providing electronic assemblies and circuit boards to both military and private sector customers.

II. MANAGEMENT/PERSONNEL

A. Operations

The business is functionally organized into two operating entities:
- Electronic Defense Systems. In the context of this organizational entity, Comptek develops the following types of products:
  - Threat detection
  - Programmable counter measures
  - Ground support systems for military hardware
  - Electronic counter measure systems
  - Antiship missile defense systems
- Applied Technology Division. This organizational entity is oriented toward the development of various types of customized software. This software is utilized in the following general areas:
  - Command control and communications systems
  - Fleet combat support systems
  - Air space surveillance and traffic control systems
  - Simulation systems

B. Project Management & Controls

Comptek is a heavy and accomplished user of project management and control systems, on an internal basis. It does not market these types of systems to its customers.

C. Culture

Comptek's professional staff consists primarily of systems engineers, systems analysts, and software programmers. There are also a number of hardware engineers. The corporation is located at the Buffalo Technology Campus, the Buffalo area's attempt to create a Boston-type high-tech business base. Comptek's senior executives have significant experience in the engineering sciences and are oriented primarily toward the Department of Defense.

D. Skill Sets

Employees are recruited from local universities in the various locations within which Comptek is located. Professional employees are also recruited from competitor organizations. Most of the professional staff have backgrounds in mathematics, engineering, computer sciences, and, to a lesser degree, business.

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E. Level of Personnel

As of March 31, 1987, the end of FY 1987, the company had 602 full-time employees and 26 part-time employees. Comptek also employed 19 persons on a contract basis. Of the full-time and part-time employees, approximately 490 of them were professional and technical personnel.

F. R&D/Technology

Comptek is fairly active in various types of R&D activities. It obtains the funding for most of these activities through the U.S. government via independent research-and-development (IR&D) funds. In 1987, the company expended approximately $250,000 for IR&D activities.

G. Executives

The chairman of Comptek, G. Wayne Hawk, is not a full-time chairman. He is president and chief executive officer of a company not affiliated with Comptek. The remainder of the senior executives of Comptek have, with few exceptions, been long-time employees of the firm, having served in various capacities in the past. Those individuals who are more recent employees of the firm were primarily recruited from other defense industry contractors.

III. REPUTATION

The majority of the company's revenues are derived as a prime contractor. Approximately 20% of its revenues were from projects performed on a subcontractor basis.

A. Importance of Contracts

Almost all of Comptek revenues are generated on a contract basis. Almost all its contract work is of strategic importance to its clients.

B. Competitive Bid/Win Ratio

Unknown.

C. Recent Publicity

Comptek acquired Industrial Systems Service Company, in Erie, Pennsylvania, during the first quarter of FY 1986. This is an electronics manufacturing company and is basically oriented toward the Department of Defense.

IV. MARKET POSITION

A. Market Presence

Approximately 72% of Comptek's revenues are attributable to contracts with departments and agencies of the U.S. government. Another 21% of its revenues were derived from contracts with prime contractors, in turn doing business with the U.S. Department of Defense. The remaining 7% of the company's revenues are attributable to technical services of various kinds and electronic component manufacturing.

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B. Market Penetration

Comptek is best known for its contributions in the tactical, electronic warfare system area. In addition, it has been successful in building a relationship in the context of command, control, and communications systems. Its recent acquisition gives it the opportunity to design, manufacture, and market electronic hardware. While this is a growing business, Comptek has not yet achieved any significant market penetration.

C. Federal Image

The company has a strong federal image, in that over 90% of its revenue comes from the federal sector. Comptek tends not to dwell on the leading edge of technology but is more an implementor than an innovator.

D. Agency Presence

Most of Comptek's work is with the Department of Defense. As stated before, this work is a mixture of prime contract and subcontract work.

E. Commercial Potential

As with most professional service firms, Comptek has the potential to penetrate the private sector. However, as is the case with most DoD contractors, the corporate mindset usually limits any serious thinking in this direction. Contrary to the above, however, Comptek's recently acquired hardware engineering and manufacturing capability seems to have convinced management that it has a potential in this area to penetrate the commercial marketplace.

V. PROFESSIONAL SERVICES

A. Project Management Capabilities

Comptek has sufficient expertise in this area, from an internal perspective, but does not market these capabilities to its customers.

B. Network/Comm. Expertise

Comptek has considerable expertise in these areas and has utilized this expertise in the context of command control and communication systems, as well as in the context of tactical weapons systems.

C. Engineering

Comptek's work in software engineering is considerable and has resulted in its increasing revenues in the context of military systems. In addition, it now has hardware engineering capabilities.

D. Ada Programming

No known capability in this area

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E. Facilities Management

Comptek does not provide this type of service.

VI. APPLICATIONS

Almost all of Comptek's applications are associated with various types of Department of Defense applications. Some of the more recent key applications include:
- A video pulse analyzer used by U.S. Navy aircraft.
- Electronic warfare standardization and improvement programs for the U.S. Air Force and foreign countries.
- A tactical reconnaissance ground processing software package, related to the Air Force's RF-4C Phantom. Comptek is providing hardware and software for six ground processing systems.
- A direct air support system for the U.S. Marine Corps. Comptek is responsible for the assembly, integration, and testing of this system.
- Command control communications and intelligence systems, primarily for the U.S. Navy and the U.S. Marine Corps.
- Operational training systems, training and simulation systems related to electronic warfare systems.

A. SDI

Comptek has not developed an SDI capability.

B. Mission Critical

Almost all of the work performed by Comptek can be categorized as mission critical.

C. CIM

Comptek has no known expertise in CIM.

VII. LEVERAGEABLE RESOURCES

A. Development Tools

Not applicable

B. PM Software Tools

Not applicable

C. Products

With the exception of Comptek's electronic hardware products, INPUT does not believe there are any leverageable resources in the product area.

D. Facilities

   1. Locations

      Corporate headquarters are located in Buffalo, New York.
      Other facility locations are as follows:
      - Arlington, Dahlgren, and Virginia Beach, VA
      - Camarillo, Goleta, Port Hueneme, San Diego, and Vallejo, CA
      - Dayton, OH
      - Erie, PA
      - Warner Robins, GA

   2. Computer Centers

      Comptek's computer center is located at its headquarters and administrative
      facility in Buffalo, New York.

   3. Network

      Comptek does not have its own network facilities.

   4. R&D Lab

      To the degree that Comptek performs R&D, it is within the context of IR&D
      funding. Most of the development work is done at the Buffalo facility.
      There is also a significant amount of R&D work being done in the hardware
      area at the Erie, Pennsylvania location.

   5. Manufacturing/Assembly

      The industrial systems service subsidiary of Comptek performs these
      functions in its Erie, Pennsylvania location.

VIII. FINANCIAL CHARACTERISTICS

   A. Revenue Size
      Note: Fiscal year ends March 31.

   FY 1987—$34,453,000
   FY 1986—$28,530,000
   FY 1985—$25,041,000

   B. Focused Revenue Stream

      Over 90% of Comptek's revenues in fiscal year 1987 was derived from
      contracts with the U.S. government and with prime defense contractors.
      Comptek's contractor relationships include Raytheon, SCI, The Eaton
      Corporation, Litton Industries, Adtech, and Vitro.

INPUT

C. General Health

    1. Growth
        FY 1987—21%
        FY 1986—14%
        FY 1985—20%

IX.   CONTRACTING DIRECTION

A. Bidding Capability

As stated before, Comptek's revenues are based on a variety of prime contracts and subcontracts. Its bidding capability is strong, since a large portion of its revenues are based on competitive contracts.

B. Fixed-Price vs. Cost-Plus Contracts

In fiscal year 1987, approximately 54% of Comptek's military-related revenues was derived from cost-plus contracts. Approximately 31% was derived from fixed-price contracts, and approximately 15% was derived from time-and-materials contracts.

X.   ACQUISITION PROPENSITY

The company has grown consistently on a revenue basis and has been consistently profitable, although there have been variations in the company's profit margins.

Approximately 28% of the company's stock is held by insiders. J. P. Morgan, Wellington Management, and M&T Capital each own 11% of the common stock of the company. Therefore, well over 50% of the company's stock is held by insiders and three venture capital firms. This creates an environment in which an acquisition can be made easily. The attitude of management toward being acquired is unknown. However, on balance, Comptek would appear to be a viable acquisition candidate.

INPUT

Detailed Selection Screen

Target: **Comptek Research Inc.**

Criteria	Low (1)	Evaluation Factors Medium (2)	High (3)	Avg./ Weight	Score
Management/Personnel				2.3 x 8	18.4
Operations	___ Fair	___ Good	_X_ Well-Discip.		
Project Mgmt./Ctrls.	___ Fair	_X_ Good	___ Strong		
Culture 1	___ Incompat.	___ Overlap	_X_ Compat.		
Skill Sets	___ Incompat.	_X_ Overlap	___ Complementary		
Level of Personnel	___ "Bodies"	_X_ Competent	___ Experts		
R&D/Technology	___ None	_X_ Implementor	___ Creator		
Executives 2	___ Need Help	_X_ Stand Alone	___ Delivers		
Reputation				2.7 x 7	18.9
Type of Contractor	___ Sub	_X_ Prime & Sub	___ Integrator		
Importance of Contracts	___ Minor	___ Mixed	_X_ Major		
Competitive Win Ratio	___ 1:4	___ 1:3	___ 1:2		
Recent Publicity	___ Negatives	___ None	_X_ Positives		
Market Position				2.4 x 6	14.4
Market Presence	___ Commercial	_X_ Both	___ Federal		
Market Penetration	___ Surface	___ Deep	_X_ Moderate		
Federal Image	___ Fair	_X_ Good	___ Excellent		
Agency Presence	___ Civil	___ Both	_X_ Defense		
Commercial Potential	___ Weak	_X_ Average	___ Strong		
Professional Services				1.8 x 5	9.0
Project Management	___ Weak	_X_ Fair	___ Very Good		
Network/Comm. Expertise 3	___ Weak	___ Fair	_X_ Very Good		
Engineering	___ Weak	_X_ Fair	___ Very Good		
Ada Programming	_X_ Weak	___ Fair	___ Very Good		
Facilities Management	_X_ Weak	___ Fair	___ Very Good		

INPUT

Application Targets				1.3	x 4	5.2
SDI	_X_ None	___ Heavy	___ Some			
"Mission Critical"	___ None	_X_ Heavy	___ Some			
CIM	_X_ None	___ Heavy	___ Some			

Leverageable Resources				1.9	x 3	5.7
Development Tools	_X_ None	___ Some	___ Integrated			
PM Software Tools	_X_ Fair	___ Good	___ Good/On-time			
Products						
Systems	_X_ Non-SI	___ SI-Related	___ SI Platform			
Applications	___ None	___ "Me Too"	_X_ Unique			
Facilities						
Locations	___ Remote	_X_ Near Buyer	___ Local & Remote			
Computer Center(s)	___ None	_X_ Fair	___ Strong			
Network	_X_ None	___ Fair	___ Strong			
R&D Lab	___ None	___ Heavy	_X_ Present			
Mfg./Assembly	___ None	___ Heavy	_X_ Present			

Financial Characteristics				2.0	x 2	4.0
Revenue Size	___ < $20 M	_X_ $20-$40 M	___ > $40 M			
Focused Revenue Stream	_X_ Many	___ Some	___ Few			
General Health 4	___ Poor	___ Fair	_X_ Good			

Contracting Direction				3.0	x 1	3.0
Bidding Capability	___ Weak	___ Fair	_X_ Very Good			
FP vs. CP Contracts						
Backlog	___ > 50%	___ App. 33%	___ < 25%			
Trend	___ <25%	___ App. 33%	_X_ > 50%			

Acquisition Propensity	___ Negative	_X_ Okay	___ Ripe	2.0	x 1	2.0

Total Weighted Score: 80.6

INPUT

Notes:

1. Culture includes commitment to quality, solid client service, and a career orientation of the staff (low turnover, recruits directly from college, and one-firm employees).

2. If the acquisition is large, company will continue to operate as is. If small, the company will be quickly integrated with AA & Co.

3. Network/communications expertise includes:
   Data Interchange Skills   None
   Connectivity Experience   None
   Network Design/Management

4. General financial health considers the following:
   Growth   < Ind.
   Margins   < Ind.
   Liquidity (Current Ratio)   < 1.5:1
   Backlog : Current Rev.   < 1:1
   Wrap Rate (Cost : Markup)   1.0 - 1.5

INPUT

I.   COMPANY IDENTIFICATION

SOFTECH, INC.
460 Totten Pond Road
Waltham, MA 02254

A. Key Contacts

Douglas T. Ross, Chairman
Justus F. Lowe, Jr., President and CEO

B. Brief Company Description

Softech, Inc. designs, develops, implements, and validates custom computer software and performs system engineering and integration services. The major portion of Softech's business is with the Department of Defense, providing system software for computers imbedded in various types of weapons systems.

In addition to the above, Softech is currently marketing an Ada product line to government contractors and to commercial organizations. This product line consists of licenses for the use of compilers, maintenance agreements, and educational services.

1. Line(s) of Business

a. Non-Information Services
   Not applicable

b. Information Services

Softech provides the following types of information services:
- Development of customized systems software
- Systems engineering and systems integration (in particular in the area of avionic systems integration)
- Development of software for special-purpose automatic test equipment
- Development of advanced programming languages, with particular expertise in Ada
- Software verification and validation, particularly in relation to software developed by other military contractors

II.   MANAGEMENT/PERSONNEL

A. Operations

Softech has four major operating groups. Each operating group focuses on a specific market.
- The Federal Systems Group; focuses on the design of systems software tools and the applications of this software for embedded computers, those computers that are integrated into major weapon systems
- The Government Systems Group; focuses on developing systems software, applications software, and software methodologies for the Department of Defense

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- The Systems Sciences Group; focuses on software verification and validation, advanced software engineering, standardized language support, and simulation.
- The Government Systems Group; primarily consists of the acquired company AMG Associates and focuses on the development of custom software and related services for automatic test equipment

B. Project Management & Controls

Softech's internal project management and control capability is, at least, adequate for its purposes. The company has a reputation for on-time delivery of quality products. There has not been any attempt to market its PM capabilities to clients.

C. Culture

The company is typical of the Boston area, Route 128, high technology companies. Its many officers and directors come out of the U.S. military/industrial complex. In addition, its outside directors are linked to MIT and other educational facilities in the Boston area. It is our opinion that this cultural influence extends from the Board and senior management throughout the Softech organization.

D. Skill Sets

Employees are recruited from local, Boston-area universities as well as from competitor companies. Softech focuses on providing an intellectual work environment that will attract and retain the proper type of engineering personnel. The company emphasizes this environment in its publications. Of its approximately 520 employees, the following represents the breakdown of college degree holders:
- Doctorate degrees—13
- Masters degrees—167
- Bachelor degrees—463

E. Level of Personnel

The company's professional staff consists of a mixture of computer engineers, software specialists, and hardware engineers. The company does not seem to focus on the human factor side of weapons development. In addition, Softech seems to have a stronger marketing flair than the majority of its competitors.

As of the end of fiscal year 1987 (5/31/87), the company employed 517 full-time persons and 102 part-time persons. Of these employees:
- 89 were in G&A positions
- 508 were in engineering positions
- 22 were in marketing, sales, and customer support positions

F. R&D/Technology

Softech seems particularly strong in the areas of R&D. This expertise extends from software, particularly Ada, through test equipment development, to integrated military systems.

G. Executives

Softech has an in-depth senior management group. All of the senior managers of Softech have had previous experience in similar organizations, ranging from hardware manufacturers such as Control Data Corporation through other DoD vendors such as the System Development Corporation.

III. REPUTATION

A. Type of Contractor

Most of the work that Softech does is in the capacity of a prime contractor, or integrator. The organization does occasionally become involved in subcontract work, although this appears to be a minor part of its overall business.

B. Importance of Contracts

Most of the work that Softech does is with the federal government, particularly with the DoD. Almost by definition, this work is contractual in nature; thus, the majority of Softech's revenues are governed by contracts.

C. Competitive Bid/Win Ratio

Not available

D. Recent Publicity

- In April of 1986, Softech acquired AMG Associates, Inc. of Arlington, Virginia.
- In 1985, Softech spun off its wholly owned subsidiary, Softech Micro Systems, Inc.
- In fiscal year 1987, Softech's revenues were down from fiscal year 1986, and the company posted a pretax and posttax loss.

IV. MARKET POSITION

A. Market Presence

The major portion of Softech's business is with the Department of Defense. This basically consists of providing systems software for computers embedded in weapons systems. In addition, Softech actively markets its Ada product line, both to government contractors and commercial organizations.

