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CASE STUDY: APPLIED DIGITAL SOLUTIONS

I3 SERVICES PLATFORM

A Thesis

Presented to the

Faculty of

California State University,

San Bernardino

In Partial Fulfillment

of the Requirements for the Degree

Master of Business Administration

by

Rieko Kanai

June 2001

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June 2001

Approved by:


Dr. Frank Lin, Chair, Information
And Decision Science

6/7/01
Date


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Dr. Walter Stewart

ABSTRACT

This project introduces the i3 Services Platform of Applied Digital Solutions and examines whether it is suitable to have this new strategy. i3 Services Strategy is an integrated corporate strategy to reengineer the organizational structure in all branches and subsidiaries and to provide a single solution to its customers. Therefore, I will first examine the external force, the general and operating environments, and the internal corporate performance; I will define the major problem of ADS; and I will justify i3 Services Strategy as a necessary course of action for ADS based on the external and internal analyses.

ACKNOWLEDGMENTS

I would like to thank Dr. Lin, Dr. Rohm, and Dr. Stewart for all your efforts as my committee members. Especially, I would like to thank Dr. Lin for guiding me to complete this thesis. Also, I would like to express my gratitude to Mr. Amro Albanna, the president of Applied Digital Solutions e-Business Practice.

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CHAPTER ONE

INTRODUCTION

Applied Digital Solutions (ADS) created a new strategy called the i3 Services Platform, which provides single source e-business solutions to companies striving to improve efficiency and productivity and to reduce costs. ADS integrates and implements solutions through its four technology groups: Network, Telephony, Internet, and Applications. The following is i3 (Intelligent Integrated Information) Services Platform.

Table 1. i3 Services Platform

Digital Angel	DA Delivery System	Digitalangel.net
ADVANCED WIRELESS GROUP		
Retail Systems	CRM Systems	Enterprise Systems
APPLICATION GROUP		
Data Centers		
SERVICES GROUP		
i3		
Services Platform		

(Source: Applied Digital Solutions, 2000)

ADS had to create a new strategy due to the loss of profit after numerous acquisitions during Year 2000. Therefore, the purpose of my project is to analyze whether i3 Strategy of ADS was necessary to meet the fast-moving IT industry. I will analyze ADS with the external components that consist of general and operating environments and the internal components. Based on these analyses, I will define its major problem and also evaluate the i3 services Platform as the optimal solution.

To research and collect data on ADS, I interviewed the employees in ADS where I am serving an internship and gathered the second sources from the Internet and the library.

Company Overview

Applied Digital Solutions, Inc. (NASDAQ; ADSX) is an information technology and solutions company offering Intelligent Integrated Information Services. Its products and services allow the collection, organization, analysis, warehousing, and dissemination of information for a wide variety of end users including commercial operations, governments, and consumers.

ADS is a solution provider across industries and technologies, including products from Oracle, Microsoft, Novell, Compaq and Sun to enable its clients to overcome the challenges they face. In a competitive business world, an organization must be intelligently connected to its customers, partners, and suppliers in order to survive in the emerging e-business market.

The company was founded in 1993 and has more than 2,500 employees all over the country. It is now expanding the business to Europe and Asia, such as China.

ADS had acquired a large number of valuable assets throughout the years, and it is time to integrate all the branches and subsidiaries to gain competitive advantages.

CHAPTER TWO

ENVIRONMENTAL ANALYSIS

I analyze the environmental factors as three categories:

General Environment

Operating Environment

Internal Analysis

With this analysis, I can find the external and internal strength and weakness of ADS.

General Environment

General Environment consists of three components:

Economic component

Technological component

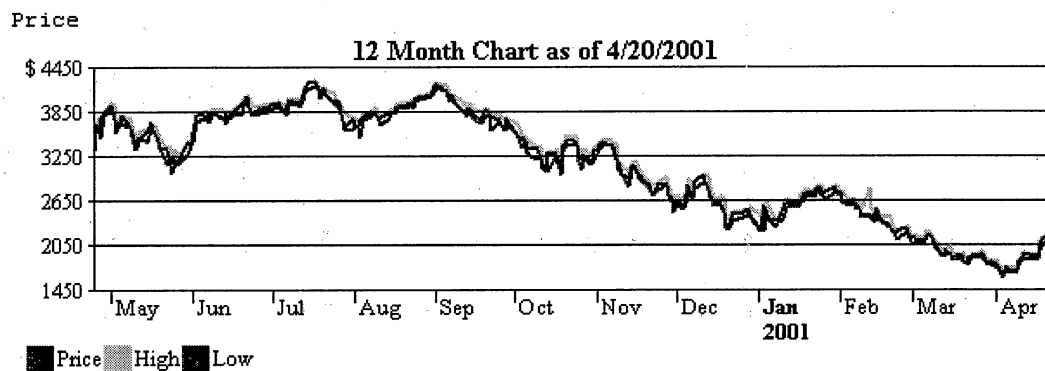
Legal component

Economic Component

I indicated consumer price index, unemployment rate, and Federal Funds Rate in Appendix A to find out the stability of the economy in the Year 2000. There are no big changes in the Consumer Price Index and the Unemployment Rate. However, the Federal Funds Rate has been gradually declining since July 2000. This is to

avoid the foreseeable decline of the economy for the pessimistic market participants after the bullish market in NASDAQ until the second quarter in 2000 as we can see on the NASDAQ chart below. The chart shows a sharp decline in September, falling till April 2001. Therefore, Federal Reserves needed to lower the interest rate to minimize the slower economy.

Figure 1. NASDAQ



(Source: NASDAQ, 2001)

I summarized the reports from Federal Reserve Districts as follows:

Reports for June 2000 from the Federal Reserve Districts indicated that solid economic growth continued in April and May 2000, but that signs of some slowing from the rapid pace earlier in the year were also present.

Indications of worsening price inflation, while not widespread, were present.

Also, the Federal Reserve Districts described in the reports from September through showed December 2000 that economic activity expanded at a moderate pace in August, September, October, November and December 2000, even though further signs of slowing growth were noted in several Districts (Federal Reserve, 2001).

The predictable recession can cause businesses to tighten their spending especially on:

- Plant and equipment investment
- Employment

Therefore, Federal Reserves decrease the interest rate to encourage businesses to borrow money to facilitate the circulation of the money in the money market.

◆ My observation

Currently, ADS does not require new facilities or professional human resources due to its series of acquisitions in Year 2000.

On the other hand, the customers may outsource the customized software from ADS to meet their immediate needs so that they can save the costs for hiring IT

professionals and for purchasing IT equipments such as the hardware and peripherals.

Technology Component

The rapid growth of the Internet and the parallel emergence of e-commerce are having a profound effect on the industry by changing how software is developed, marketed, and distributed. Changes in the quality and sophistication of electronic communications, such as high speed connections and multi-site databases, have led firms increasingly to globalize software development, with programmers in different locations collaborating and sharing code electronically.

The United States software industry is the world-leading supplier of packaged software. The U.S. software industry continues to be the fastest-growing sector of the U.S. economy. The world software market is currently estimated to be around \$150 billion. The U.S. software industry's competitiveness depends on several critical policy and technical issues, the most important being the level of protection of intellectual property rights worldwide. The industry will also face challenges stemming from the emergence of multimedia technologies,

the growing importance of services and electronic commerce, lingering export restrictions, and more suppliers around the world. Additionally, software piracy has recently emerged as a major issue for the software industry.

In the U.S., according to the trade association Business Software Alliance (BSA), sales of software products and service rose 18 percent to reach \$140.9 billion in 1998. The industry has grown three times as fast as U.S. gross domestic products, created jobs at five times the rate of the private sector, and paid wages twice the national average over the last 5 years. Because of its dominant position world wide, the industry accounts for an important share of U.S. exports. BSA estimates that "package software had a surplus of \$20 billion in the year 2000" (Market Guide 2001).

Software products increasingly are marketed and sold on line, and those sales are expected to approach \$900 million in 2001. The Internet has introduced a unique distribution channel that is able to provide consumers with on-line sales and downloads as well as much broader product selection than they can find at retail stores. The Internet provides publishers and channel partners with

fast ways to introduce their software products and services to global markets compared with previous methods.

New technologies and new ideas are being introduced at an impressive pace -- led largely by innovative and highly competitive American companies. These companies are competing to deliver complete solutions to businesses and individuals to enable them to obtain the benefits of digital communications and information. "These solutions will increasingly depend upon various combinations of networks, devices and software that cross-traditional product categories and may render many of today's products obsolete" (Market Guide, 2001).

Legal Component

In the legal component, the Internet Sales Tax in the regulatory environment called the Internet Tax Freedom Act [S. 442] would influence on any organizations with Internet because ADS has the Internet business. According to Greenstein and Feinman (2001), "this Act establishes a three-year moratorium on new state and local Internet taxes on:

- the Internet or interactive computer services; and
- the use of the Internet or interactive computer services."

The Act was passed into law in October 1998 and presently is in interim measuring to address fair and consistent tax measures.

Also, in the wake of the 1996 Telecommunications Reform Act, the telecom market is exploding. Competition is heating up and forcing carriers to offer new services (PCS, landline, cellular, Internet, etc.) through new channels in new markets - and offer them in a way that is seamless, fast and easy for customers to obtain.

Operating Environment

Operating environment consists of:

Customer component

Competition component

Labor component

Supplier component

International component

Customer Component

ADS has many clients in various kinds of industries such as food, apparel, banking, securities, hotel, natural sources and government due to the wide range of its products and services. I will describe the customers' IT objectives and ADS' solutions of these objectives.

The availability of the information on ADS' customers are limited, therefore, based on ADS' web pages, I summarized the information only on Reiter Affiliated Companies, Taylor Fresh Foods, and City of Salinas, three of ADS' customers, as examples.

➤ City of Salinas

The City of Salinas is located in the Salinas Valley and home to over 132,000 people. "The City of Salinas is a full service city and employees 620 people spread through nine departments. The departments are Administration, Police, Fire, Recreation-Parks, Legal, Library, Public Works, and Community Development and are all connected by a Wide Area Network" ("The City of Salinas", 1999).

The IT objectives of The City of Salinas:

- To maintain its network of computers, servers and associated devices.
- To fill a support staff to maintain over three hundred workstations, twelve servers and a hundred and twenty printers.
- To fill an end-user phone support for all employees as a helpdesk.

- To connect its network to all locations.
- To upgrade its IT structure to provide a new system for reliable electronic mail service.
- To meet the city standard software applications to access across the network.
- To install fifty-eight new workstations and to upgrade three mission-critical servers.

The solutions of Applied Digital Solutions:

Remote Management Services

Help Desk Services

On-Site Technical Support

Full Service Maintenance Contract

Product Acquisition Services

➤ Taylor Fresh Foods, Inc

With headquarters in the Salinas Valley, Taylor Fresh Foods, Inc. expects growth in its business from increased food service demand for fresh vegetables and from new customers and new business extensions of its value-added, pre-cut vegetables. "Taylor Fresh Foods, Inc. with 1999 revenues in excess of \$125 million, conducts business at five locations including two offices in Salinas, CA, Yuma,

AZ, Dallas, TX, Smyrna, TN and Orlando, FL ("Taylor Fresh Foods, Inc.", 2000).

The IT objectives of Taylor Fresh Foods, Inc.:

- To upgrade its IT structure to provide a new system for reliable electronic mail service that connects all its locations.
- To upgrade the servers in California that ran its accounting system.
- To support for all of its software and hardware.
- To avoid hiring an internal support staff to maintain its network of over 50 workstations.
- To develop a network that is easy to maintain, remotely managed and required no additional infrastructure acquisitions.
- To develop a WAN structure that would meet its current needs and that anticipated its future requirements.

The solutions of ADS:

Remote Management Services

Help Desk Services

Hosted Services

Product Acquisition Services

System Design and Consulting Services

Applied Digital Solutions used the Internet and Virtual Private Networking (VPN) technology to leverage the public Internet as a transportation medium to tie in remote offices. In order to link offices in Yuma, Dallas, Smyrna, and Orlando, a frame relay network was installed to deploy an Intranet so the main office in Salinas can easily interact with remote subsidiary locations. Through another VPN circuit, ADS manages Taylor Farms email server from their Remote Operations Center (ROC). Allowing Applied Digital Solutions to manage the company's email server from their ROC saves them time and maintenance costs. In addition, in all four subsidiary companies, the entire accounting platform was upgraded to support additional users, new technology and Year 2000 issues. All terminals were replaced with Pentium II or better PCs, and the cabling infrastructure was upgraded to CAT 5 standard, with fiber optic runs employed to bridge extended distances.

➤ Reiter Affiliated Companies

Headquartered in Watsonville, California, Reiter Affiliated Companies was established in 1965 and is a

producer of fresh market strawberries and raspberries marketed by Driscoll Strawberry Associates. Reiter Affiliated Companies consists of many affiliated operating companies. Reiter Affiliated Companies has facilities located in four areas, including Dover, Florida, Jalisco, Mexico, Oxnard, California and Watsonville, California.

"The growing operations' consist of nearly 1,500 crop acres of prime agricultural land and employs over 4,000 people" ("Reiter Affiliated Companies", 2000).

The IT objectives of Reiter Affiliated Companies:

- To replace its outdated UNIX terminals and PCs with a new system that would give its employees the tools they need to work more effectively.
- To update Reiter Affiliated Companies' UNIX accounting system and the remote users connectivity path.
- To develop a Wide Area Network (WAN) to improve this grower's enterprise wide communications and to share information electronically.
- To accommodate cost-efficient hardware and software and the low maintenance cost.

The solutions of ADS:

Staff Augmentation

Product Acquisition Services

Integration Services

Retainer Services

In the beginning of Applied Digital Solutions' involvement, WAN connectivity had not yet been established. Each of Reiter Affiliated Companies' four remote locations had a simple peer-to-peer network. ADS systems engineers worked with the customer to determine the optimum WAN solution by installing dedicated data circuits and a wireless data communications solution for the local Sweet Briar office. To decrease long-distance phone charges to its remote locations, ADS implemented a voice-over-IP system. This was to anticipate and address both current and future growth needs.

ADS began the technology upgrade by replacing the customer's outdated UNIX accounting server hardware and the remote users connectivity path. The system was configured to allow remote users access to the accounting system via dial-up modems. Implementing the data circuits eliminated the long-distance charges and increased speed and performance over the WAN. ADS installed a wireless

point-to-point bridge at the nearby Sweet Briar facility. This provided a secure, high-speed, wireless connection between the company's Watsonville headquarters and its Sweet Briar remote office located two miles away. Given the distance of the remote offices, implementing the voice-over-IP gateway provides real-time, toll-quality voice and fax communication over the existing IP data network. Calls automatically route through data lines eliminating long-distance charges.