The following is a breakdown of Softech's fiscal year 1986 revenue, by major client category:

- U.S. Navy   38%
- U.S. Army   19%
- U.S. Air Force   19%
- Other government agencies   3%
- NTT of Japan   16%
- Other commercial   5%

                         100%

INPUT

As of the end of fiscal year 1986, Softech was occupied in working on approximately 65 different government contracts.

B. Market Penetration

See A above.

C. Federal Image

Softech has a very strong federal image. This image is particularly strong within the context of the Department of Defense.

D. Agency Presence

As described above, most of Softech's work is with different agencies within the Department of Defense. It seems apparent that, in certain areas, in particular the development of software for imbedded weapons systems, Softech has obtained a preferred contractor status.

E. Commercial Potential

Softech has, as most DoD contractors have, a hypothetical potential to transfer its various skills to the private sector. This rarely comes to be, since management's mind set is typically oriented toward either the public sector or the private sector. There is no reason to think that this situation is different within the context of Softech.

However, Softech does seem active in marketing its Ada product line to the private sector. There is some question as to whether or not the private sector is ready for Ada products at this point in time. However, if the private sector does not represent a viable marketplace for Ada now, it may well at some point within the foreseeable future.

V. PROFESSIONAL SERVICES

A. Project Management Capabilities

Softech does not market its project management capabilities to its clients. As stated before, it does have an internal expertise in this area but does not seem inclined to turn that expertise into a viable product line.

B. Network/Comm. Expertise

Softech does not develop products within the context of network products or communications products. Therefore these areas do not seem to be of primary interest within the context of Softech.

C. Engineering

Softech's work on highly sophisticated software and complex automatic test equipment seems to be particularly significant, even within the context of the Department of Defense. In addition, the company has contributed heavily to the design of command and control systems.

D. Ada Programming

Softech has been heavily involved with Ada since the mid-1970s. The company participated in some of the early studies that identified the language requirements for Ada. Subsequent to this, Softech developed the Ada compiler validation capability, which consists of over 2,700 tests used to validate Ada compilers. In addition, Softech has developed its own compiler and a variety of other software tools pertaining to Ada.

E. Facilities Management

Not applicable.

VI.   APPLICATIONS

Softech is active in the following application areas:
- Software for avionics systems
- Application software for military logistics systems
- Application software for maintenance and reliability systems applicable to military hardware
- Ada compilers and languages, as described above
- Operating systems for militarized micro and mini computers
- Application software for verification and validation of other military software systems
- Conceptual design studies for large-scale command and control systems

A. SDI

Softech has a contract from the U.S. Army Strategic Defense Command to develop command and control software within the context of SDI.

B. Mission Critical

Virtually all of Softech's activities are related to mission critical projects, see the description of its applications above.

C. CIM

Not applicable

VII.   LEVERAGEABLE RESOURCES

A. Development Tools

As previously stated, Softech is already marketing its Ada product line to other government contractors and to commercial organizations.

B. PM Software Tools

Not applicable.

INPUT

C. Products

    1. Systems
       See above information.

    2. Applications
       See above information.

D. Facilities

    1. Locations

       The company's corporate and administrative headquarters is in Waltham,
       Massachusetts. The company is also located in the following areas:
       - Federal Systems Group; Shrewsbury, NJ and San Diego, CA
       - Government Systems Group; Alexandria, VA, Blue Bell, PA,
         Middletown, RI, and Houston, TX
       - Systems Sciences Group; headquartered in Dayton, OH, with offices in
         Indianapolis, IN, Oakland, CA, and Rome, NY

    2. Computer Centers

       Softech's primary computer center is located in Waltham, MA.

    3. Network

       Softech does not have a digital network, per se.

    4. R&D Lab

       The company's R&D work takes place in both Waltham, MA and, within
       the context of automated test equipment, Dayton, OH.

    5. Manufacturing/Assembly

       Not applicable

VIII. FINANCIAL CHARACTERISTICS

Note: Fiscal year ends May 31.

A. Revenue Size

    Fiscal year 1987—$43,521,000
    Fiscal year 1986—$45,148,000
    Fiscal year 1985—$36,433,000

B. Focused Revenue Stream

    In FY 1986, approximately 80% of Softech's revenues was derived from
    contracts with the U.S. government. Of this, approximately 75% of total
    revenues was derived from the Department of Defense.

INPUT

C. General Health

   1. Growth
      Fiscal year 1985—16%
      Fiscal year 1986—24%
      Fiscal year 1987—4%

IX. CONTRACTING DIRECTION

A. Bidding Capability

As indicated previously, Softech receives a number of sole-source contracts from the Department of Defense. However, the majority of Softech's revenues are gained through a competitive bidding process.

B. Fixed-Price vs. Cost-Plus Contracts

Cost reimbursement (cost-plus contracts) represented approximately 92% of contract revenues in fiscal year 1987. It should be noted, in this context, that, as of the end of fiscal year 1987, the company's custom services backlog was approximately $53 million. Of this amount, approximately $51 million was with the Department of Defense.

X. ACQUISITION PROPENSITY

This company would seem to be ripe for an acquisition. While it is a publicly held corporation, approximately 22% of its stock is held by insiders. It is probable that an additional large block of stock is controlled by insiders. The company's recent financial results have shown great variability, both on the top line and on the bottom line. Management is mature and may welcome a viable acquisition offer with the opportunity for them to cash in on their equity, at an appropriate point in time.

Detailed Selection Screen

Target: **Softech Inc.**

Criteria	Low (1)	Evaluation Factors Medium (2)	High (3)	Avg./ Weight	Score
Management/Personnel				2.3	x 8 18.4
Operations	___ Fair	_X_ Good	___ Well-Discip.		
Project Mgmt./Ctrls.	___ Fair	_X_ Good	___ Strong		
Culture 1	___ Incompat.	_X_ Overlap	___ Compat.		
Skill Sets	___ Incompat.	___ Overlap	_X_ Complementary		
Level of Personnel	___ "Bodies"	_X_ Competent	___ Experts		
R&D/Technology	___ None	___ Implementor	_X_ Creator		
Executives 2	___ Need Help	_X_ Stand Alone	___ Delivers		
Reputation				2.0	x 7 14.0
Type of Contractor	___ Sub	_X_ Prime & Sub	___ Integrator		
Importance of Contracts	___ Minor	___ Mixed	_X_ Major		
Competitive Win Ratio	___ 1:4	___ 1:3	___ 1:2		
Recent Publicity	_X_ Negatives	___ None	___ Positives		
Market Position				2.2	x 6 13.2
Market Presence	___ Commercial	_X_ Both	___ Federal		
Market Penetration	___ Surface	___ Deep	_X_ Moderate		
Federal Image	___ Fair	_X_ Good	___ Excellent		
Agency Presence	___ Civil	_X_ Both	___ Defense		
Commercial Potential	___ Weak	_X_ Average	___ Strong		
Professional Services				2.0	x 5 10.0
Project Management	___ Weak	_X_ Fair	___ Very Good		
Network/Comm. Expertise 3	_X_ Weak	___ Fair	___ Very Good		
Engineering	___ Weak	___ Fair	_X_ Very Good		
Ada Programming	___ Weak	___ Fair	_X_ Very Good		
Facilities Management	_X_ Weak	___ Fair	___ Very Good		

INPUT

Application Targets				2.0	x 4	8.0
SDI	___ None	___ Heavy	_X_ Some			
"Mission Critical"	___ None	_X_ Heavy	___ Some			
CIM	_X_ None	___ Heavy	___ Some			

Leverageable Resources				2.0	x 3	6.0
Development Tools	___ None	_X_ Some	___ Integrated			
PM Software Tools	_X_ Fair	___ Good	___ Good/On-time			
Products						
Systems	___ Non-SI	___ SI-Related	_X_ SI Platform			
Applications	___ None	___ "Me Too"	_X_ Unique			
Facilities						
Locations	___ Remote	_X_ Near Buyer	___ Local & Remote			
Computer Center(s)	___ None	_X_ Fair	___ Strong			
Network	_X_ None	___ Fair	___ Strong			
R&D Lab	___ None	___ Heavy	_X_ Present			
Mfg./Assembly	_X_ None	___ Heavy	___ Present			

Financial Characteristics				2.7	x 2	5.4
Revenue Size	___ < $20 M	___ $20-$40 M	_X_ > $40 M			
Focused Revenue Stream	___ Many	___ Some	_X_ Few			
General Health 4	___ Poor	_X_ Fair	___ Good			

Contracting Direction				2.3	x 1	2.3
Bidding Capability	___ Weak	___ Fair	_X_ Very Good			
FP vs. CP Contracts						
Backlog	_X_ > 50%	___ App. 33%	___ < 25%			
Trend	___ <25%	___ App. 33%	_X_ > 50%			

Acquisition Propensity	___ Negative	___ Okay	_X_ Ripe	3.0	x 1	3.0

Total Weighted Score: 80.3

INPUT

Notes:

1. Culture includes commitment to quality, solid client service, and a career orientation of the staff (low turnover, recruits directly from college, and one-firm employees).

2. If the acquisition is large, company will continue to operate as is. If small, the company will be quickly integrated with AA & Co.

3. Network/communications expertise includes:
   Data Interchange Skills   None
   Connectivity Experience   None
   Network Design/Management

4. General financial health considers the following:
   Growth   < Ind.
   Margins   < Ind.
   Liquidity (Current Ratio)   < 1.5:1
   Backlog : Current Rev.   < 1:1
   Wrap Rate (Cost : Markup)   1.0 - 1.5

INPUT

I.   COMPANY IDENTIFICATION

VANGUARD TECHNOLOGIES INTERNATIONAL, INC.
One Flint Hill
10530 Rosehaven Street
Fairfax, VA 22003

A. Key Contacts

Dean W. Crawford, Chairman & President

B. Brief Company Description

Vanguard Technologies International provides a wide range of professional
services to U.S. government agencies and, as a subcontractor, to other federal
government agencies. The company's services include the development,
installation, and maintenance of custom application software; facilities
management services; systems integration; and document storage and retrieval
services.

   1. Line(s) of Business

      a. Non-Information Services
         Not applicable

      b. Information Services

         - Custom application software development. Services provided in
           this area include systems requirement definitions, systems analysis,
           programming, testing, documentation, and training.
         - Facilities management services, provided to various government
           agencies.
         - The design, development, and operation of information storage and
           retrieval systems.

II.   MANAGEMENT/PERSONNEL

A. Operations

   1. Organization

      Vanguard Technologies is organized into a series of "companies," with each
      company headed by a divisional vice-president and centered on a particular
      functional product line. These companies are:

      - Systems Integration Company
      - National Systems Company
      - Facilities Management Company

      Each of these companies is responsible for a variety of projects, at different
      locations throughout the country. Contracts are administered on a functional
      product basis.

INPUT

B. Project Management & Controls

Vanguard has a good reputation, within the context of the federal government, for being able to deliver products on time and within budget. It does not market its project management skills as a separate product.

C. Culture

Because of the company's wide diversity of products, Vanguard does not have an easily defined, specific corporate culture. Vanguard's skills inventory encompasses almost all of the skills that are required in a broad-based information systems development context.

In another context, Vanguard should be viewed as an implementor rather than an R&D-oriented organization. This thrust alone tends to define the company's corporate culture.

D. Skill Sets

Employees are recruited from local sources at locations throughout the country when a new project needs to be staffed and the proper skill set is not otherwise available from within company resources.

E. Level of Personnel

As of the beginning of 1987 the company employed approximately 1,145 individuals. Of these, 1,060 were full-time employees, the remainder were part-time or contract employees. The corporation had, as of that time, approximately 55 individuals in corporate management and administration. The remainder were professional and information systems personnel.

F. R&D/Technology

Vanguard's R&D activities are primarily oriented toward the development of customized software and integrated systems under contract for specific clients. The corporation's key technology resource is, in essence, the capabilities of the individuals to provide these services on an ongoing basis.

G. Executives

The philosophy of the company has been focused on developing people from internal sources. Senior managers have been with the company for an extensive period of time and have been transferred from one functional area to another, within the overall corporation. On balance, the senior management group represents a diverse and well-experienced group of information systems managers.

III. REPUTATION

A. Type of Contractor

Most of the work that Vanguard does is in the capacity of a prime contractor. However, there are a number of projects where the company has been involved as a subcontractor with other prime contractors.

INPUT

B. Importance of Contracts

All of Vanguard's work is on a contract basis.

C. Competitive Bid Win Ratio

Unknown

D. Recent Publicity

In May, 1986, Vanguard made an initial public offering of approximately two million shares of common stock. The company is now publicly traded.

In April, 1987, Vanguard acquired Diversified Data Corporation, of Springfield, VA. Diversified Data, with 85 employees, provides engineering, logistics, and processing services to government agencies.

IV. MARKET POSITION

A. Market Presence

All of Vanguard's revenues are derived from U.S. government agencies. Some of Vanguard's recent contracts are:

- A five-year contract with the IRS for application system program development, application program maintenance, and the preparation and delivery of technical training
- A contract with the General Services Administration to provide a variety of data base development systems
- A hardware evaluation and design contract in regards to an integrated data base system for the U.S. Army Information Systems Engineering Command
- The design, development, and implementation of a data entry system for the Food & Drug Administration

B. Market Penetration

As stated before, all of Vanguard's revenues are derived from U.S. government contracts. Unlike many of its competitors, Vanguard gets the majority of its revenues from non-DOD government agencies. These agencies include:

- Department of Transportation
- Department of Housing and Urban Development
- Treasury Department
- General Services Administration
- Federal Communications Commission
- Department of Defense

In addition, the company is a subcontractor to prime contractors such as:

- Rockwell International
- Computer Sciences Corporation
- Planning Research Corporation

INPUT

C. Federal Image

Vanguard has a strong federal image, particularly in the non-DOD government agency area.

D. Agency Presence

See B above.

E. Commercial Potential

There is a strong commercial potential for Vanguard in the private sector, stemming from the company's various systems integration, facilities management, and custom system application.

V. PROFESSIONAL SERVICES

A. Project Management Capabilities

Vanguard has strong PM capabilities and has been able to market these to various government agencies.

B. Network/Comm. Expertise

Vanguard's networking experience is limited.

C. Engineering

Vanguard's engineering experience is limited to software engineering.

D. Ada Programming

No known Ada experience

E. Facilities Management

Approximately one-third of Vanguard's revenues are from FM projects.

VI. APPLICATIONS

A. SDI

No known capabilities

B. Mission Critical

Almost all of Vanguard's work can be considered mission critical.

C. CIM

Not applicable

INPUT

VII. LEVERAGEABLE RESOURCES

A. Development Tools

As a total professional services firm, Vanguard has not created any development tools. The single possible exception may be in the area of information storage and retrieval systems.

B. PM Software Tools

Vanguard is not active in this area.

C. Products

1. Systems

Not applicable

2. Applications

Most of Vanguard's custom-developed software is highly specialized. There do not seem to be any leverageable applications packages.

D. Facilities

1. Locations

In addition to the corporate headquarters location in Fairfax, Virginia, the company has branch offices in the following locations:

- Ventura, CA
- Boston, MA
- Detroit, MI
- Port Smith, NH
- Newport, RI
- Springfield, VA (Diversified Data Corporation)

2. Computer Centers

The main corporate computer center is at the headquarters location in Fairfax, Virginia. In addition, a computer center was acquired through the acquisition of Diversified Data Corporation (Springfield, VA).

3. Network

Not applicable

4. R&D Lab

Vanguard does not have R&D labs per se. To the degree it is engaged in R&D work, it is engaged in this work at the various operating locations in the context of developing custom software applications.

5. Manufacturing/Assembly

   Not applicable

VIII. FINANCIAL CHARACTERISTICS
Note: Fiscal year ends January 31.

A. Revenue Size

   FY 1987—$38,435,000
   FY 1986—$26,012,000
   FY 1985—$16,506,000

B. Focused Revenue Stream

   The majority of Vanguard's revenues are derived from the U.S. federal
   government. Most of these revenues are derived from non-DoD government
   agencies. The company does not seem to focus on the Department of Defense
   as a market segment but is more inclined to be a subcontractor in this context.

C. General Health

   1. Growth

      Fiscal year ending 1984—63%
      Fiscal year ending 1985—98%
      Fiscal year ending 1986—58%
      Fiscal year ending 1987—48%

IX. CONTRACTING DIRECTION

A. Bidding Capability

   The majority of Vanguard's revenues are through prime contractor agreements.
   The largest single client is the Department of Transportation, which accounted
   for approximately 18% of Vanguard's 1986-1987 revenues. The second largest
   client was the U.S. Department of Treasury, which accounted for
   approximately 15% of Vanguard's revenues in the 1986-1987 time period.