ADS upgraded the entire network from a 10 MB to a 10/100 MB environment, and the use of 3Com's Core Builder 3300 switches and routers resulted in increased network performance. Microsoft Windows NT served as the core network operating system, and ADS provided employees direct access to the Internet and e-mail capabilities through Windows NT Exchange. A Novell firewall for NT was also installed to effectively implement network and Internet security and to control e-mail communications. In the first year of integration, two Applied Digital Solutions systems engineers were responsible for the on-site maintenance of over sixty PC's, seven servers, and ten printers. High-speed impact line printers were

purchased specifically to save time and produce better quality accounting reports.

Also, ADS facilitated the upgrade of the company's entire phone system at the headquarters in Watsonville, Florida, and Mexico as well as completed the installation of new Lucent Partner phone systems at the Sweet Briar and Oxnard facilities.

ADS' other customers:

Corporate Clients--Cleveland Indians (A baseball team), Liz Claiborne (Apparel), Coach Leatherware, Lockheed Martin (Technology systems), Bank of America, San Bernardino County, U.S. West, Hilton Hotels, Florida Power & Light, Budget Rent A Car, MetLife (Insurance and financial services), and Polo Ralph Lauren (Apparel.)

Government Clients--Social Security Administration, U.S. Army, U.S. Air Force, U.S. Navy, Marines, Department of Justice, Internal Revenue Services, General Services Administration, Department of Commerce, U. S. Postal Service, Patent & Trademark Office, City of Seaside, and San Bernardino School District.

◆ My observation

To meet customers' immediate needs is very important to stay in the competitive environment such as the information technology industry. Therefore, it is a strong advantage for ADS to promptly provide the customized solutions to its customers.

Competition Component

ADS has four distinct functions:

- a. Telecommunication
- b. Network
- c. Internet
- d. Applications

To thoroughly analyze the competition in the IT industry, I will describe each of ADS' services and products, identify each two competitors competing with ADS in each sector, and compare these services and products. I chose these competitors from ItWorld.com, based on the company size and the wide range of products and services similar to the ones of ADS.

a. ADS Telecommunication provides:

- 1. Call Accounting
- 2. Telephone Systems

3. Computer Telephony Integration
 4. Call Center Solutions
 5. Wireless Telecommunications
 6. Voice Over Internet Protocol (VOIP)
1. Call Accounting by ADS

Also called Call Detail Recording (CDR) and Station Message Detail Recording (SMDR), Call Accounting is designed to provide caller and called party reports for the purpose of allocating telecom resources back to the user department - i.e., for internal chargeback. It is also a tool to optimize the assignment of transport services, identify peak traffic periods, and prevent both internal and external telephone abuse of costly facilities and equipment.

■ Competitors:

- NetCountant by NetScout Systems, Inc.

NetCountant preferred usage based billing solution reports network usage in dollars and cents. NetCountant not only helps allocate network costs as any other business expense, such as phones and electricity, it also exposes the cost of non-business use of network resources and creates accountability among network users.

NetScout Systems, Inc. (NASDAQ:NTCT) is the leading provider of business-oriented network management solutions. NetScout enables large enterprises to depend on their network to deliver business-critical applications in areas such as e-commerce, enterprise resource planning and supply chain management. Underlying NetScout's monitoring solutions are the most advanced data sources available today, NetScout Probes and Agents. With models designed for all common protocols and technologies, the newest members of NetScout's instrumentation family are the Gigabit Ethernet Probe and DS3 ATM Probe--both firsts in the industry.

➤ eTelecom by Crystal Decisions

The eTelecom solution is designed to deliver a comprehensive system that allows organizations to realize the value of their telecommunication information by consolidating data from a variety of communication channels, and significantly reduce the cost of maintaining and supporting even the largest and most diverse electronic infrastructures. It transforms large amounts of meaningless data into valuable business information that can be used to perform extensive, flexible ad hoc

reporting and analysis, the results of which help to significantly reduce the costs of corporate communication infrastructures.

The key benefits of the eTelecom analytic application include:

- identification and quantification of usage of PBX, email, and remote network access
- consolidation of data sources for consistent, flexible review and analysis
- breakdown of call costs by category (national, international, voice calls and data calls by employee, cost center and business unit by timeperiod)
- valuable reports, such as Top N, 80/20 analysis, exception reports, alerts, fastest growth, unusual values, and spikes
- allocation of telecom costs by cost center for increased control, and better budgeting and forecasting
- detection of unusual usage ('unreasonable' line items in the bill such as high-cost calls, calls at strange times of the day, or long-duration calls)
- accurate construction of capacity plans using

- accurate construction of capacity plans using historical data and forecasts.

Crystal Decisions is an information infrastructure company that leads the market in reporting, analysis and information delivery technologies and services. Crystal Decisions provides a standardized, web-based information infrastructure to help customers access their disparate data sources such as Enterprise Resource Planning (ERP) systems and Customer Relationship Management (CRM) systems, and distribute secure interactive reports and analysis to their end users, customers and partners.

Crystal Decisions is an international software corporation headquartered in Palo Alto, California. Established in 1985 as Crystal Services Inc., which was purchased in 1994 by Seagate Technology, the largest independent disc drive and related components company in the world. In November 2000, Crystal Decisions attained new ownership through the privatization of its former parent company, Seagate Technology. An investment group that includes Silver Lake Partners and executive management from Seagate Technology now owns Crystal Decisions. Together, Silver Lake and Seagate Technology offer an ideal combination of market expertise, long-term

strategic vision and financial stability. Crystal Decision is a privately held corporation with annual revenues of US\$145 million in CY2000 (Calendar Year 2000), and approximately 1,300 employees in more than 20 offices worldwide.

◆ My observation

While Call Accounting by ADS and NetCountant by NetScout Systems, Inc. create mainly reports for the telephone usage, eTelecom by Crystal Decisions is more attractive for the functions of constructing capacity plans and using historical data and forecasts.

1. Telephone Systems by ADS

Applied Digital Solutions has been in the business of designing, installing, and maintaining telecommunications systems since 1983.

2. Computer Telephony Integration by ADS

The goal of Computer Telephony Integration (CTI) is to provide a smooth seamless link between computer systems and telephones. The objective is to enable the two types of technologies to interact with one another and to control each other. This linkage can lead to competitive advantage, increased efficiency, and reduced costs because

CTI typically improves interactions with suppliers and customers, management information, business processes, and customer service.

3. Call Center Solutions by ADS

At Applied Digital Solutions, ACD and ACD reporting offers opportunities to improve customer service, help desk, and sales functions for businesses of all sizes.

■ Competitors (Highly competitive market):

➤ Oracle Call Center by Oracle

Oracle Call Center and Telephony Suite supports the operation of inbound, outbound, and blended call centers. Oracle's Call Center is a single-source solution that is fully integrated with the business applications in CRM as well as the appropriate ERP applications, to provide an enterprise-wide view of the information needed to support customer business needs. Oracle combines call center technology with applications to provide total, flexible call center solutions.

Products:

TeleSales, Telephony Manager, Customer Care, OpenTel, Call Center Intelligence, Campaign Plus, Predictive, Fulfillment, IVR Integrator, Insight, Call Blending,

TeleBusiness for Financial Services, and TeleBusiness for Telco/Utilities.

Oracle Corp. (NASDAQ: ORCL) is the world's leading supplier of software for information management, and the world's second largest independent software company. With annual revenues of more than \$9.7 billion, the company offers its database, tools and application products, along with related consulting, education, and support services, in more than 145 countries around the world.

Headquartered in Redwood Shores, California, Oracle is the first software company to develop and deploy 100 percent internet-enabled enterprise software across its entire product line: database, server, enterprise business applications, and application development and decision support tools.

➤ Verizon Call Center Services by Verizon

Verizon Call Center Services (NASDAQ: VZ) is a leading provider of multimedia call center/contact center integration services, from single sites with 100 agents to multi-site operations with thousands of agents networked into a single 'virtual' contact center. Through professional design and integration services, systems,

software, middleware, and post-implementation support, Verizon makes the integration of disparate call center systems cost-effective and timely. The solutions offered by Verizon Call Center Services help customer call centers achieve higher service levels, reduced costs and increased revenues through innovative solutions. In the call center, its focus is the application space between the ACD and

- the desktop. Through the use of open technologies, these solutions are independent of the selected ACD and desktop vendors, and work seamlessly with other call center enabling technologies such as interactive voice response (IVR) and workforce management (WFM).

◆ My observation

Call center is a very competitive market, and ADS, Oracle, and Verizon offer the similar services as single solution providers. Hence, these companies have to differentiate their call centers somehow. For example, according to Hochmuth in his article, a company called Genesys added voIP to its call center. "The VoIP Option software for Gensys' G6 suite essentially let users run a call center over a converged voice/data network.

The VoIP Option could also allow businesses to better integrate call centers in different parts of the country by connecting the centers over the Internet. The ability to set up IP-based call centers is important to users with e-commerce sites, as many carry out Web-based chat sessions with customers or prepare responses to incoming e-mail about the products or services their corporation markets (Hochmuth, 2001).

Hochmuth also mentioned "by 2003, call center systems will make up almost 30% of the worldwide voice-over-IP revenue, projected to be \$1.4 billion, according to market research firm IDC. Enterprise phone systems will account for 65% of the revenue, while hardware and software bought by voice service providers will account for the rest" (2000).

The call center is the first point the customers reach to the company as a window and will be required for the faster and more effective customer handling.

4. Wireless Telecommunications by ADS

"Applied Digital Solutions knows that the demands of business today have turned workplaces inside out. Employees and associates often are co-located or require mobility when they are at the office. An engineer

reviewing a process on the production floor, a principal monitoring hallway activity, or a clerk checking inventory needs access to a telephone connected to the business, without the associated access and usage charges incurred by a cellular phone or pager used on the public network" (ADSX.com., 2001).

■ Competitors (Highly competitive market):

➤ VoiceStream Wireless Corporation (NASDAQ: VSTR)

VoiceStream Wireless Corp. is a provider of personal communications services in the western U. S. and has 1,811,600 PCS subscribers as of 3/31/00. "For the fiscal year ended 12/31/00, revenues totaled \$1.92B, up from \$475.5M. Net loss applicable to Common totaled \$2.09B, up from \$454.7M. Revenues reflect an increase in the number of subscribers. Higher loss reflects higher sales and marketing costs and higher interest expenses" (Wireless, 2001).

➤ VERIZON Communications (NASDAQ: VZ)

Verizon, formed by the merger of Bell Atlantic and GTE, is one of the world's leading providers of high-growth communication services. "For the FY ended 12/31/00, operating revenues rose 11% to \$64.71B. Net income before

extra items and account change and application to Common rose 30% to \$10.8B. Revenues reflect the strong growth in the Domestic Wireless operations. Earnings also benefited from increased equity income from unconsolidated businesses" (Wireless Week, 2001).

◆ My observation

Verizon has the biggest market share among ADS, VoiceStream Wireless Corporation, and Verizon, but ADS can offer wider variety of products and services with a network of its partnership because VoiceStream and Verizon are both solely telecommunication companies.

6. Voice Over Internet Protocol (VOIP) by ADS

VOIP is a technology, as it allows a variety of media - voice, data, video, graphics, and fax - to utilize a single transport line. Within this technology, information is converted to packets. The packets can be carried on one of several transport services, based on the customer's need for control and predictability.

■ Competitors (Little competitive market due to the new technology):

➤ Siebel Enterprise Applications by Siebel Systems Inc.

Siebel Enterprise Applications are enabling industry-leading businesses, such as The Charles Schwab Corporation, Compaq Computer Corporation, MCI Telecommunications Corporation, Montgomery Securities, and Siemens AG, to enhance sales productivity and marketing effectiveness, improve customer satisfaction, and increase profitability. Siebel's mission is to provide the most comprehensive and effective customer information solutions to our customers, and to ensure complete and total customer satisfaction with Siebel products and service. Siebel Handheld, Siebel Voice, and Siebel Wireless give remote sales and service professionals real time access to comprehensive customer and prospect information through voice recognition, Wireless Application Protocol (WAP)-enabled mobile phones, and a wide variety of handheld devices. Users can update opportunities, review account information, access calendar and contract details, order parts, and respond to service requests.

Siebel Systems Inc. (NASDAQ: SEBL) is the leading worldwide provider of eBusiness application software. In 1995, Siebel Systems shipped its first production release

of Siebel Sales Enterprise, an innovative and comprehensive customer information solution for global organizations. Today, Siebel offers Siebel Enterprise Applications, which include Siebel Sales Enterprise and Siebel Service Enterprise, along with a host of customization tools and an innovative deployment methodology.

➤ Voice and Data Convergence/VOIP by Complete Protocol Solutions, Inc.

This service is an end-to-end business solution providing networking and security for the customers. Cisco IOS software is the platform that delivers network services and enables networked applications. Cisco IOS software differentiates Cisco products from other industry alternatives. It is the unifying thread that integrates product components. It addresses security issues and minimizes unnecessary traffic across the WAN to reduce service costs. CPS provides design and implementation of these quality products in the following areas:

- LAN
- VLAN
- WAN

- Dial-up Services with VPN Support
- Voice over Data (VOIP)
- Integrated Communications Systems

Complete Protocol Solutions, Inc. provides network integration and consulting services. Its primary objective is to provide solutions that meet the client's business models, and promote either reducing operating costs and/or gain employee efficiencies. CPS is Consultant's and Integrators of Wide Area networking solutions, Voice/Video/Data Integration, Local Area Networking, Application integration, and Internet Security.

◆ My observation

Complete Protocol Solutions, Inc. is a private company and provides design and implementation of products focusing on networking. However, ADS and Siebel offer VOIP as part of a single solution and do not have distinct products. Therefore, they could develop more this area because there are not so many entrants in the market, yet.

1. Transport Services by ADS

Applied Digital Solutions offers a full line of transport services, available from all of its offices. ADS can engineer and coordinate the provisioning of the

local, long distance, toll-free, and international communications lines with the service that fits the customers' business requirements for affordability, bandwidth, speed, and security.

■ Competitors:

- The Unicenter TNG Data Transport Option by Computer Associates International, Inc.

The Unicenter TNG Data Transport Option provides fast, reliable, and efficient transport of all kinds of data across a wide set of platforms, protocols, and data formats. It does this flexibly in a way that insulates all users from knowledge of topology, protocols, hops, connections, or networking. The Data Transport Option enables users and applications to:

- Transfer data across a wide variety of platforms and transport protocols.
- Create logical groupings of machines in the network and then transfer data to all machines in a group by a single action.
- Control the quality of delivery service. Transfers can be guaranteed or subject to a specified time-out.

- Optionally process data before sending or receiving, using custom filters. These can be used to compress or encrypt the data.
- Optimize network performance by restricting parcel size, throttling parcel sends, and enabling concurrent processing.
- Leverage the capabilities of Data Transport's Auto Discovery process to determine which machines in network are available to send and receive data transfers.
- Create customized transfer routes through the Data Transport network.
- Create scheduled transfers based on calendar specifications.

Computer Associates International, Inc. (NYSE: CA), the world's leading business software company, delivers the end-to-end infrastructure to enable e-Business through innovative technology, services and education. CA has 18,000 employees worldwide and had revenue of \$6.3 billion for the year ended December 31, 1999. Computer Associates is now the world's leading developer of client/server solutions.

➤ NetWORKS Transport by Manugistics, Inc.

NetWORKS Transport cuts cost and order cycle time. It provides global transportation planning and execution capabilities. NetWORKS Transport's global optimization and execution gives the capability of running Manugistics' entire transportation organization with a single application. Its multi-modal capabilities help orchestrate the most efficient combinations of modes to fully optimize the transportation plans. Its optimization creates continuous moves, allowing to maximize carrier equipment and reduce costs. Its execution capabilities allow the customers to pay the freight bills, track the shipments, and analyze and report on historical transportation data. NetWORKS Transport provides enterprise-wide capabilities and provides interoperation within Manugistics entire NetWORKS suite. Also, using NetWORKS Transport as a part of Manugistics eBusiness solution allows avoiding the traps of optimizing only one aspect of the trading network, or attempting to optimize each aspect separately, guaranteeing reduced costs and cycle time.

Manugistics Group, Inc. (NASDAQ: MANU) is a leading provider of eBusiness solutions that enable intelligent decisions across trading networks. Powered by the NetWORKS(TM) family of products, Manugistics' solutions ensure real-time decision-making at eSpeed, so that network trading partners are empowered to make the right decisions for profitable growth. Manugistics' success is echoed by more than 900 strategic client partners including industry leaders such as Avnet, Compaq, Exel Logistics, Nokia, Target Corporation, Timberland, The Limited, Unilever and Wal-Mart.

◆ My observation

Transport service is already a matured market, and the companies are required to provide wider range of products and services. Also, transport service is the first step for the customers before starting Internet or e-commerce, so a single solution provider has an advantage that the customer is likely to stay with the same solution company once the customer satisfies its transport service. However, ADS, Computer Associates International, Inc. and Manugistics, Inc. are all single solution providers.

So, the competition may depends on the customers' company recognition.

b. Network Group offerings:

1. Network and Systems Planning and Design
2. Network and Systems Deployment
3. Support and Maintenance

1. Network and Systems Planning and Design by ADS

ADS customizes all the design services to meet its client's unique environments and organizational requirements. As part of its designs, ADS includes its clients' present and future information systems strategic objectives. Whether these organizations require a LAN, WAN, remote access, or any other type or combination of network services, ADS can design and build a complete solution.

■ Competitors (very competitive market including services and applications):

➤ Network Operating System and Desktop Migration by Unisys

Unisys' Network Operating System (NOS) Migration Services assess, design, and implement a cost-effective operating system architecture that improves network

service levels and performance, and facilitate network management. Unisys offers a distinct combination of competencies to help realize the maximum benefits of a migration endeavor.

Unisys' customers (NASDAQ: UIS), in more than 100 countries around the world, include leading financial services institutions, airlines, communications providers, commercial market leaders, and government agencies.

➤ Computer Network Technology (NASDAQ: CMNT) provides high performance solutions for Storage Area Networks, Channel Networking, and Enterprise Application Integration.

CNT provides large-scale system design, including transaction definition, process diagrams, and logic flows.

◆ My observation

Network and systems planning and design service are also already matured markets, and the companies are required to provide wider range of products and services. As the transport service, network and systems planning is the first step for the customers before starting Internet or e-commerce, so a single solution provider has an advantage that the customer is likely to stay with the

same solution company once the customer satisfies the company's service.

2. Network and Systems Deployment by ADS

"ADS engineers are highly experienced with all kinds of system installation. They understand the nuts, the bolts, and the challenges of putting a network in place and have been through the paces of rolling out new operating systems and applications" (ADSX.com, 2001).

■ Competitors (Highly competitive market including services and applications, and many private companies in the market):

➤ Network and Systems Management solution by Melillo Consulting, Inc.

Melillo Consulting, Inc.(MJM)'s Network and Systems Management Team's methodology delivers a console into stability. MJM's NSM solution providers excel in the rapid deployment of Network & Systems Management tools for the management of Windows NT and UNIX systems, and TCP/IP network interfaces and devices. The MJM team can identify vendor-supplied application monitoring templates and craft custom templates when needed. MJM has been delivering applications and frameworks on the forefront of

managed enterprise configurations for over 10 years and has experience with MRP and ERP software modules, ISP-class web service monitoring, end-to-end performance assessment, and vastly distributed and scaled enterprise solutions.

Melillo Consulting, Inc. (MJM) provides solutions that solve complex business problems through advanced technologies. As a Hewlett-Packard (HP) Best in Class MasterLevel Reseller, MJM delivers enterprise level platform solutions based exclusively on HP's UNIX-based 9000 and MPE-based 3000 series, plus Windows-based Intel technologies. Its mission is to be the premier solution architect and integrator of proven and advanced information technologies, committed to technical excellence and customer satisfaction.

➤ Infrastructure Service by A.F.Kelly

Infrastructure Service

The Infrastructure Design offering is the phase of an Infrastructure project where A.F. Kelly identifies what networking and systems equipment will be required to meet the capacity and site-specific requirements.

A.F. Kelly's methodology is to begin with a Readiness Assessment to baseline the current client environment and to determine the business drivers that are creating the requirement for a new or improved infrastructure.

The A.F. Kelly Infrastructure Implementation offering is designed to deliver an Information Technology infrastructure that meets a predefined specification.

A.F. Kelly Infrastructure Support offerings provide our clients with technical network and system support services using several delivery mechanisms.

Founded in 1998, through strong client relationships and delivery of services across an integrated delivery model, AF Kelly has quickly become a leading provider of professional services/tools focused on enabling our clients to succeed in the new economy through the innovative application of technology. A.F.Kelly's ability to combine people, process, and technology to provide end-to-end solutions to enhance its clients competitive position has helped distinguish from the market.

It provides integrated strategy, implementation, and end-user training services in the following high-growth market segments: e-Learning, Customer Relationship Management, and e-Services (including web enablement, content

integration, rapid transformation, and infrastructure management).

◆ My observation

The market is in a matured phase, and a solution consulting firm must differentiate from the competitors to win the competition.

3. Support and Maintenance by ADS

"ADS' objective is to become a partner with each of its clients - guiding them through the maze of emerging technologies, and supporting and maintaining the technologies they have in place. Toward this end, ADS has instituted a comprehensive array of support and maintenance packages" (ADSX.com, 2001).

■ Competitors (Very competitive market):

➤ SERVICE by VERADO

VERADO offers high-quality data communications consulting services, and these services deliver engineering solutions for customer premises and enterprises. In Managed Services, VERADO offers Managed Servers and Managed Firewall Service.

Managed Servers:

VERADO has offered high-quality data communications consulting services for many years. It still offers these services that deliver engineering solutions for customer premises and enterprises. VERADO has also packaged these services for use in our IDC's, either as value-added services for its Dedicated Hosting Servers, or for use by its colocation customers.

Managed Firewall Service:

With VERADO's Managed Firewall Service, it can alleviate uncertainty by protecting us from unwanted network visitors, while monitoring and maintaining its performance.

VERADO (NASDAQ: VRDO), headquartered in Denver, Colorado, VERADO is a total Internet Solutions Provider. It provides the platform for businesses to build and execute their e-business strategies. From Co-location to Managed Services and Dedicated Servers, VERADO is the single source for all Internet needs. Currently, VERADO provides service in nine metropolitan areas in Colorado, California, Utah, Oregon and Texas.

➤ Network Six E-Commerce Services by Network Six, Inc.

Network Six provides major systems integration initiatives in both the public and private sectors. Its service offerings include: Application Development, Information Technology/Management Consulting, Business Process Re-engineering, Technology Migration, Data Warehousing, Technical and Help Desk Support, Network Infrastructure Assessment/Design/Implementation, and On-Site and Remote Network Support.

Network Six (NASDAQ: NWSS) is a full service systems integration and software development firm specializing in automated solutions for state government and human services agencies. Its new initiatives are working in the B2B e-Commerce arena developing solutions both in the public and private sector.

◆ My observation

While I was gathering the information, VERADO was the only company among ADS, VERADO, and Network Six, Inc. to mention the firewall for the maintenance and support of the network security. The security is the first concern in the installation of a network for the customers to protect data from intruders.

c. Internet Group offers:

1. Core Database Management & Database Technologies
2. Enterprise Resource Planning (ERP)
3. Customer Relationship Management (CRM)
4. Business Intelligence by ADS
5. Application Service Provider Hosting by ADS
6. E-Business Systems / E-Commerce Development
7. End User Training Programs

1. Core Database Management & Database Technologies by ADS

ADS' solutions takes into account the overall performance of its clients' web servers and databases, and add a higher level of reliability to technology foundation. ADS' solutions are based on database products that support true e-commerce activity - databases that link all the information sources within a business to give all users full accessibility to information. Access to accurate, timely data results in the best possible business decisions.

■ Competitors (Highly competitive market):

➤ JDataStore 3.5 by Inprise/Borland Corporation

JDataStore 3.5 is a Pure Java, Object Relational Database Management System for use in Web, mobile or

embedded database applications. JDataStore delivers true platform independence and portability, enabling developers to create, deploy, and support applications that reach the market faster and at a lower total cost of ownership. With its small footprint, zero administration, and top performance, JDataStore provides developers with an optimum solution for the Internet age.

Inprise/Borland Corporation (NASDAQ: INPR) combines the best of Borland - its long heritage of world-class development tools and intelligent middleware - with the strength of Visigenic's industry-leading object request broker technology. The result is a powerful new company uniquely positioned to capitalize and service the distributed enterprise computing marketplace.

➤ Data Management System (DMSII XE) by Unisys

Data Management System (DMSII XE) functions within the MCP/AS environment of ClearPath NX/LX systems are provided through DMSII Extended Edition (DMSII XE). DMSII XE offers exceptional flexibility and accommodates a variety of data models. DMSII Extended Edition (DMSII XE) is a robust database management system, supporting very large databases and high-volume, on-line transaction

processing. DMSII XE offers exceptional flexibility in accommodating a variety of data models, comprehensive auditing and recovery facilities, and on-line archiving and reorganization capabilities to support mission critical applications.

◆ My observation

JDataStore 3.5 by Inprise/Borland Corporation is more efficient than Data Management System by Unisys in terms of the usage in web and mobile or embedded database applications.

2. Enterprise Resource Planning (ERP) by ADS

ERP applications enable enterprise-wide information-sharing. ERP makes the shared information accessible to people at all levels of the organization. With the necessary information in hand, individuals can be more productive at their jobs. ERP applications can help manage ADS' "back office processes." Applied Digital Solutions has unparalleled experience installing and implementing these applications, and in networking these applications to communicate with each other over great distances.

■ Competitors(Highly competitive market):

➤ ERP Systems Integration by Integraph Corporation

Enterprise Resource Planning (ERP) systems integrate a variety of corporate resources to provide decision-support tools. While ERP provides exceptional analysis, it cannot offer the geographical dimension of information. A spatial perspective is critical to companies whose business is rooted in geography, such as real estate, transportation, communication, agriculture, and utilities. Perhaps the most useful spatial information is an address. Customers, employees, store locations, and distribution centers are all commonly referenced by their street addresses. This geographic element can carry a wealth of information. When an address is viewed geographically, it reveals spatial relationships that are not immediately evident from simply looking at an address list. Intergraph's GIS products can be integrated with solutions from SAP, Peoplesoft, and other ERP systems to provide a complete IT solution.

Integraph Corporation (NASDAQ: INGR), a pioneer of high-performance visual computing technology, is a worldwide provider of technical solutions, systems

integration, and services. It offers a full range of software, consulting, services, and hardware for the open Microsoft Windows NT computing environment to technical, creative, and information technology professionals.

Intergraph was the first company to develop a technical computing platform based on the Windows NT operating system and the Intel Architecture, thus providing high-performance users with greater computing power at a much lower cost

➤ ERP Plus by PowerCerv

The PowerCerv ERP Plus software suite is a comprehensive front-office and back-office solution that connects traditionally disparate islands of enterprise information. ERP Plus manages customer relationships from end-to-end -- resulting in improved customer communications and more profitable repeat sales. ERP Plus consists of five modules -- Manufacturing Plus, Distribution Plus, Financials Plus, SFA Plus and Support Plus -- developed on one common technology platform, by one provider, to deliver seamless integration and enhanced functionality.

PowerCerv Corporation (NASDAQ: PCRV) provides Integrated Enterprise Response solutions to companies around the globe. Featuring fully integrated enterprise application solutions with innovative e-commerce capabilities, the PowerCerv ERP Plus software suite enables companies to completely integrate the management of front-office and back-office operations. PowerCerv was founded in 1992 with one basic premise -- to solve critical business issues for midsize companies. In 1992 during an age of best-of-breed planning and philosophies -- PowerCerv stood by its vision of integration. Today, the PowerCerv solution remains the industry's only fully integrated suite of ERP and CRM modules created by one provider -- it's called ERP Plus.

◆ My observation

ERP Plus by PowerCerv is the integrated software of ERP and CRM modules and, therefore, more attractive to the customers than ERPs by ADS and by Integraph Corporation.

3. Customer Relationship Management (CRM) by ADS

The objective of CRM (Customer Relationship Management) is to track, manage, and optimize the relationship between a company and its customers. CRM

emphasizes the points of contact - also known as "touch points" - between customer and corporation. The customers can increase revenues by improving the long-term revenue stream from individual customers, maximize customer acquisition and retention, and minimize customer defection.

■ Competitors (Highly competitive market):

➤ CRM by Syntel

Syntel's CRM Practice consists of four broad areas:

- Customer Relationship Management focuses on strengthening interactions with customers and obtaining better customer data.
- Sales Force Automation enables sales staff to spend more time selling and less on administrative tasks.
- Customer Service & Support solutions enable companies to deliver enhanced support to both internal and external customers via technology.
- Syntel's CRM Practice is designed to rapidly assess and implement customized solutions for leading organizations.

Syntel, Inc. (NASDAQ: SYNT), for nearly 20 years, has provided information technology (IT) solutions to leading Fortune 500 organizations and government agencies around

the globe. Syntel provides complete applications management services to enable customers to better manage their IT environments, improve time to market, and better utilize their internal technical teams. Syntel has more than 1,900 employees in offices across North America, Europe, and Asia, as well as four world-class Global Development Centers in the US and India.