B. Fixed-Price vs. Cost-Plus Contracts

   In 1985 and 1986 fixed-price contracts accounted for approximately 45% of
   Vanguard's revenues. In 1987, these types of contracts accounted for
   approximately 60% of Vanguard's revenues. The remainder of the company's
   revenues consisted of fixed-rate contracts and cost reimbursement contracts.

X. ACQUISITION PROPENSITY

Vanguard would appear to be a reasonably good acquisition candidate. Its
management is mature and would probably entertain the right type of acquisition
offer. Vanguard, being a public company with a publicly established market price,
can be assessed rationally. There seem to be no logical or emotional blocks in the
way of serious acquisition discussions.

INPUT

Detailed Selection Screen

Target: **Vanguard Technologies, International**

Criteria	Low (1)	Evaluation Factors Medium (2)	High (3)	Avg./ Weight	Score
Management/Personnel				2.1 x 8	16.8
Operations	___ Fair	_X_ Good	___ Well-Discip.		
Project Mgmt./Ctrls.	_X_ Fair	___ Good	___ Strong		
Culture 1	___ Incompat.	___ Overlap	_X_ Compat.		
Skill Sets	___ Incompat.	_X_ Overlap	___ Complementary		
Level of Personnel	___ "Bodies"	_X_ Competent	___ Experts		
R&D/Technology	___ None	_X_ Implementor	___ Creator		
Executives 2	___ Need Help	___ Stand Alone	_X_ Delivers		
Reputation				2.3 x 7	16.1
Type of Contractor	___ Sub	_X_ Prime & Sub	___ Integrator		
Importance of Contracts	___ Minor	_X_ Mixed	___ Major		
Competitive Win Ratio	___ 1:4	___ 1:3	___ 1:2		
Recent Publicity	___ Negatives	___ None	_X_ Positives		
Market Position				2.4 x 6	14.4
Market Presence	___ Commercial	___ Both	_X_ Federal		
Market Penetration	___ Surface	___ Deep	_X_ Moderate		
Federal Image	___ Fair	_X_ Good	___ Excellent		
Agency Presence	___ Civil	_X_ Both	___ Defense		
Commercial Potential	___ Weak	_X_ Average	___ Strong		
Professional Services				1.6 x 5	8.0
Project Management	___ Weak	_X_ Fair	___ Very Good		
Network/Comm. Expertise 3	_X_ Weak	___ Fair	___ Very Good		
Engineering	_X_ Weak	___ Fair	___ Very Good		
Ada Programming	_X_ Weak	___ Fair	___ Very Good		
Facilities Management	___ Weak	___ Fair	_X_ Very Good		

INPUT

Application Targets				2.5	x 4	10.0
SDI	_X_ None	___ Heavy	___ Some			
"Mission Critical"	___ None	___ Heavy	_X_ Some			
CIM	_X_ None	___ Heavy	___ Some			

Leverageable Resources				1.6	x 3	4.8
Development Tools	_X_ None	___ Some	___ Integrated			
PM Software Tools	_X_ Fair	___ Good	___ Good/On-time			
Products						
Systems	_X_ Non-SI	___ SI-Related	___ SI Platform			
Applications	___ None	_X_ "Me Too"	___ Unique			
Facilities						
Locations	___ Remote	_X_ Near Buyer	___ Local & Remote			
Computer Center(s)	___ None	_X_ Fair	___ Strong			
Network	_X_ None	___ Fair	___ Strong			
R&D Lab	___ None	___ Heavy	_X_ Present			
Mfg./Assembly	_X_ None	___ Heavy	___ Present			

Financial Characteristics				2.7	x 2	5.4
Revenue Size	___ < $20 M	_X_ $20-$40 M	___ > $40 M			
Focused Revenue Stream	___ Many	___ Some	_X_ Few			
General Health 4	___ Poor	___ Fair	_X_ Good			

Contracting Direction				2.0	x 1	2.0
Bidding Capability	___ Weak	_X_ Fair	___ Very Good			
FP vs. CP Contracts						
Backlog	___ > 50%	_X_ App. 33%	___ < 25%			
Trend	___ <25%	___ App. 33%	___ > 50%			

Acquisition Propensity	___ Negative	_X_ Okay	___ Ripe	2.0	x 1	2.0

Total Weighted Score: 79.5

INPUT

Notes:

1. Culture includes commitment to quality, solid client service, and a career orientation of the staff (low turnover, recruits directly from college, and one-firm employees).

2. If the acquisition is large, company will continue to operate as is. If small, the company will be quickly integrated with AA & Co.

3. Network/communications expertise includes:
   Data Interchange Skills   None
   Connectivity Experience   None
   Network Design/Management

4. General financial health considers the following:
   Growth   < Ind.
   Margins   < Ind.
   Liquidity (Current Ratio)   < 1.5:1
   Backlog : Current Rev.   < 1:1
   Wrap Rate (Cost : Markup)   1.0 - 1.5

INPUT

I.   COMPANY IDENTIFICATION

CACI INTERNATIONAL,INC.
1700 North Moore Street
Arlington, VA 22209

A. Key Contacts

Herbert W. Karr, Chairman
J. P. London, President and CEO

B. Brief Company Description

CACI International, Inc. was organized as a Delaware corporation under the name CACI Worldwide, Inc. on October 8, 1985. By a merger that went into effect in June, 1986, CACI Worldwide became the parent of CACI (U.S.A.), Inc. (Delaware corporation) and CACI N.V.(Netherlands corporation) and in the process of the merger, changed its name to CACI, Inc. The company finally changed its name to CACI International, Inc. in December, 1986.

The company is organized into the following business groups:

-   CACI Products Company
-   Systems Design and Integration Group
-   Engineering and Systems Management Group
-   Systems Engineering Operating Group
-   Engineering and Systems Technologies Group
-   Management and Operational Sciences Group
-   Systems Development and Implementation Group
-   Market Analysis Group (U.S.)
-   Information Systems and Market Analysis Group (Europe)

1. Line(s) of Business

a. Non-Information Services

Advanced Information Systems:

-   Communications Engineering—evaluation, design, test, and implementation of hardware and software for information collection and processing products
-   Automated Test Equipment—customized service for electronic and electrical test, measurement, and diagnostic equipment
-   Nuclear Component Cleaning and Repair—overhaul, repair, and cleaning services for divers' equipment, recently certified to extend to nuclear systems' components
-   Reliability Engineering—analyze products for reliability and maintainability and produce technical manuals and support documentation

CACI's Design Engineering department has recently undertaken an initiative to design and build a high-speed amphibious sled. When completed, it will offer the DoD an inexpensive transport that can carry 75% of the Marine Corps' existing inventory for amphibious assaults.

INPUT

CACI also builds special-purpose hardware for unique limited-quantity applications. It has an industrial production facility and a metrology laboratory.

b. Information Services

CACI provides professional services in the areas of advanced information systems; systems engineering; logistics; proprietary analytical software products; and market analysis consulting services, information products, and systems. These services are provided to the defense, aerospace, communications, energy, transportation and distribution, financial, real estate, retail, and other markets. The business mix is represented by target area below.

Advanced Information Systems:

- Fleet Nontactical Systems Support—systems analysis and training support for the Navy's Shipboard Nontactical Automatic Data Processing Program (SNAP)
- Information Technology—support to Navy and Air Force to modernize systems, support decision making, and help to plan for future needs
- Ammunitions Management Systems—development of conventional data systems for DoD ammunition control using bar-code technology
- Automated Contracting—enhancement of commercial software to run on network of super microcomputers (Standard Army Automated Contracting System) to automate the Army procurement process
- Automated Document Management—supplier of document processing and analysis for Department of Justice Civil Division litigation support
- Systems in Europe—advanced information systems to major corporations in the areas of financial planning and repair/maintenance simulation
- Inventory Management and Warehouse Automation— analysis, design, and implementation of computerized inventory and materials-handling systems
- Decision Support Systems—operations research and computer systems support to Army resource managers using cost models
- Motor Vehicle Administration—streamlined motor vehicle administration for state and provincial governments throughout North America
- Requirements Analyses—specialized analyses to identify system deficiencies and support equipment acquisition

Logistics Sciences:

- Supply Support—information models to help the Navy improve supply support and readiness for spare and repair parts
- Logistics Facilities Operation—operation of two logistics support facilities in support of Navy's Surveillance Towed Array Sonar System ships

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- Spares and Repair Parts Procurement—technical support for Navy's competitive procurement system
- Logistics Support Training—training for Naval personnel in policies for technical support, breakout, and replenishment parts acquisition
- Munitions Requirements Model—model to determine planning factors for Naval surface fire munitions to support Marine Corps missions
- Integrated Logistics Support—logistics support including: analysis, provisioning, commercial manual screening, repair level analysis, and training documentation

Systems Acquisitions Support:

- Life Cycle Supply Support—training and life-cycle support to ensure Naval readiness of shipboard supplies, enhance standardization of equipment, and improve logistic readiness of fleet equipment
- Planning and Material Management—life-cycle spares support for Navy frigates
- Procurement Tracking—support of NAVSEA's Spanish Navy Project Office in acquisition of systems and equipment for Spanish combat ships
- Real-Time Acquisition—outfitting system to encompass entire range from configuration of ship to completion of outfitting process
- Shipbuilding Program Logistics—assemble and integrate all raw data and produce documentation package for contractor-furnished equipment
- Systems Engineering Support—operational analysis of system and requirements for spare parts, replacement parts and test equipment for Joint Tactical Information Distribution System
- Armament Systems Support—specialized engineering activities to enhance performance of weapons, carriage, and release equipment
- Hardware and Software Acquisition to enhance commercial project management system of Army Armament Research, Development, and Engineering Center

International Market Analysis:

- Consulting Services—developing and enhancing proprietary data bases and integrated marketing systems (ACORN, SPECTRA, CAS, and the ACORN list) to provide specialized marketing support

- Market Information Products—specialized market information products including: Sourcebook of Demographics and Buying Power, Siteline on-line demographics reporting, and Market-America stand-alone demographic information system

Analytical Software Products:

- Software Products—complex computer analysis products to facilitate factory planning, transportation analysis, business systems development, data base management, software security control, computer communications analysis, and simulations modeling

- CACI Language Center—provides individuals with interpreting, translation, training, and consulting services in more than 90 languages

CACI Systems Integration, Inc.—turnkey information systems with significant percentage of value in acquired hardware

II. MANAGEMENT/PERSONNEL

The management strategy is a sharp focus on quality customer service, strict cost controls and accountability, intensified marketing and sales methods, concentration on winning larger long-term prime contracts, and unique growth opportunities for internal people. This client-oriented strategy has proven adaptable and flexible to changes in the marketplace.

Unfortunately, rapid growth and a variety of new businesses have resulted in a poor showing over the last few years. A period of focus and digestion is needed.

The company has approximately 2,500 employees, of whom about 1,000 are considered to be professional or technical personnel. There are about 570 part-time people, of which 130 are professional or technical employees. The company also has about 100 people that have outside professional services contracting status and provide services as needed.

A. Project Management & Controls

CACI appears to have its projects under control as evidenced by the number of projects that it is involved in and the type of clients that it has.

A large number of operating groups and relative autonomy within each limits corporate control.

B. Culture

CACI has an overlap with the type of professional services that it provides in customizing and enhancing software packages to develop unique systems. Its engineering services and language skills seem to be unique for a company in the software professional services business.

C. Skill Sets

The skills of the personnel are widely diverse. CACI has the software analysts and programmers that develop the logistics and automated tracking systems and produce software packages to support simulation and training. CACI provides people with interpreting, translation, training, and consulting services in more than 90 languages.

On the other side of CACI, the engineers and production people are very technology-minded in developing hardware and ship/aircraft transport design.

D. Level of Personnel

The staff seems to be very competent in the manner with which they handle their projects and developments.

INPUT

E. R&D/Technology

CACI's technology is not limited to designing and developing software systems. The company has also been involved in the design and prototyping of ship building, Marine transport vehicles, aircraft, and the design and building of limited computer hardware.

F. Executives

CACI has as its Chairman of the Board the man that founded the company over 25 years ago, Herbert Karr. Jack London, the President and CEO, has been with the company for 14 years. They have provided a very stable environment for the company and have adapted with the changing markets.

Management recognizes that one of their most important assets is their people. Their conviction is to invest in the future of their people and recognize outstanding performance through promotions and incentive programs.

III. REPUTATION

A. Type of Contractor

CACI seems to provide most of its services through prime contracts and in the software area, through sales and licenses.

B. Importance of Contracts

CACI's contracts are basically for support services for the government. It does provide some major developments for the government and industry in the area of engineering designs for aircraft/transport and shipbuilding.

C. Competitive Bid/Win Ratio

Very little is known about CACI's bidding capability and the percentage of contracts that are awarded to CACI. The company does believe that it has a relatively small market share.

D. Recent Publicity

CACI has recently been awarded a contract with the Department of Justice Civil Division to design and implement a case-related document retrieval system. The company is also involved in other projects, including providing graphics presentations and computer modeling of potential court decisions.

IV. MARKET POSITION

A. Market Presence

CACI sees the competition as being from some firms that are much larger than it is and from government agencies that provide the same services in-house. CACI does not know of any other company that could provide the same level of technology. CACI believes that it has a relatively small share of the available market for its products and services.

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Recently awarded contracts with the government include:

Dept. of Justice ($49.0 million)—Litigation support services

U.S. Navy ($15.2 million)—Fleet assistance, training, and implementation support for nontactical computer systems

U.S. Air Force ($9.0 million)—Logistics management information systems, functional configuration management, and integration support

U.S. Navy ($8.5 million)—Engineering and technical support services

B. Market Penetration

CACI's strategic plan is to continue to broaden its technological and market penetration capabilities within its established business lines. It will continue to hone its competitive marketing and sales methods, emphasizing "concentration of force on target." The company is putting more emphasis on winning larger contracts.

CACI seems to be all over the board with its services and the departments with which it deals.

C. Federal Image

The number of federal contracts that CACI holds would suggest that it has a good image in federal eyes. CACI has many contracts with the Army, Navy, Air Force, and Marine Corps for logistics support and engineering services.

D. Agency Presence

CACI appears to have a fairly substantial presence, with its support to the Navy, Army, and Marine Corps.

E. Commercial Potential

CACI is starting to use the ideas and systems that were developed for the federal agencies for the commercial sector.

The company's development of personal computer versions of CACI/CAPTURE, a CACI-DocuTrax, a document tracking system, may have good commercial potential.

The motor vehicle administration area has put together some systems for the states of Indiana and South Carolina that look very promising in controlling the registration of vehicles and enhanced traffic records.

Systems like the one that was developed for the Naval Ordinance Station to plan production schedules have also been used by the Federal Reserve Bank in Charlotte to track the flow of cash.

CACI's site selection and demographic analysis offerings are primarily commercial.

V.   PROFESSIONAL SERVICES

A. Project Management Capabilities

CACI does handle some very large endeavors with the government and contracts to develop technology for the Marine Corps and the Naval Air Development Center. This would suggest that the government feels that CACI is competent in its PM capabilities. CACI does not, however, appear to have unique capabilities.

B. Network/Comm. Expertise

CACI developed the first interjurisdictional link between motor vehicle departments in Canada. The company is actively exploring the benefits of communications links between DMVs in the U.S. to improve control of drivers and prevent consumer fraud.

C. Engineering

CACI offers engineering support services in the areas of reliability engineering, technical and support documentation, and design of communications systems.

D. Ada Programming

No evidence of any Ada capability

E. Facilities Management

CACI handles some facilities management business, primarily associated with large data bases, at the Arlington Computer Center.

VI.   APPLICATIONS

A. SDI

No known work is directly related to SDI.

B. Mission Critical

Some of the work that CACI has been doing for the government has been mission critical in its aspects of providing logistics support for various departments of DoD.

C. CIM

CACI has experience in automated inventory management systems for a major pharmaceutical manufacturer and Thomas J. Lipton Co. Other areas of the automated warehousing include integrating the inventory control system with materials-handling equipment. This technology has been employed at McClellan Air Force Base and San Diego Naval Hospital to retrieve materials from stock, track their removal, and track the effect on total inventory.