➤ CRM by Computer Horizons

Computer Horizons' CRM Practice is worldwide in scope, covering a variety of industry sectors and consisting of a number of very experienced CRM consultants. Its extensive in-house knowledge and expertise enables the practice to demonstrate clear thought-leadership across the entire CRM spectrum. Its practice teams have key business knowledge of common CRM Business Metrics (such as Cross-Sell Ratios, Share of Wallet, etc.) as well as specific knowledge of particular industry areas including Finance, Insurance, Telecommunications and Retail. Computer Horizons is committed to providing outstanding service to clients, supported by:

- Partnership with clients - Focusing on identifying the best solutions.

- Solution delivery.
- Delivering those solutions on time and within budget.
- Phased implementation.
- Ensuring benefits are visible from early in the project lifecycle.
- Identification of Best-of-Breed tools
- Recommending the tools that best meet the client requirements.

Computer Horizons (NASDAQ: CHRZ) is a global technology services firm with a reputation for quality, superior technical skills, and proven, bottom-line results. Its mission is to help its clients leverage IT to solve complex business and technical challenges across the business continuum.

◆ My observation

CRMs by Syntel and by Computer Horizons are more attractive to the customers for special functions in CRM, such as Sales Force Automation (Syntel) and CRM Business Metrics (Computer Horizons), than the one by ADS.

4. Business Intelligence by ADS

Applied Digital Solutions provides solutions for reporting, analyzing, storing, and accessing data. ADS integrates its clients' systems with new products to fit overall corporate strategy. Line-of-business decision-makers need real-time, complete understanding of operational data focused on their particular business area, so they can make the best decisions possible. ADS' Business Intelligence solutions deliver insight into day-to-day operational performance to decision-makers throughout the enterprise. Managers can continuously monitor performance, measure progress toward objectives, instantly respond to exceptions, and drill through the entire enterprise to find root causes of operational anomalies.

■ Competitors:

➤ Commerce Intelligence 4.0 by InterWorld Corporation

Commerce Intelligence delivers a single view of a customer across all channels - web, call center, shipping and fulfillment systems. Commerce Intelligence sorts through the abundance of raw data produced by all of these touch-points, and transforms this data into valuable, understandable and actionable business intelligence. As a

result, businesses can get a clear and deep understanding of their customers' buying habits resulting in faster and better decision-making.

InterWorld Corporation (NASDAQ: INTW) is a leading global provider of mission-ready™ software solutions for sell-side e-commerce. Founded in 1995, the company offers end-to-end, packaged software solutions for manufacturers, distributors and retailers to sell goods over the Internet. InterWorld's complete solution allows customers like Crane, MSC Direct, Verizon, Oki Data, DisneyStore.com, Brooks Brothers and Ann Taylor maximize profitability, manage multiple suppliers and inventory levels and reduce customer service costs. Headquartered in New York City with offices throughout North America, Europe and Asia-Pacific.

➤ QAD's Business Intelligence by QAD

QAD's Business Intelligence applications deliver timely, easily understandable information to the right people in the right context. Using these tools, decision-makers can make informed business decisions, drive the decisions through to operational systems, and monitor the results.

QAD Inc. (NASDAQ: QADI) is a leading provider of e-business solutions for product-focused companies of all sizes. Its industry-specific applications deliver the functionality the customer need to run core enterprise, optimize its supply chain, strengthen customer relationships and leverage mission-critical information.

◆ My observation

Commerce Intelligence 4.0 by InterWorld Corporation seems more effective to the customers than the ones by ADS and QAD because it manages not only the internal operations in the organization but also the customers' buying habits through a single view of the all functions --web, call center, shipping and fulfillment systems.

5. Application Service Provider Hosting by ADS

As a complete solutions provider, Applied Digital Solutions offers and hosts application services that quickly put Clients' business in the forefront of the dynamic world of e-commerce. Applied Digital Solutions can build a capability that allows their developers to quickly get new content onto their web site. ADS provides a solution that each of its customers has a unique browsing experience tailored to individual needs and

tastes. ADS combines high-bandwidth data-center capability with extensive application management services.

■ Competitors:

➤ Application/Management Service Provider (ASP) by OAOT

OAOT offers integrated front-office and back-office solutions as an Application Service Provider (ASP) through its "single.point" framework:

- Consolidates partner relationships into one single point of accountability
- Offers the flexibility of customization demanded by requirements
- Affords access to world-class information technology solutions
- Introduces business benefits into contractual agreements
- Structures service levels that are mutually agreed upon, and
- Maintains a customer-centric solutions orientation.

Unlike other ASP offerings that focus solely on applications and/or the infrastructure, "single.point" starts with the clients, and keeps its focus on their specific requirements. This means that they can continue

to concentrate on their core business. OAOT's eBusiness Intelligence leverages the power of the Internet by providing instantaneous access to real-time information, and the ability to communicate in a personalized manner are crucial to a successful eBusiness. Its collaborative portals and eBusiness Intelligence services are intelligent solutions that leverage the power of the Internet and deliver Better eBusiness Results. Key offerings include:

- Collaborative portals
- Executive Dashboards
- eBbusiness Intelligence
- Rapid Needs Assessment
- Customer Relationship Management (CRM)
- Network Solutions
- OAOT's Enterprise Management
- Helpdesk Services

OAOT Technology Solutions, Inc. (NASDAQ: OAOT) is a global provider of information technology and eBusiness solutions, providing rapid integration, effective management and ongoing support of IT environments. Strong partnerships with leading industry providers and offices extending throughout North America and abroad make it

possible for OAOT to deliver end-to-end services and solutions including:

- Enterprise eBusiness Solutions
- Network and Systems Business Solutions
- Healthcare IT Solutions
- Professional Services

Headquartered in Greenbelt, Maryland, USA, OAOT has offices throughout the United States and Canada, with international locations in the U.K. and Mexico and employs over 2,200 professional, consultants and associates who promote a culture of customer satisfaction. Its goal is to become the preferred eBusiness Solutions Partner (eSP), a first-contact resource for all eBusiness and technology solutions.

➤ Ecosystem for Application Service Providers by AT&T

Designed specifically to address the needs of Application Service Providers, the program is made up of four major elements:

- Dedicated Hosting and Co-location Services
- Network and IP Services Infrastructure
- Network Utilities
- Co-marketing Opportunities

AT&T Dedicated Hosting and Co-location Services provide a state-of-the-art technology solution that delivers high-speed, bandwidth-rich connectivity along with customized monitoring, system setup, service, and support levels. Options include fully managed AT&T servers or co-location of customer-owned equipment.

AT&T (NYSE: T) is among the world's premier voice and data communications companies, serving more than 80 million customers, including consumers, businesses, and government. With annual revenues of more than \$64 billion and 151,000 employees, AT&T provides services to customers worldwide. Backed by the research and development capabilities of AT&T Labs, the company runs the world's largest, most sophisticated communications network and has one of the largest digital wireless networks in North America. The company is a leading supplier of data and Internet services for businesses and offers outsourcing, consulting and networking-integration to large businesses. It is also the nation's largest direct Internet access service for consumers. Through its recent cable acquisitions, AT&T will bring its bundle of broadband video, voice and data services to customers throughout the United States. Internationally, the AT&T/BT Global

Venture -- recently named Concert -- will serve the communications needs of multinational companies and international carriers worldwide.

◆ My observation

ADS and OAOT both have technology partnerships with AT&T for the Internet connectivity and offer the similar services. However, OAOT provides more detailed ASP than ADS, integrating with the other services such as collaborative portals, eBusiness Intelligence, CRM, and ERM.

6. E-Business Systems / E-Commerce Development by ADS

Applied Digital Solutions is a nationwide team that covers all the bases, such as a solution that integrates an appealing, intuitive, user-friendly front-end with a scalable backend, all residing on powerful and reliable networked hardware, and provides solutions for companies of all sizes.

■ Competitors (Highly competitive market):

➤ Frontstep Active Link by Symix Systems, Inc.

Frontstep Active Link allows data transfer between enterprise business systems, e-business software, supply chain and customers. Frontstep Active Link provides the

collaborative communication capabilities to let information flow freely between customers and suppliers via EDI, e-mail, fax and file transfer. Frontstep Active Link connects, automates, and streamlines business processes eliminating traditional 'rip, read and re-key' methods. Frontstep Active Link delivers intelligent messaging and workflow to extend enterprise and automate supply chain for fast response and improved efficiency.

Frontstep Active Link synchronizes the supply chain and keeps all of the customers, suppliers and business partners informed of transactions. For instance, immediately after a customer places an order, that customer receives order confirmation and tracking reference numbers using the communication path of their choice: e-mail, EDI or fax. Frontstep Active Link also allows customers to manage multiple enterprises with one process. For example, an order that is received from your Web site or a trading exchange can be fulfilled through multiple manufacturing locations. Frontstep Active Link intelligently directs the order to the multisite environment that can manufacture relevant components.

Frontstep, Inc. (NASDAQ: FSTP) is a leading global provider of e-business, supply chain and enterprise

management software for midsized manufacturers and distributors. Headquartered in Columbus, Ohio, Frontstep helps companies rapidly plan, build, launch and advance a complete e-business strategy, from automating internal business processes to collaborating with customers and suppliers over the Internet. Frontstep delivers a comprehensive suite of software and services, including enterprise management, CRM, online customer sales and service, Web-driven channel management, supply chain management, e-procurement, collaboration and integration. Frontstep markets its products through 30 direct sales and services offices in North America, Europe and the Pacific Rim, as well as through independent services and consulting firms, software resellers and business partners worldwide. Since 1979, Symix Systems, Inc. has provided more than 4,000 companies with practical and pragmatic solutions for operating their businesses more profitably, competitively and efficiently. Now as Frontstep, the company is helping midsized players leverage the Internet to drive revenues, make customers happier and make suppliers better.

➤ e-Business by Infosys

Infosys' e-business approach subscribes to the integration and customization way of leveraging Internet technologies to create a just-for-you integrated e-business solution. The Infosys e-business competency center ensures that it always uses the best-in-breed components available. Infosys also partners with leading executives on front-end visioning, e-business strategy, and program management services. Its extensive expertise in enterprise systems helps seamlessly integrate e-business systems to other enterprise applications. Organizations also benefit from Infosys' ability to effectively handle issues such as performance, security, infrastructure planning, administration and maintenance.

Infosys' e-business Competency Center is the powerhouse that drives e-business solutions. The Competency Center undertakes the following activities:

- Moves constantly into new areas with research in business processes and technology.
- Constantly evolves its e-business methodology, incorporating new experiences, and findings from

research

- Manages training of personnel

Business process research studies end-customer experience specific to online shopping, buying, and customer service. Technology Research involves ongoing and planned studies on a number of topics including e-business engines, specialized third party components, middleware, security structures, scaling and load balancing. One of the focus areas is back-end integration, a somewhat ignored but highly critical topic that underlies the success of an enterprise-wide e-business initiative. Software engineering process research uses external and internal research to constantly incorporate new ideas into Infosys e-business deployment methodology and incorporate organizational knowledge from the SEI CMM Level 5 quality methodology.

Infosys (Technologies Ltd. (NASDAQ: INFY) is a world leader in providing IT consulting and software services to the global organizations. Technologies Ltd offers offshore-based software services such as application development, software maintenance, Internet consulting, and establishing software centers for its customers. Based on these services, Infosys' solutions focus on

addressing business challenges across different horizontal applications and target vertical industries. Infosys solutions cover a wide range of business areas including e-commerce and e-business enabling, warehouse and inventory management, and customer management for vertical industries including financial services, insurance, retail, telecommunication, utilities and manufacturing. By using a global delivery model, Infosys leverages software development centers in different parts of the world to provide high quality, rapid time-to-market solutions at affordable prices.

◆ My observation

Frontstep Inc. targets its e-business at midsize organizations and can be advantageous in researching the narrower segment in detail. Also, Infosys offers a favorable e-Business since it reveals that its e-Business can integrate to other enterprise applications and that Infosys is continuously developing e-business with external and internal research.

7. End User Training Programs by ADS

ADS' people-based approach to training delivers hands-on knowledge to every user. Using a goal-based

curriculum along with data, its approach ensures that each user takes away more than just book knowledge. They learn real-world skills that enable them to immediately be productive. Applied Digital Solutions commits to providing educational resources that continually add value to clients' technology investment. In education and training, the only real measure of success is improved performance and results. To meet these criteria, Applied Digital Solutions offers a variety of education services that complement its other services. For hands-on, live project experience and transfer of knowledge within your organization, ADS offers customized mentoring programs. Self-guided computer-based training is also available.

■ Competitor (Highly competitive market):

➤ Rapid Roll-Out Assimilation and Support Services and Cambridge Boot Camp by Cambridge Technology Partners

Designed specifically for end users, Cambridge Technology Partners' Rapid Roll-Out Assimilation and Support Services ensure that its clients' employees understand the reasons behind new technologies and know how to use them optimally.

Cambridge Technology Partners' unique Cambridge Boot Camp combines training in leading-edge technical skills, professional and project management skills, and cultural assimilation to bring new IT personnel up to speed quickly or reskill the existing employees.

Cambridge Technology Partners, Inc. (NASDAQ: CATP) provides management consulting and systems integration services to transform its clients into e-businesses. Working in collaboration with Global 1000, high-velocity middle market companies, and .com start-ups, Cambridge combines a deep understanding of New Economy issues with integrated, end-to-end services and a proven track record of shared risk and rapid, guaranteed delivery. Cambridge recognizes that educating end users and IT professionals is the key to reaping maximum benefit from investments in processes and technology. Through its Assimilation Solutions Group, Cambridge Technology Partners offers a comprehensive suite of education, technical training, and assimilation tools to empower both end users and IT professionals with the skills they need to thrive in the changing business environment created by the introduction of technology.

◆ My observation

I found that few public companies provide on-site training for end users as a single service while many private companies do. ADS can reevaluate whether this service is profitable or not in long-term period.

d. Applications Products and Services offers:

1. Point Of Sale (POS) Software

2. E-Business Systems / E-Commerce

(See the above section)

3. Enterprise Resource Planning (ERP)

(See the above section)

4. Customer Relationship Management (CRM)

(See the above section)

5. Application Hosting

(See the above section)

6. Customer Interaction Management

7. Data Warehousing

8. Installation Services

9. Software Application Development

1. Point Of Sale (POS) Software by ADS

Supporting retailers' differentiation strategies is key to ADS' differentiation strategy. An integral part of

its success is a commitment to aggressive R&D. Its earliest approach to in-store systems development was a PC point-of-sale platform when most other in-store system developers were supporting their applications in a proprietary cash register environment. Today ADS is still looking ahead, working with Microsoft on new industry standards, developing applications maximizing virtual private network (VPN) connectivity, and placing the store within customers' corporate knowledge network.

➤ Retail Management System (RMS) by Lightbridge, Inc.

Retail Management System (RMS) is a comprehensive point of sale system designed specifically for the converged telecommunications retail environment. It enables retail operations to be more productive in acquiring and activating customers, more efficient in handling new service offerings, and more effective in managing customers, vendors, purchasing and inventory. With RMS, the entire sales process is more efficient, from setting up customer information, to tracking purchases and managing inventory. And this results in quicker customer turnaround, increased productivity and higher profits.

Lightbridge, Inc. (NASDAQ: LTBG) plays a critical role in preparing carriers as they face increased competition in this converging industry. The first challenge comes in the form of customer acquisition. As services within this new market continue to converge and new channels for delivering services continue to emerge, this challenge grows exponentially. If the process for acquiring a service -- whether it's cellular, PCS, long distance, or Internet -- takes too long, or is too cumbersome, the customer may go elsewhere. The second challenge comes in the form of customer retention. Once carriers acquire new customers, there exists an equally difficult challenge of retaining them over time -- a strong risk of customer churn exists.

➤ Scala.Sales by Scala.Solutions

Scala.Sales, a product in the Scala.Solutions' product line, is a web-enabled sales ordering process, developed to be used by customers and their salespeople. Scala.Sales enables their salespeople to execute their daily activities in an efficient and empowering manner. Scala.Sales allows the salespeople to connect into the order processing systems within the corporation and place

orders, check stock detail, access customer information, credit limit, current balance, and tax status. All this is done over an easy-to-use interface using Internet and XML technologies. Now salespeople can operate more efficiently. Scala.Sales effectively creates a virtual order-entry department, taking sales orders around the clock. This enables clients to do business with other countries in different time zones, increasing sales exponentially.

Scala North America, Inc. (NASDAQ: SCA), headquartered in Amsterdam, Netherlands, employs some 1,150 people worldwide encompassing 52 offices in 28 countries. Scala also supports a diverse network of independent partners and resellers that spans over 22 countries. Scala Business Solutions has developed and strengthened a global network of direct and indirect sales and service channels. This network offers a valuable asset to its clients, for it guarantees a high standard of consistency in both products and services no matter where the company may be. It also allows to rapidly adapt to the changing business environments the customers may experience, anywhere. Scala offers a unique product to businesses on a global level. Scala's enterprise and e-

commerce solutions offer functionality for a wide range of business processes.

◆ My observation

Scala.Sales by Scala.Solutions is the most attractive product among the above three products because it is based on the Internet and XML technologies which enable Scala.Solutions to interact with its customers more effectively. ADS is closely developing POS with Microsoft, and it could be both advantageous and disadvantageous because the customers do not always use Microsoft products.

6. Customer Interaction Management by ADS

The Contact Center handles a high volume of calls from customers, distributed among a large number of agents. Tracking all the calls, how they are handled, and who handles them can present a heavy-duty challenge to management. The challenge increases when multiple (and possibly remote) supervisors are added to the mix. Customer Interaction Management solutions from ADS are designed to help Contact Center managers meet the challenge. Working with performance data and trends, these scalable solutions encompass products and services

that provide all the information a manager needs to optimally staff Contact Center operations.

■ Competitors:

➤ Lightning Rod Interaction Manager by Lightning Rod Software

Lightning Rod Interaction Manager™ lets e-business site visitors and customers receive fast, accurate assistance from qualified Contact Center Agents (CCAs) via a wide range of interaction preferences. Every aspect of this comprehensive, fully integrated solution is designed according to e-business customer loyalty tenets.

Lightning Rod Interaction Manager helps e-businesses convert more browsers to buyers, increase cross-sell and up-sell opportunities, and increase site revenue. Additionally, with Lightning Rod Interaction Manager, customers' e-business contact center will experience improvements in workflow and decreases in overhead expense.

Lightning Rod Software (NASDAQ: LROD) provides customer interaction solutions that enable Web site visitors to get the real-time answers they need. Its integrated software suite encompasses all forms of customer interaction - Web chat and collaboration, Web

callback, e-mail, phone, IVR, and fax. Lightning Rod Software prioritizes, routes, and queues customer interactions according to each customer's choice of response vehicle and agents' individual strengths. Lightning Rod Software's real-time customer communication software offers e-businesses the flexibility to implement any of the modules, or the entire product suite - depending on their needs. The Lightning Rod Interaction Manager product suite offers e-businesses a high quality customer service effort. Key benefits include:

Customer Satisfaction

- Lets customers use their communications medium of choice- both real-time and near-time
- Gathers interaction information about the customers - further contributing to higher quality, personalized service and increased sales.
- Simulates the personalized, one-to-one interaction that occurs at bricks and mortars.

Increased Revenue

- Call histories and customer profiles provide

cross-selling and up-selling opportunities.

Scalable Software

- Choose any combination of the modules or the entire product suite
- Provides the means to manage customer interactions across a single, open platform.
- Universal queue allows real-time reporting views across all interaction channels, agents, and locations.

Enhanced Call Center Efficiency

- Agents spend less time with administrative functions and more time meeting customer needs.
- Advanced reporting capabilities let managers determine how personnel are being utilized, compare work and talk times, and analyze efficiency.
- Handles blended centers and blended agents.

➤ The Vignette V/5 Relationship Marketing Server by Vignette Corporation

The Vignette V/5 Relationship Marketing Server is a complete closed-loop e-marketing solution. It enables clients to 1) gain critical insights by measuring and

analyzing customer interactions across multiple business touchpoints; 2) easily segment customers into relevant groups; and 3) automatically deliver highly targeted content to those groups in the form of campaigns.

The V/5 Relationship Marketing Server "closes the loop" by continuously repeating this cycle— each time measuring and analyzing customer responses to campaigns, and adjusting customer segments and future campaign content based on continuous learning. The result is that every communication with the customers becomes more effective at achieving their objective— whether it be delivering timely and relevant information, encouraging larger and more frequent online purchases, or convincing your customers to come back again and again.

Vignette Corporation (NASDAQ: VIGN) is the leading supplier of e-business applications for building online businesses. Vignette's products enable Internet businesses to create and extend relationships with prospects and customers, and ease high-volume transaction exchanges with suppliers and partners, all of which enhance customer satisfaction and profitability.

The company's flagship e-business solution, the V/5 E-business Platform, is the only complete system that

provides the business insight, rapid business reconfiguration and integration across multiple touchpoints required for e-business success. Introduced in April 2000, the V/5 E-business Platform incorporates and expands on the openness and standards support of Vignette StoryServer software and other products. The V/5 Platform equips businesses with a unified view across multiple customers, partners, suppliers, products and interactions, giving companies the ability to maximize and measure the return on investment of all their online relationships and initiatives. The platform is supported by the Vignette Professional Services organization, which offers a broad range of services, including strategic planning, project management, account management, general implementation services, and an extensive array of training offerings. Vignette's growth is also facilitated by a growing number of partnerships with world-class organizations. Vignette Professional Services trains and enables consulting partners like Andersen Consulting, PWC and CSC to use Vignette technologies to ensure client success. Additionally, Vignette's open platform has fostered strong relationships with key partners such as IBM, Microsoft, Oracle and Sun.

On October 5th, 2000, Applied Digital Solutions announced that it is a solutions provider for Vignette Corporation. ADS' Oracle Practice business unit is authorized to resell and implement the Vignette V/5 E-business Application Platform throughout the United States.

◆ My observation

The Vignette V\5 Relationship Marketing Server has the more attractive feature than the ones of ADS and Lightning Rod Software, which simply link to e-business contact center. The Vignette V\5 Relationship Marketing Server measures and analyzes the customers' interaction on E-business, so the organizations can segment their customers more in detail. This helps forecast sales and profit; therefore, the managements can pursue the better business operation.

7. Data Warehousing by ADS

The information on Data Warehousing was not available.

■ Competitors:

➤ The Indus Knowledge Warehouse by Indus International

The Indus Knowledge Warehouse is a world class data mart application that leverages its customers' substantial EAM data acquisition and maintenance investments. The

Indus Knowledge Warehouse enables end users to focus on real performance and management issues by transforming detailed transactional data into simple business views and providing a framework for quick and easy analysis, using Broadbase data cleansing technology and virtually any Windows SQL Reporting Tool.

Indus International (NASDAQ: IINT) is the leading global provider of Enterprise Asset Management (EAM) solutions, providing the systems, products and services to help its clients improve business performance through better management of their assets. Headquartered in San Francisco, California, Indus provides software and services in more than 40 countries and has offices Worldwide. Indus employs a workforce of more than 1,300 and operates Customer Solution Centers in the United States, Europe and Asia Pacific regions. Indus markets the solutions, products and services enabling its clients to reduce cost, increase capacity, ensure regulatory compliance and improve their overall return-on-investment and competitiveness. The Indus Solutions include unique capabilities for capital intense industries such as Manufacturing, Utilities, Telecommunications, Government, Education and Transportation.

➤ Business Intelligence/Data Warehousing by CIBER

A data warehouse enables the collection and organization of data from various data sources, both inside and outside the enterprise, to provide users with a common, integrated subject-oriented view of their data for decision-making. CIBER can help customers evaluate all the options -- from data marts to data warehouses and business intelligence. CIBER also help customers integrate multiple data sources. Its architect approach will guide them through extracting, standardizing and transforming data to bring it into data warehouse application.

CIBER (NASDAQ: CBR) is a recognized leader in providing innovative IT solutions and partnering with customers to leverage technology in today's e.Business-driven marketplace. Through a powerful mix of people, processes, and the appropriate application of technology, CIBER delivers e.Business solutions to help organizations gain knowledge from the market, create value for their customers, reduce time and cost across the supply chain, and drive global competitive advantage. CIBER combines its broad array of in-depth business and technical expertise to create solutions that solve an enterprise's

complex requirements -- linking to customers, suppliers and partners around the world, satisfying end-user demand, entering new markets, and gaining a leadership position. CIBER delivers the complete set of services required for enabling e-Business: strategic management and IT consulting, enterprise applications, enterprise and network integration, application hosting, and custom business solutions. This breadth of services, combined with in-depth industry expertise, allows CIBER to respond quickly to the dynamic requirements of their customers' Internet-driven markets. CIBER's consultants are seasoned professionals who build long-term, trusted relationships and bring a high level of energy, integrity, experience and value to client work. In addition, CIBER has strong partnerships with best-in-class technology vendors, enabling CIBER to remain objective while working with clients to determine the most appropriate hardware, software and services to meet their business requirements.

◆ My observation

CIBER's product is more preferable for managers' decision-making than the one of Indus because CIBER offers the combined solution of Business Intelligence and

Data Warehousing while Indus provides Data Warehousing as a single feature.

8. Installation Services by ADS

The applications group develops and implements the hardware and software technology needed to solve communication requirements.

■ Competitors:

➤ SiteStart by Telxon Corporation

Telxon has over 50,000 wireless data network sites implemented worldwide and has developed a package of implementation services called SiteStart. SiteStart brings together all of the discrete steps involved in project implementation to ensure that the process is successful. Features include: SiteAssessment, RF network design, physical installation, final site certification with defined test and acceptance criteria, and user orientation. It is designed to be customized around the solid core and methodology of the program.

Telxon Corporation (TLXN - NASDAQ NNM) is a leading global designer and manufacturer of wireless and mobile information systems for vertical markets. The company integrates advanced mobile computing and wireless data

communication technology with a wide array of peripherals, application-specific software, and global customer services for its customers in more than 60 countries around the world. It is Telxon's mission to deliver quality, innovative solutions for mobile information systems to select markets worldwide through dedicated employees, enthusiastic partners, and satisfied customers.

➤ Organizational Services by SCT (System & Computer Technology Corporation)

As a part of Organizational Services, the integrated services (Systems Integration, Program Management, Shared Services, Consulting Services, and IT Infrastructure Services), SCT offers installation service.

SCT is a complete services provider, whether the solution is implementation support or services customized for the unique needs.

SCT (System & Computer Technology Corporation) (NASDAQ: SCTC) is a global information technology solutions company, serving more than 2,500 clients worldwide. SCT serves - education, government, utilities, and process manufacturing.

◆ My observation

SiteStart by Telxon Corporation is more favorable than Organizational Services by SCT since Telxon Corporation offers "final site certification" with defined test and acceptance criteria and also user orientation after the installation. This makes its customers more secured, rather than simply providing them physical installation.

9. Software Application Development by ADS

ADS are involved in the design, manufacturer and support of satellite communication technology including modems and data broadcast receivers and wireless global positioning systems for commercial and military applications.

■ Competitors (Very competitive market):

➤ Custom Application Software Development by Waypoint Systems Integrations Inc.

Waypoint Systems Integrations Inc. (NASDAQ: IFCI) provides Voice and Data cabling, telephony, networking (Lans, Wans, security and firewalls, remote computing, and wireless data), and customized software applications. Waypoint Systems Integrations Inc. is certified with

Microsoft as a solution provider, partnering with Win, Lucent, Nortel, 3Com, Allaire, IBM and Sybase Open Solutions.

➤ eBusiness Application Development by Commerce One Global Services

Commerce One Global Services' strategy is employing an iterative and incremental process for faster feedback, quicker releases, and improved development quality.

In 1997, AppNet was created to help companies meet the challenges by combining Internet strategy, marketing and technology into a single solution. From beginning to end, AppNet can tailor these solutions to meet specific needs, freeing companies to focus on their own core business as they expand into the online marketplace. Customers who benefit from AppNet's end-to-end capabilities include leading Fortune 1000 and dot.com companies in manufacturing, retail, health care, telecommunications, consumer goods and financial services, as well as global non-profit organizations and government agencies. AppNet is traded on the NASDAQ national market (NASDAQ: APNT). AppNet is headquartered in Bethesda,

Maryland, and has more than 20 offices across the United States and Europe.

◆ My observation

In the application development market, most of the public companies are now offering single solutions rather than providing solely software development. Therefore, software developers have to develop software with special features to differentiate from the competitors.

◆ My overall observation in Competition Component

Based on my research in this section, I will conclude that all of the markets ADS is belonging to have heavy competitions among public and private companies. Therefore, unless ADS has products or services with the distinctive features and qualities, it is very difficult to sustain in the every markets. Leaving the markets where ADS is not making profits, such as on-site training, and focusing on the markets where ADS is making profits are another alternative for ADS to win the competitions.

Labor Component

Salaries for IT professional are rising by double digits again, with CIO salaries spiking to an average of \$133,000 -- plus \$31,000 in bonus money. (U.S. Department

of Labor, September 2000) As the government increased to issue the number of H1B visa for the IT professionals in abroad, the IT professionals are still in demand.

Therefore, labors in IT industry have a bargaining power to the organizations. According to the Impact of Competitive Forces by M. Porter (1980), "the Suppliers' bargaining power implies that prices can be raised and reduced quality and services (1980). To combat this force, the organizations have to carefully select labors in terms of salary and skill.