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VII. LEVERAGEABLE RESOURCES

A. Development Tools

Software products include:

THE SOFTWARE BUS—Data base management application development tool

DB AID—IMS/CICS application development tool

APPLICATIONS GENERATORS—Program code generation and system documentation tool

CACI SYSTEM FACTORY, ANALYST'S WORKBENCH, DESIGNER'S WORKBENCH, DB ACCESS II—productivity tools

B. PM Software Tools

INPUT knows of no proprietary PM tools.

C. Products

1. Systems

Software packages include:

SIMSCRIPT II.5 and PC SIMSCRIPT II.5—simulation programming languages

CATALIST and CACI/CAPTURE—information management and retrieval systems

GEN-A-SCREEN—forms generator

2. Applications

Software packages include:

MEMO—electronic mail

SIMFACTORY—factory planning aid

ACORN—market segmentation tool

SIMTRAINER—animated training simulation

CACI owns three U.S. patents at this time. The company believes that these patents are valid, but does not believe that its business is completely dependent on these patents.

CACI also owns approximately 82 registered U.S. trademarks and service marks. It holds proprietary rights in about 22 computer software packages and data bases. Some of these packages are: ACORN, CACI/CAPTURE,

INPUT

COSIMS, COSTPRO, DORIS, FLICKER, PC SIMSCRIPT II.5, SIMFACTORY, and others.

CACI N.V., the European group, also claims copyright and proprietary rights in its software products, known as CATALIST, D2S2, GEOMATCH, and SITE. It also has four registered trademarks and two pending trademarks.

D. Facilities

1. Locations

CACI is headquartered in Arlington, VA with other offices in Clarendon, Crystal City, Chesapeake, Fairfax, and Virginia Beach (VA); Dayton (OH); Gaithersburg, Beltsville, California, and Camp Springs (MD); Los Angeles, Irvine, La Jolla, National City, and Port Hueneme (CA); Mechanicsburg and Philadelphia (PA); New York City; Portland (OR); Athens (GA); Denver (CO); Montgomery (AL); Oak Ridge (TN); Orange Park (FL); Sturgeon Bay (WI); Shrewsbury (NJ); Tulsa (OK); Washington, DC; and Edmonton, (Alberta) and Toronto (Ontario) Canada.

CACI leases office space at 44 locations nationwide. It also leases space for 10 offices outside of the U.S.

2. Computer Centers

The computer center located in Arlington, VA has two IBM 4341 computers for its processing clients and internal use.

3. Network

No evidence of a network in operation

4. R&D Lab

CACI operates a metrology lab in Virginia Beach, which provides customized service for electronic and electrical test, measurement, and diagnostic equipment.

Other labs are located throughout the country for specialized development.

5. Manufacturing/Assembly

CACI has the capability to build special-purpose hardware and operates an industrial production facility in Beltsville, MD.

VIII. FINANCIAL CHARACTERISTICS

	1987	1986	1985
Revenues ($M)			
U.S.	106.5	91.1	89.1
Foreign	12.3	7.6	8.8

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Combined	118.8	98.7	97.9

Growth

U.S.	17%	2%	(8.6%)
Combined	20.3%	0.8%	(10.8%)

Net Income ($M)

U.S.	1.4	(0.2)	1.9
Foreign	1.3	1.2	0.6
Combined	2.7	1.0	2.5

Liquidity

Combined	1.81	1.40	1.36

CACI's backlog as of the end of fiscal year 1987 was approximately $40.5 million, primarily contracts with the federal government.

IX.   CONTRACTING DIRECTION

A. Bidding Capability

B. Fixed-Price vs. Cost-Plus Contracts

In fiscal year 1987, the fixed-price contracts ran about 62% of contracts and fixed-fee contracts accounted for the other 38%. In the previous year, the fixed-price vs. fixed-fee ratio was about the same, at 61% and 39% respectively.

X.   ACQUISITION PROPENSITY

CACI is a company that provides a wide gamut of services; it does a little of everything and does not tend to specialize in a few targeted areas.

The company had remarkable growth in the early 1980s, but growth fell in 1984 and 1985. It is slowly coming back to exceed its high in 1983.

Senior management is advancing in age, and there may be the possibility of a change in the company management.

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Detailed Selection Screen

Target: **CACI**

Criteria	Low (1)	Evaluation Factors Medium (2)	High (3)	Avg./ Weight	Score
Management/Personnel				2.0	x 8 16.0
Operations	___ Fair	_X_ Good	___ Well-Discip.		
Project Mgmt./Ctrls.	___ Fair	_X_ Good	___ Strong		
Culture 1	___ Incompat.	_X_ Overlap	___ Compat.		
Skill Sets	___ Incompat.	_X_ Overlap	___ Complementary		
Level of Personnel	___ "Bodies"	_X_ Competent	___ Experts		
R&D/Technology	___ None	_X_ Implementor	___ Creator		
Executives 2	___ Need Help	_X_ Stand Alone	___ Delivers		
Reputation				2.3	x 7 16.3
Type of Contractor	___ Sub	_X_ Prime & Sub	___ Integrator		
Importance of Contracts	___ Minor	_X_ Mixed	___ Major		
Competitive Win Ratio	___ 1:4	___ 1:3	___ 1:2		
Recent Publicity	___ Negatives	___ None	_X_ Positives		
Market Position				2.4	x 6 14.4
Market Presence	___ Commercial	_X_ Both	___ Federal		
Market Penetration	___ Surface	___ Deep	_X_ Moderate		
Federal Image	___ Fair	_X_ Good	___ Excellent		
Agency Presence	___ Civil	_X_ Both	___ Defense		
Commercial Potential	___ Weak	___ Average	_X_ Strong		
Professional Services				1.8	x 5 9.0
Project Management	___ Weak	_X_ Fair	___ Very Good		
Network/Comm. Expertise 3	___ Weak	_X_ Fair	___ Very Good		
Engineering	___ Weak	_X_ Fair	___ Very Good		
Ada Programming	_X_ Weak	___ Fair	___ Very Good		
Facilities Management	___ Weak	_X_ Fair	___ Very Good		

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Application Targets				2.3	x 4	9.2
SDI	_X_ None	___ Heavy	___ Some			
"Mission Critical"	___ None	___ Heavy	_X_ Some			
CIM	___ None	___ Heavy	_X_ Some			

Leverageable Resources				2.1	x 3	6.3
Development Tools	___ None	_X_ Some	___ Integrated			
PM Software Tools	___ Fair	___ Good	___ Good/On-time			
Products						
Systems	_X_ Non-SI	___ SI-Related	___ SI Platform			
Applications	___ None	___ "Me Too"	_X_ Unique			
Facilities						
Locations	___ Remote	_X_ Near Buyer	___ Local & Remote			
Computer Center(s)	___ None	_X_ Fair	___ Strong			
Network	_X_ None	___ Fair	___ Strong			
R&D Lab	___ None	___ Heavy	_X_ Present			
Mfg./Assembly	___ None	___ Heavy	_X_ Present			

Financial Characteristics				2.0	x 2	4.0
Revenue Size	___ < $20 M	___ $20-$40 M	_X_ > $40 M			
Focused Revenue Stream	_X_ Many	___ Some	___ Few			
General Health 4	___ Poor	_X_ Fair	___ Good			

Contracting Direction				2.0	x 1	2.0
Bidding Capability	___ Weak	___ Fair	___ Very Good			
FP vs. CP Contracts						
Backlog	_X_ > 50%	___ App. 33%	___ < 25%			
Trend	___ <25%	___ App. 33%	_X_ > 50%			

Acquisition Propensity	___ Negative	_X_ Okay	___ Ripe	2.0	x 1	2.0

Total Weighted Score: 79.2

INPUT

Notes:

1. Culture includes commitment to quality, solid client service, and a career orientation of the staff (low turnover, recruits directly from college, and one-firm employees).

2. If the acquisition is large, company will continue to operate as is. If small, the company will be quickly integrated with AA & Co.

3. Network/communications expertise includes:
   Data Interchange Skills   None
   Connectivity Experience   None
   Network Design/Management

4. General financial health considers the following:
   Growth   < Ind.
   Margins   < Ind.
   Liquidity (Current Ratio)   < 1.5:1
   Backlog : Current Rev.   < 1:1
   Wrap Rate (Cost : Markup)   1.0 - 1.5

INPUT

I.   COMPANY IDENTIFICATION

ERC INTERNATIONAL
3211 Jermantown Road
P.O. Box 10107
Fairfax, VA 22030

A. Key Contacts

Jack E. Aalseth, Chairman and CEO
John E. Gray, President and COO

B. Brief Company Description

ERC International (formerly Evaluation Research Corp.) provides professional
and technical services in the areas of defense, energy, and the environment. It
also provides logistics and facilities management services to government
agencies and commercial clients throughout the U.S., as well as overseas.

Initially established to sell software engineering, technical, and consulting
services to the Department of Defense, it has more recently become a broad-
based technical and professional services firm, providing services and products
not only to government agencies but to the private sector as well.

1. Line(s) of Business

a. Non-Information Services

Most of ERCI's non-information services are performed within the
context of services to various kinds of utility companies. In this
context, ERCI provides:
-    Quality-assurance and quality-control services
-    Plant construction engineering services
-    Evaluation of utility safety programs
-    Energy policy formulation, development, and analysis

ERCI also provides non-information services through its facilities
management group. These services include:
-    Audio-visual services
-    Training services
-    Miscellaneous administrative services

b. Information Services

The majority of ERCI's information services are provided through its
defense group. These services include:
-    Custom software development
-    Systems integration services
-    Computer modeling and simulation
-    Development of software for command control communications and
     intelligence systems (C3I)

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II. MANAGEMENT/PERSONNEL

A. Operations

The business is organized into four relatively autonomous operating entities:

- Defense Group. Serves the Department of Defense and other government agencies, as well as other defense contractors on a subcontractor basis. The Defense Group is divided into four divisions:
  - the Weapons Systems Division
  - the Information Sciences Division
  - the C3I Division
  - the Applied Engineering Division

- Energy and Environment Group. Basically oriented toward providing services to various kinds of electrical utilities, both nuclear and conventional. The Energy and Environment Group is composed of two subsidiary organizations:
  - SIMCO—Provides on-site technical support to electric utility companies
  - IEL—Provides services in the area of policy formulation, development, and analysis.

- Facilities Management Group. Operates and manages a great variety of support activities for various U.S. government agencies. The Facilities Management Group consists of three subsidiary companies:
  - Logistics Operations, Inc.
  - D-K Associates, Inc.
  - ERCI Facilities Service Corp. (WESTEC Group).
    The WESTEC Group is divided into the following:
  - Systems Division
  - Environmental Division
  - Analytical Technology, Inc.
  - Power Engineering Division

B. Project Management & Controls

ERCI has strong expertise in project management and controls, in particular, within its Defense Group and its Facilities Management Group.

C. Culture

Most of the key executives of ERCI have doctorate degrees. Because of this academic background and for business reasons, ERCI tends to recruit professional staff personnel with higher-than-average academic backgrounds. Because of the broad diversity of services provided by ERCI, the company's professional staff consists of a great variety of individuals, and thus, the corporate culture is diversified. It is more likely that distinct cultural similarities exist within the various Groups, as opposed to there being an overall corporate culture.

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D. Skill Sets

   As stated above, ERCI can almost be viewed as a conglomerate of four separate companies, with each company operating in a different market area. Therefore, the skill sets vary greatly among the various groups.

E. Level of Personnel

   As of the end of FY 1986 (December 31), ERCI had over 1,650 employees. The professional staff consisted primarily of engineers, programmers, software specialists, and environmental specialists.

F. R&D/Technology

   ERCI does not perform any R&D work of significance, in the classical sense. Much of the technology that has been developed within ERCI has been in the context of the company's performance on existing contracts. This is particularly true in the Defense Group. In general, ERCI can be viewed as a classical, highly diversified, professional services organization. Thus, its technology is primarily in the context of the creative capabilities of its professional staff.

G. Executives

   The Chairman of the company is also a founder (the company was founded in 1976). He served in various positions within ERCI, and its predecessor companies, from its founding until the present. Other members of senior management have also been with ERCI, or its predecessor companies, for at least 10 years. The key management group is unusually deep and diverse. As a group, the individuals have exceptionally strong experience in all of the areas within which ERCI operates.

III. REPUTATION

A. Type of Contractor

   In FY 1986, approximately 24% of ERCI's business resulted from work as a prime contractor to the Department of Defense. An additional 22% of its revenues were associated with work as a Department of Defense subcontractor. The remaining 54% of revenues resulted from non-contract work with federal agencies and commercial clients.

B. Importance of Contracts

   Approximately half of ERCI's revenues are contractual in nature. It is probable that a large percentage of the other half of its revenues are also semicontractual in nature. Within such contracts, ERCI works within the context of a written agreement with its clients but these agreements are easily cancellable by either party.

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C. Competitive Bid/Win Ratio

This information is not available.

D. Recent Publicity

ERCI is well regarded, both within the public and the private sectors. The company seems to have established leadership positions in each of its areas of endeavor. Recent events include:

- The acquisition of D-K Associates
- The acquisition of Analytic Systems, Inc.
- The acquisition of WESTEC Services, Inc.
- The discontinuation of the Computer Systems Group, in FY 1986
- An initial public offering in May, 1986
- Recognition by *Forbes* magazine as one of the 200 best small companies
- Recognition by *INC*. magazine as one of the 100 fastest-growing companies in the U.S.

IV. MARKET POSITION

A. Market Presence

As stated before, the company is unusually diversified for an organization of this type. In FY 1986, the composition of ERCI's revenues were:

- Department of Defense, 46%
- Other Federal agencies, 8%
- Commercial companies, 46%

In the government sector, ERCI has completed projects for most of the major agencies within the Department of Defense and almost all other major federal government agencies. The Energy and Environmental Group has worked with a variety of major utility companies, both in the U.S. and overseas. Most of the work of the Facilities Management Group has been, and is being, performed for various government agencies, both DoD and civilian. The WESTEC Group has provided services for DoD, the EPA, and a large number of commercial organizations.

B. Market Penetration

ERCI has good market penetration, both within the federal government and within the private sector. The federal government agencies have already been identified. Some of ERCI's private sector clients are:

- General Electric
- Martin Marietta
- Southern California Edison
- Mobile Oil
- IBM
- ITT

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ERCI's overseas operations have served both government and industrial clients in the following countries:

- United Kingdom
- India
- Peoples Republic of China
- Japan
- West Germany
- France

C. Federal Image

ERCI has a strong federal image, both from the perspective of the Department of Defense as well as the Environmental Protection Agency. In addition, its federal image extends into other federal civilian agencies in the context of its environmental engineering capability.

D. Agency Presence

As stated before, the single largest client organization is the Department of Defense. We do not know if ERCI operates in this environment as a sole-source vendor.

E. Commercial Potential

During the last several years, ERCI has been able to steadily increase the proportion of revenues derived from the private sector. At this point, approximately 50% of the company's revenues are generated from the private sector.

V. PROFESSIONAL SERVICES

A. Project Management Capabilities

As stated before, ERCI has extensive project management capabilities, both within its Defense Group and its Facilities Management Group. In a sense, the company markets its project management capabilities to clients through its Facilities Management contracts.

B. Network/Comm. Expertise

This is not a primary strength of ERCI. Even in the context of its Defense Group, there is only a small communications ingredient in its defense work.

C. Engineering

The company has a strong engineering capability, both in the software engineering arena and in the energy and environment arena. Further, the WESTEC Group has a large number of engineers encompassing a variety of engineering disciplines.

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D. Ada Programming

There is no known Ada programming capability within ERCI.

VI. APPLICATIONS

The company's applications are primarily sofware applications, developed within the Defense Group. It is difficult to name specific applications when describing ERCI. The company's work has been highly specialized within the context of various weapons systems, and this work does not constitute the development of applications in the true sense.

A. SDI

ERCI has not, to INPUT's knowledge, engaged directly in SDI work.

B. Mission Critical

Most of the work that ERCI does for its government clients can be considered mission critical. Its commercial work is a mix of mission critical and noncritical work.

C. CIM

ERCI has no known expertise in CIM.

VII. LEVERAGEABLE RESOURCES

A. Development Tools

Not applicable

B. PM Software Tools

Not applicable

C. Products

1. Systems

Not applicable

2. Applications

See comments under section V1.

D. Facilities

1. Locations

The company's corporate headquarters and administrative center is located in Fairfax, VA. This facility houses the majority of ERCI's personnel. The other significant location, housing the WESTEC Group, is in San Diego, CA. ERCI has personnel in other minor locations throughout the U.S.

2. Computer Centers

ERCI's only computer center is located in its corporate headquarters in Fairfax, VA.

3. Network

There are no extensive network facilities within ERCI.