Supplier Component

Partnerships

Having a productive partnership with the other vendors is crucial specially in building new and fast technology capabilities with a wide network.

Applied Digital Solutions has the partnerships with the organizations in the various sectors such as telecommunication, software, and hardware and ensures:

1. Committed to providing high quality, comprehensive, cost-effective solutions
2. Total Solution services to ensure to exceed business objectives

3. Leverage investment in the customers' current business systems
4. Experienced, knowledgeable consultant
5. Project Management Institute certified project managers
6. Committed to long-term relationships
7. Total responsibility - One call

ADS has established partnerships with the following firms:

3Com, Allaire, Ameritech, ASE, AT&T, Cisco Systems, Citrix, Compaq, Computer Associates, Cyntergy, Fujitsu, Hewlett Packard, IBM, ICL Retail, Intel, Interface, Lexmark, Liebert, Lucent, Microsoft, NEC, NCR, Novell, Okidata, Oracle, Panasonic, PaylinX, PSINet, Quest Software, Qwest, RadioLAN, SCO, Smith-Gardner, Sprint, Symbol, Telxon, Toshiba, Vignette, and XcelleNet

◆ My observation

ADS has a wide network with the partners that specialized in hardware, telecommunications, networking, and software. This is a strong advantage for ADS in four issues:

1. Creating new business objectives

2. Developing new products
3. Distribution channels
4. Mass purchasing for discounts

International Component

ADS has branch offices in abroad: one in United Kingdom, one in Spain, and one in Canada. ADS is expanding business to Asia.

INTERNAL ANALYSIS

Organizational Aspects

Vision

"The true enterprise value is fully realized through focused strategic alignment and successfully leveraging the interdependence among them. To optimize the collective value of its core business, the company developed the Intelligent Integrated Information, or I3 Service Platform." (Mercedes, COO, President of ADS)

Corporate Headquarters:

Applied Digital Solutions Incorporated
400 Royal Palm Way, Suite 410
Palm Beach, Florida 33480

For the locations of the branch offices, see Appendix B.

Acquisitions

It is important to note here that, during Year 2000, ADS aggressively acquired more than ten companies for new product development and market expansion.

I list the series of ADS' acquisitions and new partnerships from January 2000 to February 2001, as follows based on the information I obtained from Yahoo.marketguide.com. I will find benefits of ADS from these acquisitions.

February 09, 2001

ADS's Digital Angel.net, Inc. and Medical Advisory Systems announced that Digital Angel.net, Inc. has agreed to purchase a 16.6% interest in Medical Advisory Systems, Inc. (MAS) from members of senior management of MAS. In conjunction with the purchase, Digital Angel.net will be nominating four members to the Board of Directors.

➤ Benefits of ADS:

1. MAS operates a secure ASP facility under FDA guidelines for the tracking of clinical studies.
2. MAS offers a variety of services to individuals and Fortune 100 clients.

3. Therefore, Applied Digital Solutions will now have a secure, FDA approved ASP facility for management sensitive data and a 24/7 physician-staffed medical call center for use by Digital Angel customers and end-patients.

January 16, 2001

ADS announced that it has acquired the development and private label marketing rights to Corema EXPRESS, a customer relationship marketing (CRM) software application for the retail industry, from Fujitsu-ICL Systems Inc., a member of the Fujitsu group.

➤ Benefit of ADS:

As part of its agreement with Fujitsu-ICL, ADS received source code and development access, enabling the Company to develop its own CRM offering based upon Corema EXPRESS.

January 12, 2001

ADS announced the acquisition of Transatlantic Software Corporation, a retail software developer specializing in central merchandising and data warehousing systems.

➤ Benefit of ADS:

Transatlantic became part of Applied Digital's Retail Systems business unit.

November 14, 2000

ADS and SysComm International Corporation jointly announced that ADS agreed to acquire a controlling interest in SysComm International Corporation from its founder, John Spielberger. SysComm acquired majority ownership of Applied Digital Solutions' Information Products Center, Inc. subsidiary.

➤ Benefit of ADS:

SysComm provides network and systems integration and is a reseller of computer hardware.

October 26, 2000

ADS announced that it has acquired Santa Ana, California based Pacific Decision Sciences Corporation, a provider of proprietary web-based customer relationship management software.

➤ Benefit of ADS:

Pacific Decision Science Corporation offers technology of proprietary web-based customer relationship management software.

October 04, 2000

ADS announced that it has signed a letter of intent to acquire an 80% stake in an e-commerce venture sponsored by Connect Intelligence, a pan-European provider of e-infrastructure, Internet connectivity and enhanced Internet services.

September 11, 2000

ADS announced the closing of the merger between its wholly owned subsidiary, Digital Angel.net Inc., and Destron Fearing Corporation.

August 15, 2000

ADS announced that it has acquired New York-based WebNet Services, Inc., an Internet service provider, network integrator and website developer.

➤ Benefits of ADS:

1. The acquisition expands the palate of Integrated Technology solutions that Applied Digital offers.
2. It strengthens the Company's Application Service Provider initiative.

August 04, 2000

ADS announced that it has acquired Timely Technology Corporation (TTC), an e-commerce solutions company based in Riverside, California.

➤ Benefits of ADS:

1. ADS can expand the e-business, since TTC's main client base includes organizations in education, banking, mortgage, insurance, retail, and government.
2. ADS can geographically expand the market in west side of the United States.

August 02, 2000

ADS announced the acquisition of Computer Equity, Inc. (COMPEC). COMPEC is a privately held holding company headquartered in Chantilly, Virginia that specializes in providing integrated telecommunications, telephony, computer and Internet systems, services and products to the U.S. government, as well as the commercial marketplace.

➤ Benefit of ADS:

ADS can obtain new customers in integrated telecommunications, telephony, computer and Internet

systems, services, and products to the U.S. Government and the commercial marketplace.

July 24, 2000

ADS announced the acquisition of Perimeter Technology, a privately held company.

➤ Benefit of ADS:

Perimeter Technology provides a comprehensive suite of technologies that enable organizations to support a wide array of Internet customer contact techniques.

May 31, 2000

ADS and Smith-Gardner, a provider of end-to-end software solutions for e-commerce, announced a partnership to provide integrated in-store and e-commerce solutions. The two companies integrate Applied Digital's TradeWind applications with Smith-Gardner's Ecometry, a universal suite of e-business applications.

➤ Benefit of ADS:

The new partnership allows Smith-Gardner and Applied Digital Solutions to jointly offer a customer-centric solution aimed at satisfying the brick-and-mortar, e-retailing and direct marketing needs of multi-channel specialty retailers.

May 04, 2000

ADS announced that it has retained Prudential Securities to assist Applied Digital in pursuing strategic alternatives with respect to its subsidiary, Intellesale.com, Inc.

May 03, 2000

Intellesale.com Inc., a subsidiary of Applied Digital Solutions, Inc., announced a distribution agreement with AltaVista Company, a search, media and commerce network.

➤ Benefit of ADS:

Under the terms of the agreement, institutions that purchase ten or more of Intellesale's computers receive AltaVista's free unlimited Internet access software.

April 27, 2000

ADS and Ramp Networks, Inc., a provider of shared Internet access devices, announced a Small Office Security program designed to give small business the tools they need to protect themselves from hackers.

November 04, 1999

ADS announced that it has partnered with BellSouth. ADS and BellSouth have worked jointly on what could be the first CTII (Computer Telephony Internet Integration)

deployment in the United States. Remindline.com, a Jacksonville-based company, contracted with ADS to build and maintain an Internet reminder service that incorporates Internet, telecommunications, LAN and software requirements. BellSouth provide both the frame relay Internet service and the voice network, allowing instant communications. ADS deploy the hardware platform, text-to-speech recognition software, telephone integration and intelligent data mining required to process the reminder notification.

➤ Benefits of ADS:

1. To bring added value to ADS customers
2. Fast development of new product

Marketing Aspects

Research and Development is critical in the IT industry because the product life cycle is very short compared with the ones in the other industries. Therefore, the product development cost is very high in terms of obtaining tangible and intangible assets. I understand that acquisitions are helpful as a substitute for in-house R&D, related to product and market extensions.

According to Bower (2001), "an assortment of high-tech and biotech companies use acquisition instead of R&D to build market position quickly in response to shortening product life cycles...From the target company's point of view, an acquisition is often desirable, since it takes a massive amount of money to build a sustainable company in technical markets. And potential acquirers (such as Microsoft) can easily crush you if you compete with them directly." In his article he referred to the successes of acquisitions by Microsoft and Cisco. Also, he mentioned the fact that AT&T did not succeed after acquiring NCR, a computer manufacturer. Bower believes that the success of the acquisitions depends on the two elements: holding on key people and the "not invented here" syndrome. He addresses that the IT professionals are more valuable as key people than any other assets. So, if they leave the company after the acquisition, the strategy could fail. What "not invented here" syndrome Bower explained is that minimizing the confusions of IT professionals in the different corporate culture after the acquisition. Handling the human resources well can lead to the success of the acquisition. Bower also addressed that the measurement of success or failure of the acquisition takes

long time while IT companies need to find the prompt result due to the fast-moving industry.

As I mentioned ADS' series of acquisitions in the earlier section, ADS acquired many companies and have partnerships with the organizations for market expansion and new product development. Another tactics was to have a research agreement. For example, on July 07, 2000, Digital Angel.net Inc., ADS' wholly owned subsidiary, has signed a research agreement with Princeton University and the New Jersey Institute of Technology. The research team assists in the development of Digital Angel, a miniature digital transceiver that can be used for monitoring the medical conditions of at-risk patients, commodity supply chain management, food safety, preventing the unauthorized use of firearms, providing identification for e-commerce security, locating missing individuals or pets, and tracking the location of property. The device, which is intended to be bonded closely to the body or implanted just under the skin, would be able to send and receive data and that it would be tracked by GPS (Global Positioning System) technology.

Since ADS has a business alliance for research with Princeton University and the New Jersey Institute of

Technology, it can gather information on the area ADS is not familiar with and develop new products quicker while ADS does not have a hundred percent control over these organizations or their research materials.

International Business

ADS has branch offices in Spain, U.K., and Canada. The followings are some of the operations abroad. The information on the activities of the ADS branch offices in abroad was not available.

- In February 2001, Applied Digital Solutions, Inc. announced that its Digital Angel.net subsidiary has signed a letter of intent with Spain's Plasticos Mondragon, S.A. to provide location, sensing and wireless information solutions for water control and environmental management. The terms of the letter call for Mondragon to assist in the funding and marketing of specific Digital Angel products designed to fit with Mondragon's existing product lines and markets.
- In January 2001, Signature Industries Limited, a subsidiary of Applied Digital Solutions, Inc., announced that it has been awarded a contract to supply the U.K. Royal Navy with its SARBE 10 deep-water

recovery beacon. The emergency rescue beacons is used in the recovery of submarine personnel. Delivery of the units will be in July 2001 with technical support extending for a period of up to 10 years. Signature has also recently received a trial order from French Special Forces and from the U.K. Ministry of Defense for their recently launched SARBE 8 combat rescue beacon, a military search and rescue device that incorporates GPS technology.

- In June 2000, IntelSale.com, a subsidiary of Applied Digital Solutions announced that it would launch a Spanish-language version of its Website IntelSale.com. The new site, InteliVenta.com, offers all of the features of the Company's current site.

◆ My observation

In the domestic market, ADS could expand markets and product lines through acquisitions. But is its sales activity such as advertising and sales promotion enough?

In the international market, Internet made it possible to be boundless in the global business. Therefore, ADS has a room to expand the world market.

Financial Aspects

Refer to APPENDIX B, I will analyze the financial data on ADS in Year 2000 with each tables.

The share price of ADS in Table 1 shows the declines in April, November, and December 2000. These declines are caused by the crush of NASDAQ market in where the participants of the market were pessimistic of the future market and the U.S. economy after NASDAQ was aggressively bullish.

Table 2 shows the monthly share volume of NASDAQ, Newyork Stock Exchange (NSE), and Dow Jones (DJ.) As we can see only NASDAQ is very turbulent during Year 2000.

In Table 3, ADS of P/E High-last 5 Yrs. is much higher than the norms. P/E ratio shows how much investors are willing to pay per dollar of reported profits (Brigham et. al, 1999.) P/E ratios are higher for firms with strong growth prospects. Since ADS' P/E ratio is above the average for other computer companies, this suggests that the company is regarded as having stronger growth prospects.

In Table 4, both Sales and Capital Spending of ADS - 5 Yr. Growth Rate are higher than the averages.

Table 5 indicates that ADS has lower Quick Ratio and Interest Coverage than the averages. Quick ratio is calculated by deducting inventories from current assets and then dividing the remainder by current liabilities (Brigham et. al, 1999.) Inventories are the least liquid of a firm's current assets, so those on which losses are likely to occur in the event of liquidation. However, the ratios of Industry, Sector, and S&P 500 vary, and this is not reliable as indicators.

Interest Coverage measures the extent to which operating income can decline before the firm is unable to meet its annual interest costs. Also, Interest Coverage of ADS is much lower than the other averages, indicating that ADS has a relatively low margin of safety and would face difficulties if it attempted to borrow additional funds.

Table 6 shows the decreases of ADS' revenue in Year 2000, and also Table 7 indicates the decline of EPS in Year 2000. The economy and the weaker financial market caused these declines. On October 20, 2000, Applied Digital Solutions sold a non-exclusive worldwide licensing agreement for its acquired Net-Vu product and received a

cash payment of \$9 million and \$1 million in stock from the licensee. This did not help push up the revenue.

In Table 8, while Telecommunications Division is decreasing the revenue, Application Technology, Network Infrastructure, and Advanced Wireless are increasing the revenues. This was mainly due to the demand of Internet.

Table 9 illustrates that Application Technology depreciates more rapidly than the other divisions and has the half of the Segment Total every year.

Lastly, four divisions of ADS, in Table 10, almost share the equal rate of assets in Year 2000. This was due to a part of ADS' i3 Services Strategy.

◆ My observation

Due to the uncertainty of the economy and the fluctuated financial market during Year 2000, ADS' share price declined and lost revenue, especially in December.

One of the actions ADS took was, on January 03, 2000, to sell "approximately 4.9 million of its shares in TigerTel, Inc., its Toronto-based telecommunications subsidiary, to AT&T Canada. Under AT&T's offer, approximately 7.3 million of TigerTel's 7.5 million outstanding shares were tendered to AT&T at CDN\$9.25 per

share (\$6.36 US)" (YahooMarketData, 2001). However, this did not help ADS' revenue.