4. R&D Lab

ERCI does not do R&D work, in the true sense of the word, and it does not have an R&D lab.

5. Manufacturing/Assembly

Not applicable

VIII. FINANCIAL CHARACTERISTICS

Note: The fiscal year ends December 31.

A. Revenue Size

1986—$95,280,000
1985—$62,788,000
1984—$32,275,000

B. Focused Revenue Stream

The single largest revenue stream, in 1986, was from the Department of Defense (46% of revenues). Other federal agencies, primarily the Environmental Protection Agency, generated 8% of revenues. A large number of commercial organizations generated the remainder (46%) of ERCI's revenues. No single organization was responsible for a large portion of commercial revenues.

C. General Health

1. Growth

FY 1986—52%
FY 1985—95%
FY 1984—12%

To the best of INPUT's knowledge, ERCI's growth has continued throughout FY 1987.

IX.   CONTRACTING DIRECTION

A. Bidding Capability

In FY 1986, approximately 54% of the company's total revenues were derived from competitive contracts.

B. Fixed-Price vs. Cost-Plus Contracts

The company's services are generally performed under a mix of cost-plus, fixed-fee, and time-and-materials contracts and subcontracts. INPUT does not have a breakdown of the percentage of revenues for each type of contract.

X.   ACQUISITION PROPENSITY

ERCI has grown rapidly and profitably during the past five fiscal years. Most of this growth has been internally generated; however, some of it is due to a rather aggressive acquisition program.

Though there is nothing finite to indicate that ERCI would not be a good acquisition candidate, the fact that management has been consistently successful, financially and otherwise, during the last four or five years indicates that the company might not welcome an acquisition offer. Quite frequently, when a company has acquisition-oriented management, it will not at the same time entertain an offer to be acquired. However, this is only speculation and, as stated previously, in all finite respects, the company makes a good acquisition candidate.

INPUT

Detailed Selection Screen

Target: **ERC International**

Criteria	Low (1)	Evaluation Factors Medium (2)	High (3)	Avg./ Weight	Score
Management/Personnel				2.6	x 8 20.8
Operations	___ Fair	___ Good	_X_ Well-Discip.		
Project Mgmt./Ctrls.	___ Fair	___ Good	_X_ Strong		
Culture 1	___ Incompat.	___ Overlap	_X_ Compat.		
Skill Sets	___ Incompat.	_X_ Overlap	___ Complementary		
Level of Personnel	___ "Bodies"	_X_ Competent	___ Experts		
R&D/Technology	___ None	_X_ Implementor	___ Creator		
Executives 2	___ Need Help	___ Stand Alone	_X_ Delivers		
Reputation				2.3	x 7 16.1
Type of Contractor	___ Sub	_X_ Prime & Sub	___ Integrator		
Importance of Contracts	___ Minor	_X_ Mixed	___ Major		
Competitive Win Ratio	___ 1:4	___ 1:3	___ 1:2		
Recent Publicity	___ Negatives	___ None	_X_ Positives		
Market Position				2.4	x 6 14.4
Market Presence	___ Commercial	_X_ Both	___ Federal		
Market Penetration	___ Surface	___ Deep	_X_ Moderate		
Federal Image	___ Fair	_X_ Good	___ Excellent		
Agency Presence	___ Civil	_X_ Both	___ Defense		
Commercial Potential	___ Weak	___ Average	_X_ Strong		
Professional Services				1.4	x 5 7.0
Project Management	___ Weak	_X_ Fair	___ Very Good		
Network/Comm. Expertise 3	_X_ Weak	___ Fair	___ Very Good		
Engineering	___ Weak	_X_ Fair	___ Very Good		
Ada Programming	_X_ Weak	___ Fair	___ Very Good		
Facilities Management	___ Weak	___ Fair	_X_ Very Good		

INPUT

Application Targets						1.3	x 4	5.2
SDI	_X_ None	___ Heavy	___ Some					
"Mission Critical"	___ None	_X_ Heavy	___ Some					
CIM	_X_ None	___ Heavy	___ Some					

Leverageable Resources						1.6	x 3	4.8
Development Tools	_X_ None	___ Some	___ Integrated					
PM Software Tools	_X_ Fair	___ Good	___ Good/On-time					
Products								
Systems	_X_ Non-SI	___ SI-Related	___ SI Platform					
Applications	___ None	___ "Me Too"	_X_ Unique					
Facilities								
Locations	___ Remote	___ Near Buyer	_X_ Local & Remote					
Computer Center(s)	___ None	_X_ Fair	___ Strong					
Network	_X_ None	___ Fair	___ Strong					
R&D Lab	_X_ None	___ Heavy	___ Present					
Mfg./Assembly	_X_ None	___ Heavy	___ Present					

Financial Characteristics						2.3	x 2	4.6
Revenue Size	___ < $20 M	___ $20-$40 M	_X_ > $40 M					
Focused Revenue Stream	_X_ Many	___ Some	___ Few					
General Health 4	___ Poor	___ Fair	_X_ Good					

Contracting Direction						3.0	x 1	3.0
Bidding Capability	___ Weak	___ Fair	_X_ Very Good					
FP vs. CP Contracts								
Backlog	___ > 50%	___ App. 33%	___ < 25%					
Trend	___ <25%	___ App. 33%	___ > 50%					

Acquisition Propensity	___ Negative	___ Okay	_X_ Ripe	3.0	x 1	3.0

Total Weighted Score: 78.9

INPUT

Notes:

1. Culture includes commitment to quality, solid client service, and a career orientation of the staff (low turnover, recruits directly from college, and one-firm employees).

2. If the acquisition is large, company will continue to operate as is. If small, the company will be quickly integrated with AA & Co.

3. Network/communications expertise includes:
   Data Interchange Skills   None
   Connectivity Experience   None
   Network Design/Management

4. General financial health considers the following:
   Growth   < Ind.
   Margins   < Ind.
   Liquidity (Current Ratio)   < 1.5:1
   Backlog : Current Rev.   < 1:1
   Wrap Rate (Cost : Markup)   1.0 - 1.5

INPUT

I. COMPANY IDENTIFICATION

CALCULON CORPORATION
1301 Piccard Drive
Rockville, MD 20850

Note: Calculon is a wholely owned subsidiary of the ORI Group. In 1987, the
Atlantic Research Corporation (ARC) acquired ORI.

A. Key Contacts

Coleman Raphael, Chairman (ARC)
William H. Borten, President (ARC)

B. Brief Company Description

Calculon offers a wide range of services in information systems technology,
primarily to the United States Department of Defense. The corporation tends to
structure itself as a broad-based information services consulting organization.
Calculon's expertise can be subdivided into the five following functional areas:
- Systems integration
- Software engineering
- Communications engineering
- Computer systems support services
- Systems engineering

1. Line(s) of Business

a. Non-Information Services

Not applicable

b. Information Services

As stated before, Calculon is a broad based information systems
consulting company. In that context, Calculon provides such services
as:
- Hardware and software selection
- Systems integration
- Custom software development
- Operations research
- Data base development and management
- Office automation
- Telecommunications engineering

II. MANAGEMENT/PERSONNEL

A. Operations

Calculon as part of the ORI Group (Calculon, Intercon Systems, and
Operations Research, Inc.) has been organized into the following six functional
areas:
- Command Control and Communications Systems
- Software Development

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- Implementation and Maintenance
- Operational and Administrative Support Services
- Training Systems Development
- Telecommunications, Engineering, and Support Services

B. Project Management & Controls

No specific, known information

C. Culture

The ORI Group has a staff of approximately 1,700 people. Of these, approximately 550 are employees of Calculon. These people comprise a mix of various system development disciplines.

Because of the wide variety of services offered by Calculon, the skills of the employees are more varied than in other similar companies.

D. Skill Sets

Employees are primarily recruited from competitor organizations and, to a lesser degree, from neighboring educational institutions.

E. Level of Personnel

Information is not available.

F. R&D/Technology

Calculon's R&D technology is basically limited to the area of software development. The organization is primarily an implementor, as opposed to a developer; therefore its expertise and strength in the R&D area is limited, compared to many other DoD vendors.

G. Executives

Unknown

III. REPUTATION

A. Type of Contractor

Most of the work that Calculon does is as a prime contractor dealing directly with its various clients. Much of its federal government work is in the area of supporting existing information systems, and thus Calculon tends to be a prime contractor in these areas.

B. Importance of Contracts

Most of the contracts that Calculon has are with the federal government. Some of these are on a project basis and some, the support contracts, are on an annual renewal basis.

INPUT

C. Competitive Bid/Win Ratio

Unknown

D. Recent Publicity

Calculon was acquired by ORI and formed in 1985. It forms one of the three components of the new ORI Group. In turn, ORI was acquired by Atlantic Research Corporation in 1987.

IV.   MARKET POSITION

A. Market Presence

A majority of Calculon's revenues are generated from contracts with the federal government. Calculon indicates that it has some commercial clients, although INPUT estimates that in excess of 90% of its revenues are from the federal government.

B. Market Penetration

Approximately 55% of the ORI Group's revenues are generated from within the United States Department of Defense. Approximately 20% are generated from the Department of Energy, and approximately 10% are generated from NASA. The remainder of the ORI Group's revenues are generated from other federal agencies and commercial organizations. We do not have a breakdown of revenues (or market penetration figures) for Calculon itself.

C. Federal Image

Calculon has a strong reputation within the federal government as an implementor. It is not recognized as, nor does it purport to be, a "think tank."

D. Commercial Potential

Because much of the work that Calculon (ORI Group) does for the federal government is similar to what other professional service organizations are doing for commercial organizations, it is reasonable to expect that Calculon has a high level of commercial potential. However, there is a question as to whether or not the mind set of the management of the organization makes the company's skills easily transferable from the public sector to the private sector.

V.   PROFESSIONAL SERVICES

A. Project Management Capabilities

Calculon's expertise in project management is considerable. As an example, it has had a 14-year project with the Naval Warfare Systems Command in which it has managed a variety of projects related to a telecommunications switching network for the United States Marine Corps. Calculon provides similar services to other government agencies.

INPUT

B. Network/Comm. Expertise

The company has demonstrated considerable expertise in both the data communications and network development areas. Again, much of this work has been done for various government agencies, including the Department of Defense.

C. Engineering

Calculon's engineering activities are primarily within the context of software engineering, communications engineering, and systems engineering, in general. The organization does not seem to evidence expertise in the area of hardware engineering.

D. Ada Programming

No known capabilities

E. Facilities Management

Calculon is engaged in a number of large-scale facilities management contracts. These contracts include:
- Management of NASA's Langely Research Center
- Management of a telecommunications system for the U.S. Department of Energy
- Management of a data center for the U.S. Department of Energy

VI. APPLICATIONS

The ORI Group has a strong modeling and simulation capability. These include:
- a system survivability simulator
- a risk analysis methodology generator
- nuclear hardening trade-off analyzer
- a space-based events model

It is INPUT'S opinion that the majority of these capabilities are included in the ORI Group, as opposed to Calculon itself, although Calculon has some of these capabilities. In addition, Calculon has applications capability in software development, software testing, development of software procedures and software documentations. Furthermore, Calculon and the ORI Group in general have considerable experience in systems training.

A. SDI

No direct experience

B. Mission Critical

Most of Calculon's work is operational in nature and therefore can be considered to be basically mission critical.

C. CIM

Calculon has no known expertise in CIM.

VII.   LEVERAGEABLE RESOURCES

A. Development Tools

We believe that Calculon's expertise in the development area is in its basic resources—its staff. It does not have any known development tools, per se.

B. PM Software Tools

Same as A above

C. Products

1. Systems

No known off-the-shelf systems

2. Applications

No known leverageable applications

D. Facilities

1. Locations

Calculon is headquartered in Rockville, MD. It has a variety of other locations throughout the metropolitan Washington, DC area, as well as in:
- Augusta, GA
- Dayton, OH
- Philadelphia, PA
- Shrewsbury, NJ

2. Computer Centers

No specific information available.

3. Network

No specific information available.

4. R&D Lab

The R&D work that Calculon does, custom software development, is performed in its Rockville, MD facility.

5. Manufacturing/Assembly

Not applicable

INPUT

VIII. FINANCIAL CHARACTERISTICS

A. Revenue Size

In 1985, the ORI Group had revenues of approximately $100 million. This
comprised the following three components:
- Intercon Systems—$17 million
- Calculon—$33 million
- ORI, Inc.—$50 million

Previous revenue figures are not comparable because prior to 1985 the "ORI
Group" consisted solely of Operating Research, Inc.

B. Focused Revenue Stream

Virtually all of Calculon's revenues are derived from various agencies within
the Department of Defense.

C. General Health

1. Growth

Very rapid, since the majority of this growth was due to acquisitions

IX. CONTRACTING DIRECTION

A. Bidding Capability

Most of Calculon's revenues are gained through a competitive bid process.
Since many other government contractors have capabilities that are similar to
Calculon's, almost all of this type of work is awarded on a true competitive bid
basis.

B. Fixed-Price vs. Cost-Plus Contracts

Because of the varied nature of Calculon's work, its contractual structure is a
variety of fixed-price and cost-plus contracts. INPUT is not aware of the mix
ratio of these types of contracts.

X. ACQUISITION PROPENSITY

Calculon, in spite of being acquired twice in recent years, is still functioning as a
discrete organizational entity. Further, several sources have indicated that APC
may be in a position to seriously discuss the divestiture of Calculon. Therefore, we
rank the possibility of the acquisition of Calculon as good.

INPUT

Detailed Selection Screen

Target: **Calculon Corporation**

Criteria	Low (1)	Evaluation Factors Medium (2)	High (3)	Avg./Weight	Score
Management/Personnel				2.0 x 8	16.0
Operations	___ Fair	_X_ Good	___ Well-Discip.		
Project Mgmt./Ctrls.	___ Fair	_X_ Good	___ Strong		
Culture 1	___ Incompat.	_X_ Overlap	___ Compat.		
Skill Sets	___ Incompat.	_X_ Overlap	___ Complementary		
Level of Personnel	___ "Bodies"	_X_ Competent	___ Experts		
R&D/Technology	___ None	_X_ Implementor	___ Creator		
Executives 2	___ Need Help	_X_ Stand Alone	___ Delivers		
Reputation				2.7 x 7	18.9
Type of Contractor	___ Sub	_X_ Prime & Sub	___ Integrator		
Importance of Contracts	___ Minor	___ Mixed	_X_ Major		
Competitive Win Ratio	___ 1:4	___ 1:3	___ 1:2		
Recent Publicity	___ Negatives	___ None	_X_ Positives		
Market Position				2.4 x 6	14.4
Market Presence	___ Commercial	___ Both	_X_ Federal		
Market Penetration	___ Surface	___ Deep	_X_ Moderate		
Federal Image	___ Fair	_X_ Good	___ Excellent		
Agency Presence	___ Civil	_X_ Both	___ Defense		
Commercial Potential	___ Weak	_X_ Average	___ Strong		
Professional Services				2.2 x 5	11.0
Project Management	___ Weak	_X_ Fair	___ Very Good		
Network/Comm. Expertise 3	___ Weak	___ Fair	_X_ Very Good		
Engineering	___ Weak	_X_ Fair	___ Very Good		
Ada Programming	_X_ Weak	___ Fair	___ Very Good		
Facilities Management	___ Weak	___ Fair	_X_ Very Good		

INPUT

Application Targets				1.3	x 4	5.2
SDI	_X_ None	___ Heavy	___ Some			
"Mission Critical"	___ None	_X_ Heavy	___ Some			
CIM	_X_ None	___ Heavy	___ Some			

Leverageable Resources				1.7	x 3	5.1
Development Tools	_X_ None	___ Some	___ Integrated			
PM Software Tools	_X_ Fair	___ Good	___ Good/On-time			
Products						
Systems	_X_ Non-SI	___ SI-Related	___ SI Platform			
Applications	___ None	_X_ "Me Too"	___ Unique			
Facilities						
Locations	___ Remote	_X_ Near Buyer	___ Local & Remote			
Computer Center(s)	___ None	_X_ Fair	___ Strong			
Network	___ None	_X_ Fair	___ Strong			
R&D Lab	___ None	___ Heavy	_X_ Present			
Mfg./Assembly	_X_ None	___ Heavy	___ Present			

Financial Characteristics				2.0	x 2	4.0
Revenue Size	___ < $20 M	_X_ $20-$40 M	___ > $40 M			
Focused Revenue Stream	_X_ Many	___ Some	___ Few			
General Health 4	___ Poor	___ Fair	_X_ Good			

Contracting Direction				2.0	x 1	2.0
Bidding Capability	___ Weak	_X_ Fair	___ Very Good			
FP vs. CP Contracts						
Backlog	___ > 50%	___ App. 33%	___ < 25%			
Trend	___ <25%	___ App. 33%	___ > 50%			

Acquisition Propensity	___ Negative	_X_ Okay	___ Ripe	2.0	x 1	2.0

Total Weighted Score: 78.6

INPUT

Notes:

1. Culture includes commitment to quality, solid client service, and a career orientation of the staff (low turnover, recruits directly from college, and one-firm employees).

2. If the acquisition is large, company will continue to operate as is. If small, the company will be quickly integrated with AA & Co.

3. Network/communications expertise includes:
   Data Interchange Skills   None
   Connectivity Experience   None
   Network Design/Management

4. General financial health considers the following:
   Growth   < Ind.
   Margins   < Ind.
   Liquidity (Current Ratio)   < 1.5:1
   Backlog : Current Rev.   < 1:1
   Wrap Rate (Cost : Markup) 1.0 - 1.5

INPUT

I.   COMPANY IDENTIFICATION

PERCEPTRONICS
6271 Variel Avenue
Woodland Hills, CA 91367

A. Key Contacts

Gershon Weltman, Chairman
Amos Freedy, President

B. Brief Company Description

Perceptronics designs and develops computer-based training, simulation and
decision support systems. The systems are designed to improve the job
performance of military personnel in their use of military equipment, including
tanks, armored vehicles, helicopters, and aircraft. The bulk of the company's
business is with various agencies of the Department of Defense, either as a
prime contractor or as a subcontractor to other defense contractors.

In addition, the company is engaged in basic research related to artificial
intelligence and robotics, analytical studies of man-machine relationships, and
the rapid prototyping and manufacture of simulators and other equipment used
in training and in command and control applications.

1. Line(s) of Business

a. Non-Information Services

Not applicable

b. Information Services

Perceptronics is engaged in the following types of information services.
- Training and simulation systems, oriented primarily toward military
  weapons systems.
- Simulation network software (SIMNET).
- Artificial intelligence (EXPERNET), oriented to real-time, man-
  machine control systems.
- Robotics, oriented toward military systems, focusing on an airborne
  vehicle for elevated reconnaissance.
- Command systems.
- Customized software for avionics and weapons systems.

II.   MANAGEMENT/PERSONNEL

A. Operations

Perceptronics is organized into the following divisions:
- The Training and Simulation Systems Division
- The Artificial Intelligence and Man-Machine Systems Division
- The Avionics and Weapons Systems Division
- The Manpower, Personnel, and Logistics Systems Division

INPUT

Perceptronics also owns 50% of CIMTECH Ltd., located in Israel.

B. Project Management & Controls

Perceptronics utilizes project management and control systems for its own internal purposes. It does not market these capabilities to its customers.

C. Culture

The company is very academically oriented, reflecting the background and interest of its chairman and its president. The company purposely develops an image of a high-tech, innovative organization. As a function of this it is primarily oriented toward rather esoteric projects, almost all for the benefit of the Department of Defense.

D. Skill Sets

Employees are recruited from a variety of universities, as well as from competitive firms. Employees are encouraged to pursue academic interests and additional advanced degrees. While Perceptronics cannot be looked upon as an R&D lab, many of its activities and its approaches to complex projects are academic in their nature.

E. Level of Personnel

Specific information is not available.

F. R&D/Technology

Almost all of Perceptronics' R&D activity consists of a variety of development projects, within the context of the Department of Defense. Their conglomerate R&D experience is almost totally oriented to this particular market area. The majority of this R&D activity is funded by the government through the DoD's IR&D funding.

G. Executives

Both the Chairman and the Chief Executive Officer have considerable experience in the federal government market area, particularly within the Department of Defense. Almost all of their joint experience has been in this market. The company is beginning to attempt to sell some of its products in the commercial area (private sector). In order to do this, it is recruiting key individuals from this sector, recognizing that the existing Perceptronics' management does not have skills in this area.

III. REPUTATION

A. Type of Contractor

Most of the work Perceptronics does is in the capacity of subcontractor or co-contractor on complex military systems projects. With the exception of some of its R&D work, very little of its work is done on a prime contractor basis.

INPUT

B. Importance of Contracts

Almost all of the work that Perceptronics does is done on a contract basis, either with the Department of Defense or, more commonly, with a prime DoD contractor.

C. Competitive Bid/Win Ratio

Because of Perceptronics' rather unique talents, capabilities, and expertise, it is normally selected to work in a rather narrowly defined project environment. Therefore, the company's ability to gain those contracts indicates that it bids, and wins, them on a high bid/win ratio.

D. Recent Publicity

- Work on the CIMNET technical simulation program in conjunction with Bolt Beranek & Newman and Delta Graphics
- The spin-off of CIMTECH, the company's former Israeli subsidiary

IV. MARKET POSITION

A. Market Presence

Perceptronics is almost totally involved in the Department of Defense market area. Over 90% of its business is generated from this market segment. Some of Perceptronics' recent contracts are:
- SIMNET
- The Cockpit Automation Technology Program for the USAF (in conjunction with the Northrup Corporation)
- A robotics program sponsored by DARPA related to a robot-based reconnaissance system

B. Market Penetration

Perceptronics' most unique capabilities are in the area of simulation and artificial intelligence. It is apparent by the company's recent revenue growth that it has been able to penetrate these markets, within the Department of Defense. However, it is not known to what degree competitive companies have a similar, or better, market position.

C. Federal Image

Perceptronics has a reasonably good federal image (Department of Defense) in that the majority of its revenues come from the federal sector. There is no known situation in which Perceptronics was not able to perform adequately within the context of one of its contracts.

D. Agency Presence

The majority of Perceptronics' work is with the Department of Defense. It is our opinion that because of the particular expertise within Perceptronics, the company is on a preferred subcontractor list and is able to gain contracts on a noncompetitive basis, both as a prime contractor and a subcontractor.

INPUT

E. Commercial Potential

Because of the highly specialized nature of Perceptronics' work, there seems to be little potential for its services in the commercial market. Management has attempted to penetrate the private sector with derivatives of its product line, but so far with only limited success.

V. PROFESSIONAL SERVICES

A. Project Management Capabilities

This is not a major service offered by Perceptronics.

B. Network/Comm. Expertise

Not applicable

C. Engineering

The company has designed, manufactured, and installed a number of military simulator systems. This has basically been done within the context of the company's SIMNET contract. In this context, the company has demonstrated its ability to design, manufacture, and install hardware, as well as the related software.

D. Ada Programming

No known expertise

E. Facilities Management

Perceptronics does not demonstrate any interest in the facilities management area.

VI. APPLICATIONS

A significant amount of development work has been done in the area of simulation and training in relation to SIMNET. In addition, the company has developed considerable expertise in the area of artificial intelligence and has applied this expertise in the context of the Cockpit Automation Technology Program for the U.S. Air Force. In addition, Perceptronics has demonstrated its ability in the robotics area by fulfilling its R&D obligations for DARPA and the Naval Research Laboratory, in the context of COVER (Commanders Vehicle for Elevated Reconnaissance).

A. SDI

Perceptronics does not have any SDI capabilities.

B. Mission Critical

Almost all of Perceptronics work is directly related to projects that are critical to National Defense.

C. CIM

Perceptronics does not have any known experience in the area of CIM.

VII. LEVERAGEABLE RESOURCES

A. Development Tools

No specific tools are leverageable, in that the majority of Perceptronics work is one-of-a-kind development projects.

B. PM Software Tools

Not applicable

C. Products

1. Systems

See the information presented above.

2. Applications

Most of Perceptronics' development work appears to be one-of-a-kind, in the context of a pure professional services organization.

D. Facilities

1. Locations

The company's corporate offices and the headquarters for its three divisions are located in its Woodland Hills, CA facility. In addition to this facility, the company is also located in:
- Arlington, VA
- Ann Arbor, MI
- Orlando, FL
- Dayton, OH
- Philadelphia, PA
- Fort Leavenworth, KS
- Eugene, OR
- Albuquerque, NM

2. Computer Centers

The company's computer center is located in its Woodland Hills, CA facility.

3. Network

The company does not have a data network.

INPUT

4. R&D Lab

Depending on the nature of the work, R&D is done in any of the corporate facilities that are located near the customer.

5. Manufacturing/Assembly

The corporation is not involved in any manufacturing/assembly operations.

VIII. FINANCIAL CHARACTERISTICS

Note: Fiscal year ends March 31.

A. Revenue Size

FY 1987—$38,404,000
FY 1986—$28,994,000
FY 1985—$15,665,000

B. Focused Revenue Stream

In FY 1987, approximately 48% of the company's revenues was derived from DoD development contracts. The remainder of the company's revenues was derived from systems production activities. To the best of INPUT's knowledge, all 1987 revenues resulted from contracts with the Department of Defense, either prime or subcontracts.

C. General Health

1. Growth

FY	Growth
1985	102%
1986	85%
1987	32%

2. Margins

As shown below, the company has not shown a recent ability to generate profits on a consistent basis.

FY	Net Profit
1987	(1,316)
1986	831
1985	346
1984	(179)
1983	260

3. Liquidity

Current assets: $20,878,000
Current liabilities: $7,600,000

INPUT

IX. CONTRACTING DIRECTION

A. Bidding Capability

As indicated before, Perceptronics seems to be able to win a number of sole-source contracts, either on a prime contractor basis or on a subcontractor basis.

B. Fixed-Price vs. Cost-Plus Contracts

Details are unknown.

X. INPUT EVALUATION

A. Acquisition Propensity

The company is publicly held, and the growth in its per-share market price has been unimpressive in the last several years. Perceptronics is a closely held public company, and it is reasonable to expect that it could be acquired on a friendly takeover basis. On balance, we would consider acquisition possibilities to be good.

Detailed Selection Screen

Target: **Perceptronics**

Criteria	Low (1)	Evaluation Factors Medium (2)	High (3)	Avg./ Weight	Score
Management/Personnel				2.4 x 8	19.2
Operations	___ Fair	_X_ Good	___ Well-Discip.		
Project Mgmt./Ctrls.	___ Fair	_X_ Good	___ Strong		
Culture 1	___ Incompat.	___ Overlap	_X_ Compat.		
Skill Sets	___ Incompat.	___ Overlap	_X_ Complementary		
Level of Personnel	___ "Bodies"	_X_ Competent	___ Experts		
R&D/Technology	___ None	___ Implementor	_X_ Creator		
Executives 2	___ Need Help	_X_ Stand Alone	___ Delivers		
Reputation				2.3 x 7	16.1
Type of Contractor	___ Sub	_X_ Prime & Sub	___ Integrator		
Importance of Contracts	___ Minor	___ Mixed	_X_ Major		
Competitive Win Ratio	___ 1:4	___ 1:3	_X_ 1:2		
Recent Publicity	_X_ Negatives	___ None	___ Positives		
Market Position				2.4 x 6	14.4
Market Presence	___ Commercial	___ Both	_X_ Federal		
Market Penetration	___ Surface	___ Deep	_X_ Moderate		
Federal Image	___ Fair	_X_ Good	___ Excellent		
Agency Presence	___ Civil	___ Both	_X_ Defense		
Commercial Potential	_X_ Weak	___ Average	___ Strong		
Professional Services				1.4 x 5	7.0
Project Management	___ Weak	_X_ Fair	___ Very Good		
Network/Comm. Expertise 3	_X_ Weak	___ Fair	_X_ Very Good		
Engineering	___ Weak	_X_ Fair	___ Very Good		
Ada Programming	_X_ Weak	___ Fair	___ Very Good		
Facilities Management	_X_ Weak	___ Fair	_X_ Very Good		

INPUT

Application Targets				1.3	x 4	5.2
SDI	_X_ None	___ Heavy	___ Some			
"Mission Critical"	___ None	_X_ Heavy	___ Some			
CIM	_X_ None	___ Heavy	___ Some			

Leverageable Resources				1.0	x 3	3.0
Development Tools	_X_ None	___ Some	___ Integrated			
PM Software Tools	_X_ Fair	___ Good	___ Good/On-time			
Products						
Systems	_X_ Non-SI	___ SI-Related	___ SI Platform			
Applications	_X_ None	___ "Me Too"	___ Unique			
Facilities						
Locations	___ Remote	___ Near Buyer	___ Local & Remote			
Computer Center(s)	___ None	___ Fair	___ Strong			
Network	___ None	___ Fair	___ Strong			
R&D Lab	___ None	___ Heavy	___ Present			
Mfg./Assembly	___ None	___ Heavy	___ Present			

Financial Characteristics				1.7	x 2	3.4
Revenue Size	___ < $20 M	_X_ $20-$40 M	___ > $40 M			
Focused Revenue Stream	_X_ Many	___ Some	___ Few			
General Health 4	___ Poor	_X_ Fair	___ Good			

Contracting Direction				2.0	x 1	2.0
Bidding Capability	___ Weak	_X_ Fair	___ Very Good			
FP vs. CP Contracts						
Backlog	___ > 50%	___ App. 33%	___ < 25%			
Trend	___ <25%	___ App. 33%	___ > 50%			

Acquisition Propensity	___ Negative	_X_ Okay	___ Ripe	2.0	x 1	2.0

Total Weighted Score: 72.3

INPUT

Notes:

1. Culture includes commitment to quality, solid client service, and a career orientation of the staff (low turnover, recruits directly from college, and one-firm employees).

2. If the acquisition is large, company will continue to operate as is. If small, the company will be quickly integrated with AA & Co.

3. Network/communications expertise includes:
   Data Interchange Skills   None
   Connectivity Experience   None
   Network Design/Management

4. General financial health considers the following:
   Growth   < Ind.
   Margins   < Ind.
   Liquidity (Current Ratio)   < 1.5:1
   Backlog : Current Rev.   < 1:1
   Wrap Rate (Cost : Markup)   1.0 - 1.5

I.   COMPANY IDENTIFICATION

INPUT/OUTPUT COMPUTER SERVICES
400 Totten Pond Road
Waltham, MA 02254

A. Key Contacts

Thomas A. Farrington, President

B. Brief Company Description

IOCS has over 15 years of varying types of computer industry experience with
the federal government and, to a lesser degree, private industry. IOCS is a
broad-based computer services company with a reputation as an implementor,
rather than as a high-technology, R&D-oriented organization. The company's
corporate publications focus on customer satisfaction and quality services at
competitive prices. This is a minority-owned business.

1. Line(s) of Business

a. Non-Information Services

Not applicable

b. Information Services

IOCS is able to offer a large variety of services, all within the
information systems area. The list below shows the company's services
as described in its corporate literature:
- Real-time systems design and implementation
- Program management and support for large military systems
- Software development, education, and training
- Facilities management
- Planning/analysis/feasibility studies
- Systems integration, installation, and maintenance

II.   MANAGEMENT/PERSONNEL

A. Operations

The business is organized into five functional areas, as follows:
- Information management systems
- Software and operations support services
- Voice information systems
- Aviation systems
- Defense systems

B. Project Management & Controls

IOCS indicates that it offers these services to clients. INPUT is not aware of its
degree of expertise in this area.

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C. Culture

IOCS employees are a group of implementors, and as such, they do not represent the highly educated "think tank" type of employee. IOCS's basic strengths are in system development and system implementation activities, and therefore its personnel represent those individuals who can best perform in these environments.

D. Skill Sets

See C above.

E. Level of Personnel

The corporation has over 300 employees, including hardware and software engineers, MIS and data base analysts, communication specialists, and transportation analysts. The organization also has technical writers and systems trainers. The general skill level of the employees represents a broad-based staff of generalists, as opposed to a high degree of specialization in narrow market niches.

F. R&D/Technology

The company's basic R&D expertise is in the development of customized software systems and the development of integrated systems.

G. Executives

The company's senior executives have been in place since the early 1970s and represent, at this point in time, a seasoned, highly experienced management team.

III. REPUTATION

A. Type of Contractor

Most of the work IOCS does is in the capacity of a prime contractor, be it with a federal government agency or in the private sector. Almost all of its contracts are of key importance to the user.

B. Importance of Contracts

All of IOCS's federal government work is on a contract basis. This is also true of its work in the private sector.

C. Competitive Bid/Win Ratio

Unknown

D. Recent Publicity

The company is well regarded and known to have technological leadership in the area of systems development, systems integration, facilities management, and systems training.

INPUT

IV. MARKET POSITION

A. Market Presence

IOCS has extensive experience in the federal government area. The company has also served a broad range of commercial organizations. It is INPUT's understanding that the majority of IOCS's revenues come from the federal government.