Personnel Aspects

ADS has more than 2,500 employees in 2000. A minimum of 200 engineers and technologist are fully qualified to accomplish critical tasks needed in project. In addition to the above resources, ADS has established strategic relationships with local universities, University of California and California State University, to provide with additional web designers, if needed. Advanced project development tools are to allow for efficient collaboration among all team members world-wide.

There were two significant changes in the headquarters.

First, on November 17, 2000, ADS announced that it named Jerome C. Artigliere to the position of Chief Financial Officer. Mr. Artigliere took the position vacated by David A. Loppert, who has been named CEO of SysComm International Corporation.

And on February 20, 2001, Ms. Mercedes Walton, former AT&T Executive, was appointed as President and Chief Operating Officer.

◆ My observation

New CFO would restructure financial performance, and new COO would operate ADS more effectively with her experience in AT&T.

Production Aspects

All branches and subsidiaries involve in, at least, one of four functions:

- Network
- Telephony
- Internet
- Applications

The Non-Core Business Group--This group is comprised of seven individually managed companies:

1. Gavin-Graham Electrical Products

Gavin-Graham Electrical Products is a custom manufacturer of electrical products, specializing in digital and analog panelboards, switchboards, motor controls and general control panels. Gavin-Graham also provides custom manufacturing processes such as shearing, punching, forming, welding, grinding, painting, and assembly of various component structures.

2. Ground Effects, Ltd.

Ground Effects, Ltd., based in Windsor, Canada, is a certified manufacturer and tier one supplier of standard and specialized vehicle accessory products to the automotive industry. The company exports over 80% of the products it produces to the United States, Mexico, South America, the Far East, and the Middle East.

3. Hopper Manufacturing Co., Inc.

Hopper Manufacturing Co., Inc. re-manufactures and distributes automotive parts. This primarily includes alternators, starters, water pumps, distributors, and smog pumps.

4. Innovative Vacuum Solutions, Inc.

Innovative Vacuum Solutions, Inc. designs, installs and re-manufactures vacuum systems used in industry.

5. Americom

6. STC Netcom

7. ACT Leasing



are all involved in the fabrication, installation and maintenance of microwave, cellular and digital personal communication services towers.

"As of December 31, 1999, 1998 and 1997, revenues from this business group, as well as four disposed

entities within the Company's Communications

Infrastructure group, accounted for 19.2%, 34.7% and 21.3%, respectively, of its total revenues" (Market Guide, 2001.)

Network Group

The Network Infrastructure Group dedicated to delivering quality e-Business services and support to its client partners. ADS recognized market trends and restructured its objectives to address e-Business infrastructure design and deployment.

Network Group offered:

- Network and Systems Planning and Design
- Network and Systems Deployment
- Support and Maintenance

Telephony Group

Its mission was to provide "Total Customer Care".

The Telephony Group provided complete design, project management, cable/fiber infrastructure, installation and on-going support for the customers.

The Group offered:

- Call Accounting
- Telephone Systems
- Computer Telephony Integration

- Call Center Solutions
- Wireless Telecommunications
- Voice Over Internet Protocol (VOIP)
- Transport Services

Internet Group

The goal of Internet/E-business group was to enable its customers to enhance e-business capabilities by helping them to leverage the entire Internet has to offer.

This involved the joining of front office customer service applications with back office processing capabilities to give a true picture of the customer, the marketplace, and the competition.

The Internet Group focused on equipping its customers with the necessary tools and support services to make a successful transition to e-business, thereby enabling them to harness the tremendous global computing power of the World Wide Web. By challenging its customers to think beyond using the Internet as simply a vehicle to conduct transactions, the Internet Group acquired an intimate knowledge of the client's business processes to create superior infrastructures that link customer service applications with back office processing capabilities.

With this power at their fingertips, its customers could execute for the future instead of contemplating the missed opportunities of the past.

Internet Group offered:

- Core Database Management & Database Technologies
- Enterprise Resource Planning (ERP)
- Customer Relationship Management (CRM)
- Business Intelligence
- Application Service Provider Hosting
- E-Business Systems / E-Commerce Development
- End User Training Programs

Applications Group

The Applications group developed and implemented the hardware and software technology needed to solve communication requirements, from portable data collection systems to inventory control systems.

These solutions were helping end-users convert from analog to digital and from wire line to wireless systems. The applications Group also involved in the design, manufacture, and support of satellite communication technology, including satellite modems and data broadcast

receivers and wireless global positioning systems for commercial and military applications.

Products and Services:

- Point Of Sale (POS) Software
- E-Business Systems / E-Commerce
- Enterprise Resource Planning (ERP)
- Customer Relationship Management (CRM)
- Application Hosting
- Customer Interaction Management
- Data Warehousing
- Software Application Development
- Installation Services

Point of Sale Software

➤ TradeWind®

A 100% Microsoft Windows NT-based in-store system, TradeWind provides simplicity of use and flexibility of transactions, enabling store associates to deliver the highest level of customer service possible. In addition to its robust POS transaction capabilities, TradeWind also includes an extensive customer portfolio feature and powerful back office and inventory functionality.

➤ TradeCenter® Data Store

TradeCenter® Data Store reflects that line of thinking. A point of aggregation between in-store applications and host systems, TradeCenter® Data Store is a repository for store transactional data.

TradeCenter® Data Store serves as a point of access for a variety of corporate systems as well as a data store for chain-wide reporting and additional analysis.

Features:

- Ability to sell, return, special order and send merchandise in a single transaction
- Collects chain-wide POS transaction data
- Fully integrated with in-store systems
- Can be interfaced with other in-store systems
- Aggregate all store-level data in a single database (data mart), regardless of in-store application
- Utilize this database of store information for back-up, reporting, archiving and/or analysis purposes
- Exports data to standard file formats (Microsoft Excel, Microsoft Access, text files)

- Channels data from this central repository to numerous corporate systems (including other Applied Digital applications)

➤ TradeRoute™

TradeRoute is an interactive request handling gateway that routes inquiries (like inventory locator, merchandise credit validation, gift certificate validation, customer look-up, etc.) from an in-store system to a central data repository, and presents responses back to the in-store application.

Features:

- Enables chain-wide access to select corporate/host data
- Fully integrated with TradeWind
- Supports dial-up, WANs, VPNs and other means of communications

➤ TradeCenter® Loss Prevention

In the retail world, managing loss prevention is a necessity. It can be a difficult and lengthy process to identify situations concerning theft or inadequate training. Problems like these can result in considerable loss and do significant damage to the customers.

Therefore, it is important to identify the source of losses and determine the appropriate action.

To accomplish this task, Applied Digital has developed TradeCenter® Loss Prevention, a loss prevention application that enables to conduct a systematic review of transaction data to pinpoint sources of trouble and act upon them early.

Features:

- Collects chain-wide transaction data
- Fully integrated with in-store systems
- Can be interfaced with other in-store systems
- Systematic methods and procedures to compare individuals, stores and groups of stores
- Case-building
- Exception reporting
- Incident reporting
- Extensive standard reporting
- Ad hoc queries, reports, and analysis of transaction information
- Alert feature signals critical in-store situations through e-mail messaging
- Gathers information about customers and their purchases

- Exports data to standard file formats (Microsoft Excel, Microsoft Access, text files)
- Automated feed of host merchandising systems

➤ TradeCenter® Corema® EXPRESS

Customers provide with a stream of information every time they purchase. Modern point-of-sale systems (like TradeWind) capture the full detail of the purchase, including what was bought, where, when, how much it cost, and how the customer paid. Such data is a source of information on customers' shopping preferences and habits, but it is rarely properly exploited. The TradeCenter® Corema® EXPRESS application provides technology support for the marketing activities associated with analyzing, understanding and responding to customers' purchasing behavior. It is designed for the specialty retailer interested in providing a high level of service to their customers and to establishing a one-to-one marketing relationship over time with those customers.

The ability to develop, manage, and sustain a true one-to-one marketing relationship with the customer will be the key differentiator for retailers going forward and will produce significant return on investment.

TradeCenter® Corema® EXPRESS helps devise and implement a means of identifying individual customers and of keeping in contact with them.

Features:

- Designed for marketers. Supports the day-to-day activities of marketers engaged in customer focused marketing activities.
- Requires minimal technical support. Because it is an Intranet application installed on a department server, users can connect to it simply with a standard browser.
- Easy to use. Web browser provides consistency of application interface.
- Identify customers in a number of ways: customer number, loyalty card, telephone number, driver's license, etc.
- Supports multiple customer numbers for multiple marketing programs.
- Imports data from POS, catalog, and e-commerce systems for a complete view of all customers.
- Speeds marketing queries by managing data efficiently. The working database size is kept small, but enables fast loading of sales transaction data when required.

small, but enables fast loading of sales transaction data when required.

- Build dynamic customer segments and analyze changes as conditions are altered.
- Wide range of reports is available showing trends, impact of promotions and customer groupings.
- Export data to Microsoft Excel or other applications for further processing and graphical formatting.
- Send customer name and address data to a mailing house using export list functions.

CHAPTER THREE

MAJOR PROBLEM

ADS aggressively acquired many companies to expand markets in 1999 and 2000, and its management strategy is the same as before.

1. Facts

- The same top management.
- An absence of sales from disposed businesses.

2. Symptoms

- A decline of its share price in 2000.
- A loss of revenue in 2000.

3. Opinions

ADS needs:

- good top management to initiate a new corporate strategy.
- good streamline of the organization after series of acquisitions.
- good customer services to increase profits and market shares.

4. Assumption

ADS is losing the strategic tactics and directions after too much expansion of business and would lose the competitions in every market.

CHAPTER FOUR

ALTERNATIVE COURSE OF ACTION

I have two alternatives for ADS as courses of action.

Alternative 1

Status Quo

Strengths: Little

Weaknesses:

- The same top management as before.
- No distinct strategies to follow.
- Weak sales marketing.

Overall evaluation of alternative:

Alternative 1 is not favorable. Without good top management and the organizational structure, ADS would lose competitions and market shares.

Alternative 2

i3 Services Platform

Table 2. i3 Services Platform

Digital Angel	DA Delivery System	Digitalangel.net
ADVANCED WIRELESS GROUP		
Retail Systems	CRM Systems	Enterprise Systems
APPLICATION GROUP		
Data Centers		
SERVICES GROUP		
i3		
Services Platform		

(Source: Applied Digital Solutions, 2000)

Strengths:

1. Ms. Mercedes from AT&T was appointed as President, COO of ADS.
2. ADS can optimize strategic interrelationships among the core businesses of Applications, Services and Advanced Wireless while positioning Applied Digital to deploy marketplace solutions.
(See APPENDIX C, Figure 2: Organizational Chart.)

3. The Platform can streamline the organizational structure. This helps develop new products effectively and provide better products and services efficiently.
4. The i3 Services Platform is comprised of the design, implementation and support of information management systems, through these three core business units that intelligently integrate with our customers' existing IT infrastructure.
5. Operating from the i3 Services Platform, Applied Digital Solutions' Advanced Wireless, Applications and Services business groups offer data management solutions and services for the collection, organization, analysis, warehousing and dissemination of real-time intelligence for a wide variety of customers including business, government, and consumer markets.
6. The i3 Services Platform is flexible enough to coalesce internal, external and collaborative information. ADS will capture, filter and deliver user-defined intelligence when and where the customers need it.

ADS can monitor and alert the customers to critical events, providing the ability to quickly react to immediate conditions.

7. The i3 Service Platform can securely publish vital intelligence to their employees, customers and strategic business partners.

The above strengths can help ADS expand within the global market.

To justify my recommendation, I will address two theories, Strategy Integration Analysis (SIA) and the Customer-Activity Cycle, to i3 Services Platform.

First, I will apply Strategy Integration Analysis (SIA) introduced by Nickerson and Silverman to ADS. Nickerson and Silverman contend that managers often neglect to integrate their business strategy, technology strategy and intellectual capital strategy for a new business opportunity (See APPENDIX C, Figure 3.)

SIA is based on the premise that "a successful new business strategy rests on identification, protection and exploitation of those unique/idiosyncratic assets/investments that allow a firm to gain and sustain competitive advantage in the New Business Opportunities (NBO)" (1998).

Intellectual capital strategy includes intellectual property (IP), such as patents, trademarks, copyrights, trade secrets and trade dress, as well as intangible assets like idiosyncratic knowledge, relational capital and reputation capital for which no IP exists.

Intellectual capital (IC) management involves the establishment of monitoring, measurement and management practices that secure intellectual assets for use by the firm and that scan the environment for opportunities for and competitive threats to these intellectual assets.

There are four elements that are interdependent, related to the idiosyncratic assets:

1. Targeting customers
2. Investments in the customer transaction
(e.g., a brand name; a reputation, reliability)
3. Investments in production cost technology
4. Choice of organizational form

By identifying these assets, the organization can maximize its ability to identify business opportunities. There are six steps to follow in implementing Strategy Integration Analysis:

1. Assemble a multi-disciplinary team including business, technology and legal personnel.

2. Identify and select a target market and position.
3. Identify investments and technology.
4. Identify unique or idiosyncratic technologies that form the basis of competitive advantage by comparing the firm's technology and intellectual position with that of potential competitors.
5. Choose optimal organizational and IC management configuration based on the preceding four steps.
6. Evaluate expected profitability of this integrated strategy.

Now I will take these steps to analyze and observe ADS' i3 Services Platform.

Step 1:

i3 Services Platform constructs a new organizational structure to enhance the broad range of products and services. Advanced Wireless, Application, and Services Groups are interdependent as the boundless business units. Therefore, the i3 Services Platform fits into a multi-disciplinary team including business, technology and legal personnel.

Step 2:

ADS' goal is to meet the needs of the various customers in business, education, and government, quickly

reacting to immediate conditions. i3 Platform provides single source e-business solutions to the customers for better business efficiency and productivity and for lower costs. ADS integrates and implements solutions through its four technology groups: Network, Telephony, Internet and Applications. i3 Services Platform is flexible to provide the integrated services.

Step 3:

Due to a series of acquisitions, ADS has a wide range of technologies such as wireless, telecommunications, applications, and networking. Now i3 Services Platform can offer the integrated services to the customers as idiosyncratic investments in the customer transaction. The Services Group will especially strengthen the relationship with the customers. Also, i3 Platform can invent and develop the new products much quicker than before because of the streamlined organizational structure. Each branch office can provide almost identical services. This adds the significant benefits to the value chain and gives more competitive advantages.

Step 4:

ADS' Digital Angel™ is an idiosyncratic technology that forms its technology and intellectual position.

There is no sign of any competitions for this product, which combines the technologies of GPS, Wireless, Bio-sensors, and Self-charged power source. (See Appendix C for the basic concept of Digital Angel.)