B. Market Penetration

IOCS does not have significant market penetration in any one area or with any single client. The only possible exception to this is the Federal Aviation Administration. IOCS has had several relatively large contracts with the FAA.

C. Federal Image

IOCS is understood to have a reasonably sound federal image and to receive special status because it is a minority-owned business.

D. Agency Presence

The only known significant penetration into a federal agency is the Federal Aviation Administration. In other market areas IOCS's presence and penetration is considered to be minimal.

E. Commercial Potential

There is a high degree of potential for IOCS to transfer its government-related skills to the commercial sector. Most of the work it has been doing for government agencies is identical to the work that it has done, or could be doing, in the commercial sector.

V. PROFESSIONAL SERVICES

A. Project Management Capabilities

IOCS has good skills in this area and has demonstrated these skills by managing projects for federal government agencies and for private organizations. The company is also able to teach project management skills to clients' personnel.

B. Network/Comm. Expertise

IOCS has extensive expertise and experience in these areas. In particular IOCS's network experience extends to:
- Wide-area networks
- LANs
- Network design
- Hardware/software selection
- Network integration and testing

INPUT

C. Engineering

The company's engineering expertise is primarily in software engineering (software design and development).

D. Ada Programming

No known expertise in this area

E. Facilities Management

IOCS has not shown any inclination to act as a facilities manager.

VI. APPLICATIONS

IOCS has a variety of applications that are transferable from one market segment to another. Rather than list all of these application areas, selected key applications are listed below.
- Financial/accounting
  · DBMS applications
  · Application design and development
- Integrated voice response systems
  · Weather
  · Finance
  · Transportation
  · Benefits
- Transportation systems analysis
  · Transit and railroad systems
  · Computer modeling and simulation
- Office automation systems
  · Mini and micro computer applications
  · Systems integration
- Identification systems
  · Magnetic stripe card application
  · Smart card applications

A. SDI

IOCS has not, to INPUT's knowledge, engaged in any SDI development work.

B. Mission Critical

Almost all of IOCS's work is critical to the client.

C. CIM

IOCS has no known experience in CIM.

INPUT

VII. LEVERAGEABLE RESOURCES

A. Development Tools

IOCS has no development tools, per se, that could be leveraged into other areas.

B. PM Software Tools

Same as A above.

C. Products

1. Systems

Not applicable

2. Applications

As stated previously, the majority of the applications that IOCS has developed for the commercial sector are easily transferable to other commercial market segments. The federal government agency applications are probably unique and customized for the particular agency that was the IOCS client. Also, see VI above.

D. Facilities

1. Locations

IOCS is headquartered in Waltham, Massachusetts. In addition, the company has facilities in the following locations:
- Washington, DC
- Philadelphia, PA
- Los Angeles, CA
- Dallas, TX
- Chicago, IL

Furthermore, IOCS employs personnel in approximately 12 other locations throughout the United States. These people are in small groups related to single projects.

2. Computer Centers

IOCS has a computer center at its Waltham, Massachusetts headquarters facility.

3. Network

Unknown

4. R&D Lab

The IOCS development software work is performed both at its Waltham, Massachusetts location and its Washington, DC location.

INPUT

5. Manufacturing/Assembly

   Not applicable

VIII. FINANCIAL CHARACTERISTICS

Note: Fiscal year ends June 30.

A. Revenue Size

   FY 1986 revenues—$19.5 million
   FY 1985 revenues—$13.0 million

B. Focused Revenue Stream

   The majority of IOCS's revenue in FY 1986 was derived from federal
   government contracts. The remainder of its revenue was derived from a great
   variety of state and local governments and from commercial organizations.

C. General Health

   1. Growth

      Recent growth (revenues) has been impressive—50% between 1985 and
      1986.

IX. CONTRACTING DIRECTION

A. Bidding Capability

   IOCS has, in the context of the federal government, been primarily a
   subcontractor. It has had limited prime contractor status with some federal
   government agencies and has also been a prime contractor in state and local
   government projects and in the private sector.

B. Fixed-Price vs. Cost-Plus Contracts

   IOCS is willing to work in the context of either fixed-price or cost-plus
   contracts. Most of its contracts in the federal sector have been cost-plus
   contracts.

X. ACQUISITION PROPENSITY

IOCS is a reasonably sound potential acquisition candidate but would probably be
very difficult to strike a deal with. Management has been in place a long time and
takes pride in being part of a successful minority-owned business. Though a
financial deal might be struck very easily, the emotional issues may be difficult to
overcome.

INPUT

Detailed Selection Screen

Target: **Input/Output Computer Services**

Criteria	Low (1)	Evaluation Factors Medium (2)	High (3)	Avg./ Weight	Score
Management/Personnel				2.0 x 8	16.0
Operations	___ Fair	_X_ Good	___ Well-Discip.		
Project Mgmt./Ctrls.	___ Fair	_X_ Good	___ Strong		
Culture 1	___ Incompat.	___ Overlap	___ Compat.		
Skill Sets	___ Incompat.	_X_ Overlap	___ Complementary		
Level of Personnel	___ "Bodies"	_X_ Competent	___ Experts		
R&D/Technology	___ None	_X_ Implementor	___ Creator		
Executives 2	___ Need Help	_X_ Stand Alone	___ Delivers		
Reputation				2.7 x 7	18.9
Type of Contractor	___ Sub	_X_ Prime & Sub	___ Integrator		
Importance of Contracts	___ Minor	___ Mixed	_X_ Major		
Competitive Win Ratio	___ 1:4	___ 1:3	___ 1:2		
Recent Publicity	___ Negatives	___ None	_X_ Positives		
Market Position				2.0 x 6	12.0
Market Presence	___ Commercial	_X_ Both	___ Federal		
Market Penetration	_X_ Surface	___ Deep	___ Moderate		
Federal Image	___ Fair	_X_ Good	___ Excellent		
Agency Presence	___ Civil	_X_ Both	___ Defense		
Commercial Potential	___ Weak	___ Average	_X_ Strong		
Professional Services				1.6 x 5	8.0
Project Management	___ Weak	_X_ Fair	___ Very Good		
Network/Comm. Expertise 3	___ Weak	_X_ Fair	___ Very Good		
Engineering	___ Weak	_X_ Fair	___ Very Good		
Ada Programming	_X_ Weak	___ Fair	___ Very Good		
Facilities Management	_X_ Weak	___ Fair	___ Very Good		

Application Targets				1.3	x 4	5.2
SDI	_X_ None	___ Heavy	___ Some			
"Mission Critical"	___ None	_X_ Heavy	___ Some			
CIM	_X_ None	___ Heavy	___ Some			

Leverageable Resources				1.6	x 3	4.8
Development Tools	_X_ None	___ Some	___ Integrated			
PM Software Tools	_X_ Fair	___ Good	___ Good/On-time			
Products						
Systems	_X_ Non-SI	___ SI-Related	___ SI Platform			
Applications	___ None	_X_ "Me Too"	___ Unique			
Facilities						
Locations	___ Remote	_X_ Near Buyer	___ Local & Remote			
Computer Center(s)	___ None	_X_ Fair	___ Strong			
Network	___ None	___ Fair	___ Strong			
R&D Lab	___ None	___ Heavy	_X_ Present			
Mfg./Assembly	_X_ None	___ Heavy	___ Present			

Financial Characteristics				1.0	x 2	2.2
Revenue Size	_X_ < $20 M	___ $20-$40 M	___ > $40 M			
Focused Revenue Stream	_X_ Many	___ Some	___ Few			
General Health 4	___ Poor	___ Fair	___ Good			

Contracting Direction				2.0	x 1	2.0
Bidding Capability	___ Weak	_X_ Fair	___ Very Good			
FP vs. CP Contracts						
Backlog	___ > 50%	___ App. 33%	___ < 25%			
Trend	___ <25%	___ App. 33%	___ > 50%			

Acquisition Propensity	___ Negative	_X_ Okay	___ Ripe	2.0	x 1	2.0

Total Weighted Score: 70.9

Notes:

1. Culture includes commitment to quality, solid client service, and a career orientation of the staff (low turnover, recruits directly from college, and one-firm employees).

2. If the acquisition is large, company will continue to operate as is. If small, the company will be quickly integrated with AA & Co.

3. Network/communications expertise includes:
   Data Interchange Skills   None
   Connectivity Experience   None
   Network Design/Management

4. General financial health considers the following:
   Growth   < Ind.
   Margins   < Ind.
   Liquidity (Current Ratio)   < 1.5:1
   Backlog : Current Rev.   < 1:1
   Wrap Rate (Cost : Markup)   1.0 - 1.5

INPUT

I.   COMPANY IDENTIFICATION

COMPUTER DATA SYSTEMS, INC.
One Curie Court
Rockville, MD 20850

A. Key Contacts

Clifford Kendall, Chairman and President

B. Brief Company Description

CDSI provides professional and processing services, software products, and turnkey systems to federal, state, and local governments, nonprofit organizations, and commercial clients.

1. Line(s) of Business

a. Non-Information Services

Computer Data Systems Sales, Inc., a wholly owned subsidiary, sells microcomputer hardware and software systems and services (hardware and software integration, installation and maintenance, training, and customized applications systems development).

b. Information Services

CDSI is organized as two major operating divisions:

1).   Processing Services Group—provides financial software products, turnkey systems, and full-service DP support (keypunch and data entry services, microfiche conversion, and mailing, warehousing, and inventory control services) to federal, state, local government, and commercial clients.

Divisions of the Processing Services Group include:

- Financial Systems Division, which develops, markets, and maintains CDSI's proprietary financial software's packages (Financial Accounting & Reporting System, Cash Management System, and Debt Management and Collection System).

- The Financial Accounting and Reporting System supports 16 federal agencies and, by 1988, 30 state employment security agencies.

- The Department of Commerce recently selected this system as the first departmental accounting system for the department.

- Union Systems Division provides turnkey hardware/software systems for trade unions and nonprofit organizations.

- Clearinghouse Division offers full-service support for inventory control; mail room processing; pull, pack, and ship processing;

document archival and storage; Class A secure storage; and storage of magnetic media. Three presidential candidates currently employ CDSI to handle their contributions processing, disbursement accounting, mail handling, and information management.

- Data Systems Division offers all data center services to CDSI's other divisions.

2). Professional Services Group—efforts in the professional services area are concentrated mainly on providing highly technical data processing services to the federal government.

Divisions of the professional services group include:

- Defense Systems Division provides full service, with emphasis in DoD work on risk analysis and security audit services, financial systems, and logistics, primarily to federal agencies through contracts with GSA.

- Systems Integration Division (a new division) performs requirements analysis, integration of hardware/software, installation, and other life-cycle support. Systems include office automation, data base management, and administrative and transaction processing, primarily for DoD clients.

- Information Systems Division (formerly Consulting and Programming) offers capabilities in office automation, data base management systems development, facilities management, and technical support.

- This division holds two commercial contracts for development of order processing inventory control, image processing, and software conversion.

- This division also operates, maintains, and enhances the Department of Education's Payment Management and Central Registry System.

- Government Services Division works primarily on contracts for GSA and the Departments of Labor and Interior. One contract ($11 million), for the Office of Surface Mining and Reclamation Enforcement, involves software enhancements, data collection, production, design, development, and implementation of several systems.

II. MANAGEMENT/PERSONNEL

A. Operations

The company reports that the loss in 1987 was due, in part, to slippage in fixed-price contracts. Controls have been instituted to prevent this situation from happening in the future.

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The marketing groups were recently reorganized to be more aggressive.

Employee counts by function are as follows:

Employees (Approximate)

Professional Services Group	740
Processing Services Group	237
General & Administrative	223
Total	1,200

B. Project Management & Controls

As indicated above, CDSI has had problems with on-time delivery. These problems are currently being addressed, but more time will be required to eliminate old problems.

C. Culture

Though this is largely undetermined by INPUT at the moment, the culture does seem to have some overlap.

D. Skill Sets

CDSI has very complementary technical skills, especially in implementing projects.

E. Level of Personnel

For the most part, CDSI's personnel are competent, but not experts.

F. R&D/Technology

CDSI is an implementor.

G. Executives

Several new managers were put in place in early 1987, and their track record is yet to be established.

III.   REPUTATION

A. Type of Contractor

Primary experience has come from GSA Task Order contracts.

B. Importance of Contracts

Two large and several small contracts were recently won. CDSI's financial-oriented contracts are important, but many contracts are less critical.

INPUT

C. Competitive Bid/Win Ratio

FY 1987 awards were infrequent.

D. Recent Publicity

No negative publicity is known.

IV. MARKET POSITION

A. Market Presence

Approximately 97% of fiscal 1986 revenue was derived from the federal government.

B. Market Penetration

Outside of GSA and the Navy, agency penetration has been on the surface.

1. Recent Clients/Projects are as follows:

a. Navy—($22.8 million potential) for data base administration, data center operations, telecommunications, training, quality assurance, and related life-cycle software support to the NALC, Patuxent River Naval Base

b. Navy—($11 million) NADOC

c. Interior—$11 million

d. Marine Corps—$1.4 million

e. Pension Benefit Guaranty Corp.—$1 million

f. Education—($4.8 million) facilities management (operation, maintenance, and enhancement) of Payment Management and Central Registry System

g. Marine Corps—($3 million) design, develop, and install Standard Accounting, Budgeting and Report System (SABRS), which integrates the accounting, budgeting, and reporting functions into a single automated information system

h. GSA—($2 million) design, procure, integrate, and install a LAN, which will upgrade the office automation system serving the U.S. Navy, Commander in Chief, U.S. Atlantic Command Headquarters (Norfolk, VA)

i. GSA—($10 million potential) IRMS contract to provide EDP studies and technical assistance services to GSA's Western Zone

j. GSA -- Subcontract to DP Associates (Huntsville, AL) for EDP facilities management (data center management, systems programming,

computer operations, production control, and data conversion services) for GSA's Western Zone.

    k. DoT/Federal Railroad Administration -- ($1.9 million) SI project to design, procure, integrate, install, and maintain LANs, workstations, and related office automation.

C. Federal Image

DoD is a long-standing CDSI client, with several Navy customers dating back to the early 1970s. CDSI is well regarded by the DoD. However, CDSI is less well known by other agencies.

D. Agency Presence

Both DoD and civil agency contracts are held.

E. Commercial Potential

Basic professional services skills, financial applications, turnkey systems in OA, and data base management are all leverageable in the commercial markets.

V. PROFESSIONAL SERVICES

A. Project Management Capabilities

As noted above, internal project management skills have been a problem. INPUT believes, therefore, that "salable" skills may be weak.

B. Network/Comm. Expertise

Telecommunications is an area of expertise, as are data base management systems, risk analysis, and security audit services.

C. Engineering

Systems engineering capabilities are available.

D. Ada Programming

INPUT knows of no Ada experience held by CDSI.

E. Facilities Management

FM is offered, and CDSI has held several FM contracts.

VI. APPLICATIONS

A. SDI

There appear to be no awards in this applications area.

INPUT

B. Mission Critical

CDSI deals with critical systems to the extent that it is heavily involved in financial systems.

C. CIM

CDSI has no CIM experience.

VII. LEVERAGEABLE RESOURCES

A. Development Tools

Utility software systems within its Processing Services Group would appear to be applicable to efficient development.

B. PM Software Tools

Software management tools and more-efficient systems are in place for internal use.

C. Products

1. Systems

No packaged systems products are offered.

2. Applications

As indicated above, three key financial packages are offered.

D. Facilities

1. Locations

CDSI has a 130,000-square-foot corporate headquarters building in Rockville, MD.

Regional offices are located in Huntsville (AL), Metuchen (NJ), and Norfolk (VA). These offices, as well as other local offices and two warehouses in Maryland, are leased.

CDSI has a 50% partnership in an office building at Patuxent River Naval Base that supports the Naval Air Logistics Center (NALC) and a partnership in a 20,000-square-foot building in California, MD.

2. Computer Centers

CDSI has two IBM 3083s at its Rockville Data Center.

3. Network

CDSI's network is accessed via Telenet.

4. R&D Lab

No facilities are apparent.

5. Manufacturing/Assembly

No facilities are available.

VIII.   FINANCIAL CHARACTERISTICS

A. Revenue Size

Note: The fiscal year ends on June 30.

	(1st Quarter) 1988	1987	1986	1985
Revenue ($M)	16.2	52.9	54.6	55.1

FY 1987 revenue decreased, due in part to the completion of several large contracts without a corresponding replacement of new contract awards.

While revenue growth has been disappointing, first-quarter 1988 results show a 38% increase over the same period last year.

B. Focused Revenue Stream

	6/87	6/86	6/85
Sales ($M)			
Professional Services	38.9	41.8	41.8
Data Processing	23.5	21.6	21.2
Income ($M)			
Professional Services	2.0	3.1	2.9
Data Processing	0.7	0.5	1.5

Approximately 77% of CDSI's revenue is derived from professional services, 15% from software package licenses, 5% from clearing house operations, and the remaining 3% from other processing services and turnkey systems.

IX.   CONTRACTING DIRECTION

A. Bidding Capability

CDSI has earned frequent awards in the financial management markets, but a recent "dry spell" suggests the need for stronger bidding.

B. Fixed-Price vs. Cost-Plus Contracts

Many contracts are time-and-materials or cost-plus. CDSI does have fixed-price experience. A trend in contract type is unknown.

INPUT

X. Acquisition Propensity

Although CDSI had financial problems in FY 1987, first quarter results for FY 1988 indicate a turnaround. If project management and bidding problems continue to show improvement, this could be a reasonably attractive target, primarily because of its diversity of skills and contracts.

Detailed Selection Screen

Target: **Computer Data Systems, Inc.**

Criteria	Low (1)	Medium (2)	High (3)	Avg./ Weight	Score
Management/Personnel				1.7 x 8	13.6
Operations	_X_ Fair	___ Good	___ Well-Discip.		
Project Mgmt./Ctrls.	_X_ Fair	___ Good	___ Strong		
Culture 1	___ Incompat.	_X_ Overlap	___ Compat.		
Skill Sets	___ Incompat.	_X_ Overlap	___ Complementary		
Level of Personnel	___ "Bodies"	_X_ Competent	___ Experts		
R&D/Technology	___ None	_X_ Implementor	___ Creator		
Executives 2	___ Need Help	___ Stand Alone	___ Delivers		
Reputation				1.8 x 7	12.6
Type of Contractor	___ Sub	_X_ Prime & Sub	___ Integrator		
Importance of Contracts	___ Minor	_X_ Mixed	___ Major		
Competitive Win Ratio	_X_ 1:4	___ 1:3	___ 1:2		
Recent Publicity	___ Negatives	_X_ None	___ Positives		
Market Position				2.0 x 6	12.0
Market Presence	___ Commercial	___ Both	_X_ Federal		
Market Penetration	_X_ Surface	___ Deep	___ Moderate		
Federal Image	___ Fair	_X_ Good	___ Excellent		
Agency Presence	___ Civil	_X_ Both	___ Defense		
Commercial Potential	___ Weak	_X_ Average	___ Strong		
Professional Services				1.8 x 5	9.0
Project Management	_X_ Weak	___ Fair	___ Very Good		
Network/Comm. Expertise 3	___ Weak	_X_ Fair	___ Very Good		
Engineering	___ Weak	_X_ Fair	___ Very Good		
Ada Programming	_X_ Weak	___ Fair	___ Very Good		
Facilities Management	___ Weak	___ Fair	_X_ Very Good		

INPUT

Application Targets				1.7	x 4	6.8
SDI	_X_ None	___ Heavy	___ Some			
"Mission Critical"	___ None	___ Heavy	_X_ Some			
CIM	_X_ None	___ Heavy	___ Some			

Leverageable Resources				2.0	x 3	6.0
Development Tools	___ None	_X_ Some	___ Integrated			
PM Software Tools	___ Fair	_X_ Good	___ Good/On-time			
Products						
Systems	_X_ Non-SI	___ SI-Related	___ SI Platform			
Applications	___ None	___ "Me Too"	_X_ Unique			
Facilities						
Locations	___ Remote	___ Near Buyer	_X_ Local & Remote			
Computer Center(s)	___ None	___ Fair	_X_ Strong			
Network	___ None	_X_ Fair	___ Strong			
R&D Lab	_X_ None	___ Heavy	___ Present			
Mfg./Assembly	_X_ None	___ Heavy	___ Present			

Financial Characteristics				2.3	x 2	4.6
Revenue Size	___ < $20 M	___ $20-$40 M	_X_ > $40 M			
Focused Revenue Stream	___ Many	_X_ Some	___ Few			
General Health 4	___ Poor	_X_ Fair	___ Good			

Contracting Direction				2.0	x 1	2.0
Bidding Capability	___ Weak	_X_ Fair	___ Very Good			
FP vs. CP Contracts						
Backlog	___ > 50%	___ App. 33%	___ < 25%			
Trend	___ <25%	___ App. 33%	___ > 50%			

Acquisition Propensity	___ Negative	_X_ Okay	___ Ripe	2.0	x 1	2.0

Total Weighted Score: 68.6

Notes:

1. Culture includes commitment to quality, solid client service, and a career orientation of the staff (low turnover, recruits directly from college, and one-firm employees).

2. If the acquisition is large, company will continue to operate as is. If small, the company will be quickly integrated with AA & Co.

3. Network/communications expertise includes:
   Data Interchange Skills   None
   Connectivity Experience   None
   Network Design/Management

4. General financial health considers the following:
   Growth   < Ind.
   Margins   < Ind.
   Liquidity (Current Ratio)   < 1.5:1
   Backlog : Current Rev.   < 1:1
   Wrap Rate (Cost : Markup)   1.0 - 1.5

INPUT

I.   COMPANY IDENTIFICATION

SYSTEMS & COMPUTER TECHNOLOGY CORPORATION
4 County View Road
Malvern, PA 19355

A. Key Contacts

B. Brief Company Description

    1. Line(s) of Business

       a. Non-Information Services

       All of the company's business endeavors are in the information services area.

       b. Information Services include the following capabilities:

- On-site management and staffing of an organization's resources (facilities management)

- The sale of packaged application software for education and government

- The development and sale of custom application software

- Telecommunications services

- Microcomputer-based turnkey products

- Software and turnkey systems for law enforcement organizations

- Systems management and office automation services for associations

- Information services for the federal government

II.   MANAGEMENT/PERSONNEL

A. Operations

SCT is divided into three divisions, as follows:

- Information Resource Management Division (IRM). IRM provides the corporation's facilities management services.

- Systems Integration Division

     - Software Products Group
     - Packaged Application Software for education and government.
     - Custom Services
     - Custom Application Software and Project Management

INPUT

- Information Services Group
- Includes telecommunications services and micro-based products

- Corporate Development Division

    - Law Systems Group Turnkey Systems and Application
    - Software for law enforcement agencies
    - Federal Group Information Services and Software for the federal government
    - Associations Group
    - Systems Management and Office Automation Services for associations
    - Acquisition and Merger activities

B. Project Management & Controls

   Not applicable

C. Culture

   The SCT corporate culture is analogous to the typical information service company providing computer services to commercial clients. A number of SCT's key management personnel have GEISCO as their common management background experience. It would seem apparent that GEISCO's corporate culture and SCT's corporate culture are similar.

D. Skill Sets

   - Data Center Operations
   - Packaged Software Development
   - Custom Software Development
   - Systems Integration

E. Level of Personnel

F. R&D/Technology

   SCT's technology is adequate in its chosen market areas of education and law enforcement and probably average in the other market areas. Its technology is not as extensive or esoteric as that of other firms oriented toward the Department of Defense as their market niche.

G. Executives

   - The six key executives range in age from age 42 to age 52.
   - The majority of these executives have had considerable computer service experience.
   - The majority of executive experience prior to SCT was with GEISCO and Cullinet Software.

III. REPUTATION

   A. Type of Contractor

   SCT does not appear to engage in any joint ventures or partnering operations.

   SCT appears to act as prime contractor in all of its business endeavors.

   B. Importance of Contracts

   1. Applications

   Contracts are important in the sale and delivery of:

   - Packaged software
   - Custom software
   - Integrated systems
   - Facilities management agreements

   Of the above contractual aspects, those pertaining to facilities management agreements are the most long lasting and normally the most complex.

   C. Competitive Bid Win Ratio

   D. Recent Publicity

   - SCT seems to have labored for three to four years in the shadow of a class action share holders suit brought against the corporation and previous members of SCT management.

   - This suit was recently settled. However, the company took a $15.5 million hit on earnings in fiscal 1986 as a function of settling this lawsuit.

IV. MARKET POSITION

   A. Market Presence

   - Universities
   - State and local governments
   - Associations

   1. Marketing/Sales

   The company recently (August, 1986) hired a Vice President of Sales and Marketing.

   - This person formerly held sales and marketing positions with MSA and Cullinet Software.
   - This seems to be a move to strengthen the sales and marketing activities of SCT. However, this person has also been given blind management responsibility in addition to sales and marketing responsibilities.

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B. Market Penetration

Given the revenue and types of markets selected by SCT, market penetration has been slight.

C. Federal Image

1. Defense

Not applicable

2. Civil

Unknown, but cannot be a strong image because of the nature of SCT's revenues

D. Agency Presence

Not applicable except at the state and local government levels

E. Commercial Potential

A facilities management capability is applicable in the commercial information systems marketplace just as it is applicable in state and local government or federal government marketplaces. However, at this point in time, commercial organizations do not buy facilities management services as readily as do government agencies.

A custom software development capability is also applicable in a generalized way, as is a systems integration capability. However, the technical staffs in both of these areas must have some knowledge of client requirements. For this reason it would appear that, for the present, SCT's capabilities in these areas are somewhat limited in the general commercial marketplace.

The company's future direction seems more oriented toward penetrating the federal government marketplace than expanding in the commercial marketplace.

V.   PROFESSIONAL SERVICES

A. Project Management Capabilities

It must be assumed that SCT is able to control its internal system development activities through some use of project management capabilities.

In the fiscal year 1986 annual report there is mention of significant cost overruns in relation to completing existing software contracts. This leads to a question concerning SCT's capability to properly control system development projects.

B. Network/Comm. Expertise

Limited

C. Engineering

   Not applicable

D. Ada Programming

   Not applicable

E. Facilities Management

   Significant in the educational and state and local government market segments.

VI.   APPLICATIONS

   A. SDI

      Not applicable

   B. Mission Critical

      Not applicable

   C. CIM

      Not applicable

VII.   LEVERAGEABLE RESOURCES

   A. Development Tools

      Applicable in the context of being able to redirect staffs of software developing
      personnel in a variety of directions, as long as client requirements are
      understood

   B. PM Software Tools

      Not applicable

   C. Products

      1. Systems

         Not applicable

      2. Applications

         - Education and government
         - Integrated financial information systems
         - Integrated student information system
         - Human resource information system
         - Alumni and donor development system
         - Law enforcement agencies
         - Computer-aided dispatching
         - Police and fire management information systems

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- Criminal and civil court information systems
- Associations market, no applications specified

D. Facilities

- The company is headquartered in Malvern, Pennsylvania

- Other corporate locations include:
  - Irvine, California
  - Hato Rey, Puerto Rico

Except for a development center in Malvern, Pennsylvania, there are no other computer centers.

1. Network

Not applicable

2. R&D Lab

Malvern, Pennsylvania

3. Manufacturing/Assembly

Not applicable

VIII. FINANCIAL CHARACTERISTICS

Fiscal year ends September 30.

A. Revenue Size

- Fiscal year 1986 -- $41.5 million
- Fiscal year 1985 -- $47.4 million
- Fiscal year 1984 -- $46.4 million

B. Focused Revenue Stream

Approximately 90% of SCT's revenues were derived from IRM contracts (facilities management contracts).

C. General Health

The corporation's revenue growth from fiscal year 1983 through fiscal year 1986 has been erratic, and 1986 revenues are lower than 1983 revenues.

Pretax margins have been equally erratic, varying from a high of $13.7 million in fiscal year 1983 to a loss of $23.4 million in fiscal year 1986.

- In fiscal year 1986:
  - current assets—$39.9 million
  - current liabilities—$7.2 million

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IX. CONTRACTING DIRECTION

A. Bidding Capability

B. Fixed-Price vs. Cost-Plus Contracts

Not applicable

X. ACQUISITION PROPENSITY

The company's only significant capability is in the facilities management area, and these capabilities are primarily directed to county and local governments.

The company has achieved varying degrees of success, and in recent years the class action lawsuit has appeared to be disruptive in all phases of the company's operations. Those management personnel that were directly involved in the class action lawsuit have now left the company, and new management is apparently attempting to overcome this disruptive influence.

The company's degree of success, in general, is probably lower than average as compared to other firms of the same type.

A. Acquisition Propensity

Given the current depressed state of SCT's first share market price, it would be logical to assume that SCT is a valid acquisition candidate.

Detailed Selection Screen

Target: **Systems & Computer Technology Corporation**

Criteria	Low (1)	Evaluation Factors Medium (2)	High (3)	Avg./ Weight	Score
Management/Personnel				1.5 x 8	12.0
Operations	_X_ Fair	___ Good	___ Well-Discip.		
Project Mgmt./Ctrls.	_X_ Fair	___ Good	___ Strong		
Culture 1	_X_ Incompat.	___ Overlap	___ Compat.		
Skill Sets	___ Incompat.	___ Overlap	___ Complementary		
Level of Personnel	___ "Bodies"	_X_ Competent	___ Experts		
R&D/Technology	___ None	_X_ Implementor	___ Creator		
Executives 2	___ Need Help	_X_ Stand Alone	___ Delivers		
Reputation				2.3 x 7	16.1
Type of Contractor	___ Sub	___ Prime & Sub	_X_ Integrator		
Importance of Contracts	___ Minor	___ Mixed	_X_ Major		
Competitive Win Ratio	___ 1:4	___ 1:3	___ 1:2		
Recent Publicity	_X_ Negatives	___ None	___ Positives		
Market Position				1.6 x 6	9.6
Market Presence	_X_ Commercial	___ Both	___ Federal		
Market Penetration	___ Surface	___ Deep	_X_ Moderate		
Federal Image	_X_ Fair	___ Good	___ Excellent		
Agency Presence	_X_ Civil	___ Both	___ Defense		
Commercial Potential	___ Weak	_X_ Average	___ Strong		
Professional Services				1.6 x 5	8.0
Project Management	___ Weak	_X_ Fair	___ Very Good		
Network/Comm. Expertise 3	_X_ Weak	___ Fair	___ Very Good		
Engineering	_X_ Weak	___ Fair	___ Very Good		
Ada Programming	_X_ Weak	___ Fair	___ Very Good		
Facilities Management	___ Weak	___ Fair	_X_ Very Good		

INPUT

Application Targets				1.3	x 4	5.2
SDI	_X_ None	___ Heavy	___ Some			
"Mission Critical"	___ None	_X_ Heavy	___ Some			
CIM	_X_ None	___ Heavy	___ Some			

Leverageable Resources				1.6	x 3	4.8
Development Tools	___ None	_X_ Some	___ Integrated			
PM Software Tools	_X_ Fair	___ Good	___ Good/On-time			
Products						
Systems	_X_ Non-SI	___ SI-Related	___ SI Platform			
Applications	___ None	_X_ "Me Too"	___ Unique			
Facilities						
Locations	_X_ Remote	___ Near Buyer	___ Local & Remote			
Computer Center(s)	___ None	_X_ Fair	___ Strong			
Network	_X_ None	___ Fair	___ Strong			
R&D Lab	___ None	___ Heavy	_X_ Present			
Mfg./Assembly	_X_ None	___ Heavy	___ Present			

Financial Characteristics				2.6	x 2	5.2
Revenue Size	___ < $20 M	___ $20-$40 M	_X_ > $40 M			
Focused Revenue Stream	___ Many	___ Some	_X_ Few			
General Health 4	___ Poor	_X_ Fair	___ Good			

Contracting Direction					x 1	
Bidding Capability	___ Weak	___ Fair	___ Very Good			
FP vs. CP Contracts						
Backlog	___ > 50%	___ App. 33%	___ < 25%			
Trend	___ <25%	___ App. 33%	___ > 50%			

Acquisition Propensity	___ Negative	___ Okay	_X_ Ripe	3.0	x 1	3.0

Total Weighted Score: 63.9

Notes:

1. Culture includes commitment to quality, solid client service, and a career orientation of the staff (low turnover, recruits directly from college, and one-firm employees).

2. If the acquisition is large, company will continue to operate as is. If small, the company will be quickly integrated with AA & Co.

3. Network/communications expertise includes:
   Data Interchange Skills   None
   Connectivity Experience   None
   Network Design/Management

4. General financial health considers the following:
   Growth   < Ind.
   Margins   < Ind.
   Liquidity (Current Ratio)   < 1.5:1
   Backlog : Current Rev.   < 1:1
   Wrap Rate (Cost : Markup)   1.0 - 1.5

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