Digital Angel applies to:

Life Saving

- Medical Patients (Heart, Diabetes, etc.)
- Lost People (Children, Alzheimer's Disease, Autism, Kidnappings)
- Soldiers, Pilots
- Insurance Companies

E-Commerce

- Location Aware Information
- Internet Security
- Card Security

Protection of Valued Items

- Laptop Computers
- Museum Items
- Bank Money Bag

Animals

- Pets
- Endangered Species

Profit sources are from licenses and royalties for each sector of applications or regions, hardware manufacture, and ASP.

Step 5:

Based on the above analysis, I found that employing i3 Services Platform could bring ADS the competitive advantages over the competitors because ADS can offer comprehensive services to its customers. Therefore, it can pursue new business opportunities.

Second, I will apply i3 Services Platform to another theory called "the Customer-Activity Cycle" introduced by Vandermerwe, so that I can demonstrate that i3 Strategy is effective to ADS as a new strategy.

In "How Increasing Value to Customers Improves Business Results," Vandermerwe stresses on defining market spaces and the whole customer while the conventional strategy focuses on the sales of discrete items and market share. He defines customer focus as "obtaining value for customers (whether or not they buy all the items they could of a company's products and services) as well as obtaining value from customers (who voluntarily choose to stay with a company that obtains value for

them)"(Vandermerwe, 2000.) For a strategy based on customer focus, managers should address six key areas:

1. Swinging the power from the company to the customer.
 2. Achieving customer lock-on. (Customers choose the enterprise because of the ongoing superior value it provides; with standard lock-in, customers have no choice.)
 3. Articulating new market spaces. (Broadly speaking, market spaces are the results customers want.)
 4. Delivering an integrated customer experience.
 5. Working with the new economics, in which the resources that generate value are abundant and able to be used and reused.
 6. Creating one cohesive strategy from reinforcing loops that build and sustain momentum
- (Vandermerwe, 2000.)

The above areas are vital to increase customers' loyalty to the company rather than to increase the sales of core products.

Now I will apply this customer focus methodology to ADS' i3 Services Platform.

1. Swinging the Power From the Company to the Customer.

Swinging the power from the company to the customer creates the situation that the customers would spontaneously try to reach or contact the company from by themselves. This is more effective with the Internet because of the easiness of accessibility to the web site.

The ADS' web site (www.ADSX.com) provides information on the company, news, products/services, solutions, and investor relations. It displays the phone numbers, addresses, and e-mail addresses of the headquarters and all the branches so that the customers can easily reach them. Also, I feel that the web site is favorable because all the names, phone/fax numbers, and e-mail addresses of all the corporate and divisional officers are provided. So, if the customers want to gather information on ADS' certain product, they can readily contact to its representatives.

2. Achieving customer lock-on.

While with lock-in, the customer would switch the supplier once there is another supplier appears, with lock-on, the customer stays with the same supplier as a loyal customer.

With i3 Services Platform, ADS can provide the wide range of the integrated services to the customers through Advanced Wireless, Applications, and Services Groups as a total solution from designing, implementing, and supporting. Therefore, the customers can hook on to ADS, which is the integrated solution provider.

3. Articulating new market spaces.

Rather than focusing on the expansion of market share, defining a new market opportunity where the customers will be eager to spend their money on can lead to the higher profit returns.

As I mentioned above, the strategic interrelationship among ADS' business groups in i3 Services Platform can meet the immediate needs of the customers. Therefore, ADS can quickly react to the new market spaces.

4. Delivering an integrated customer experience.

This element is when, who, and how deliver an integrated customer experience.

i3 Services Platform can offer the integrated service to the customers through the core business groups such as Advanced Wireless, Applications, and Services business groups, the customers can meet their immediate needs.

Vandermerwe describes customer activity as a customer-activity cycle methodology, which defines the value add-ons to customers (See APPENDIX E.) The Customer-Activity Cycle, Figure 1 in APPENDIX E, shows that a market space is in an overall customer activity cycle. Figure 2 illustrates capitalizing on value gaps. Vandermerwem explained, "Any interruption in the flow of the customer-activity cycle creates value gaps, or discontinuities, that open access to competitors, unless the company fills the gaps first with value add-ons. By filling value gaps, new comers become killer entrants, establishing vital links to customers, building trust and opening opportunities for more business" (2000.)

Digital Angel is used for life saving, e-commerce, protection of valued items and animals with the technologies of GPS, wireless, bio-sensors, and self-power source. Therefore, for example, a user with a heart disease always wears a Digital Angel for the unpredictable situation such as a sudden heart attack. Because the medical condition and location are monitored for at-risk patients, Digital Angel data is transmitted wirelessly, on a real time basis, to an Internet-integrated ground station. Now I will apply the customer-activity cycle to

ADS' Digital Angel, illustrating its effectiveness as a new strategy (see APPENDIX E Figure 3.) As I described on the diagram, Digital Angel meets the customer-activity cycle due to its integrated solution.

Digital Angel can also overcome the five forces of competition, the intensity of rivalry among existing competitors, the barriers to entry for new competitors, the threat of substitute products or services, the bargaining power of suppliers, and the bargaining power of buyers, in the Internet Influences Industry Structure argued by Porter, shown on APPENDIX F. Porter argues that "these forces determine how the economic value created by any product, service, technology...Analyzing the forces illuminates an industry's fundamental attractiveness, exposes the underlying drivers of average industry profitability, and provides insight into how profitability will evolve in the future" (2001.) He believes that the most of trends are negative in the Internet industry due to its open system. So, I will address the positive elements of Digital Angel to each negative element of Porter's Five Forces, "How the Internet Influences Industry Structure."

1. Threat of substitute products or services

(-) The proliferation of Internet approaches creates new substitution threats

► Currently, Digital Angel is a unique product without competitors in the market due to the complex of GPS, wireless, bio-sensors, and self-power source. Because this technology is developed by ADS' branches offices and subsidiaries, ADS can improve the product quickly with quality. Also, ADS is a single solution provider with i3 Services Platform, which can create customer loyalties.

2. Buyers bargaining power of end users

(-) Shifts bargaining power to end consumers

(-) Reduces switching costs

► Digital Angel is not a simple device like a computer screen, and because of the integration of bio and wireless technologies, it is not easy for the users to bargain for its high technology or to reduce switching costs.

3. Barriers to entry

(-) Reduces barriers to entry such as the need for a sales force, access to channels, and physical assets - anything that Internet technology eliminates or makes easier to do.

► ADS is a public company and open the information such as its locations to the customers and investors. However,

since the technology of Digital Angel is developed by its branches and subsidiaries after a series of ADS' acquisitions, it is not easy for the competitors to obtain or steal the information on its technology.

4. Rivalry among existing competitors

(-) Reduces differences among competitors, as offerings are difficult to keep proprietary

► There is no competitors to Digital Angel at present.

(-) Migrates competition to price

► Because of the integration of bio and wireless technologies, it is not easy for competitors to copy Digital Angel or to migrate competition to price.

(-) Widens the geographic market, increasing the number of competitors

► Applied Digital Solutions is located all over the U.S. and in Europe, Canada, and Asia, plus its web site. So, ADS is geographically advantageous.

(-) Lowers variable cost relative to fixed cost, increasing pressures for price discounting

► ADS has many branches, subsidiaries, and suppliers and can keep the variable cost lower.

5. Bargaining power of suppliers

(+/-) Procurement using the Internet tends to raise

bargaining power over suppliers, though it can also give suppliers access to more customers

(-) The Internet provides a channel for suppliers to reach end users, reducing the leverage of intervening companies

(-) Internet procurement and digital markets tend to give all companies equal access to suppliers, and gravitate procurement to standardized products that reduce differentiation

(-) Reduced barriers to entry and the proliferation of competitors downstream shifts power to suppliers

► ADS is a public company, and because of its credibility and company size, suppliers do not have a strong bargaining power.

Although Porter argues that the Internet can create more competitive industry structure, as I described above, I determine that ADS can overcome the five forces with Digital Angel, a part of i3 Services Platform.

5. Working with the new economics, in which the resources that generate value are abundant and able to be used and reused.

Vandermerwe refers to four new economics elements: Economies of skill, stretch, sweep and spread. Especially, with the Internet, the companies can reduce costs and

expand margins. Economies of skill locks on the customers; Economies of stretch enhance the customers' preferences; Economies of sweep keeps the cost lower when the company centers customer needs; and economies of spread grows revenues and reduces costs.

Services Group of i3 Services Platform can go through these four elements of economies because i3 Strategy meets the customers needs as a single solution provider. Also, ADS' informative web site can interact with the potential and existing customers, and this creates "lock-on" easily. Furthermore, as APPENDIX C Figure 2 shows, all branches provide the same services of Wireless, Application and Service as single solution providers.

6. Creating one cohesive strategy from reinforcing loops that build and sustain momentum.

The following six loops can boost the profit with the other customer focus components to lock on the customers:

Loop 1-Relationship

Loop 2-Knowledge and Information

Loop 3- Networks

Loop 4-Players

Loop 5-Developers

Loop 6-Costs

ADS keeps affirmative relationships with customers and suppliers, provides plenty of knowledge and information, offers a wide range of networks, retains many professional employees (players and developers), and keeps the cost low.

In conclusion, as I demonstrated above based on the theory of Vandermerwe, Applied Digital Solutions can add values to customers and improve ADS' business operations with i3 Services Platform.

➤ Weaknesses of i3 Services Platform:

- Costs for integrations are high.

For example, all the branches and subsidiaries are converting all computers to Dell Computer so that they can obtain some discounts for mass purchasing.

- Long-term process to implement

Therefore, it is not easy to measure the organizational performance.

Due to the size of the company and the locations of all the branches, the implementation will take time.

Overall evaluation:

With i3 Services Platform, ADS will regain control over the branches and subsidiaries and obtain competitive

advantages, production and sales efficiency, and good publicity for investors. Since i3 Services will be provided by all branches and subsidiaries, ADS can promptly meet the needs of the customers.

CHAPTER FIVE

CHOSEN ALTERNATIVE AND IMPLEMENTATION

I chose i3 Services Platform strategy, Alternative 2, for its effectiveness of reorganizing the corporate structure and business strategy that ADS is currently pursuing.

➤ What should be done to implement the chosen alternative effectively?

◆ Specific recommendation:

ADS needs to seek out how to minimize the financial and human costs of making the necessary organizational alternations and still maximize the speed of the implementation so that the corporation can begin to realize productivity benefits.

◆ Justification:

Since ADS provides single source e-business solutions to its customers to improve efficiency and productivity and to reduce costs, it should concern with implementing two perspectives: Technology and Corporate Implementations. According to Leonard-Barton, "these two perspectives are the aggregate corporate experience across a number of

implantations: (1) a technical learning curve describing the cumulative knowledge about the technical aspects of implementing a particular technology (including additions that aid in aligning the technology with existing equipment or systems) and (2) an organizational learning curve describing the cumulative knowledge about the management of organizational issues (changes in user skills, procedures, performance criteria) raised by a particular technology" (1989).

Knowing these learning curves from the previous experience can reduce the "uncertainty," hence it becomes effective to transform the whole company.

➤ Who should be responsible for implementing the chosen alternative?

Specific recommendation:

The president needs to clarify the objective and timeline of the i3 strategy to all employees, and the management team members, taking the initiatives to carry out the new corporate strategy. However, the all employees should be responsible for implementation because this is the overall company integration in technology and resources.

Justification:

i3 Services Platform involves all levels of the employees, not only the top management as the diagram of i3 Services Platform shows.

According to Labovitz and Rosansky, People, Processes, and Customers, are aligned vertically and horizontally. This alignment can lead the organization to the better performance outcome. And the core of these four elements is called "the main thing" which is:

- The main thing for the organization as a whole must be a common and unifying concept to which every unit can contribute.
- Each department and team must be able to see a direct relationship between what it does and this overarching goal.
- The main thing must be clear, easy to understand, consistent with the strategy of the organization, and actionable by every group and individual (Labovitz and Rosansky 1997).

The cooperation of all employees in any level of the organizations can lead to the success of this i3 Services Platform because they understand the strategy and its goal.

- How should the chosen alternative be evaluated for success or failure?

Specific recommendation:

ADS can hold regular meetings of any levels from business units to branches to discuss the progress and outcome of i3 Services Platform.

Justification:

The regular meetings of any levels of ADS are effective because business units have the information corporate managers need to make strategic decisions. Saloner (et. al, 2000) suggests that "the design of reporting routines, management information systems, and coordinating groups should take into account the kind of information corporate managers need to evaluate the decisions made by business unit managers." Especially, ADS is a diversified organization, and the flow of information and time frame are crucial to the success of i3 Services Platform.

APPENDIX A:
ECONOMIC ANALYSIS

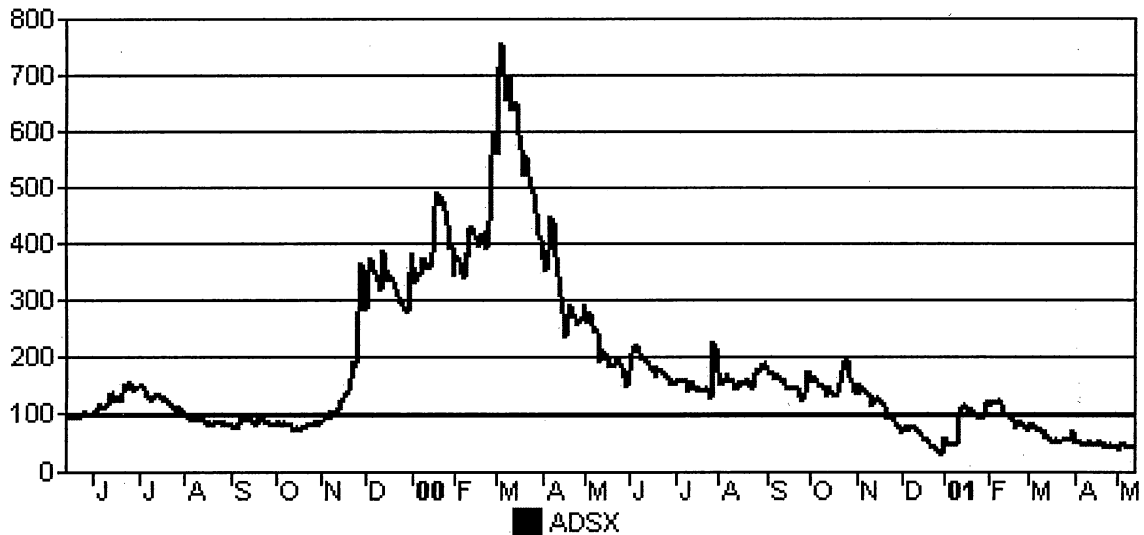
Yr. Month	Consumer Price Index	Changes	Unemploy- ment Rate (%)	Changes	Federal Funds Rate (%)	Changes
2000.01	169.4		4.0		5.46	
2000.02	170.2	0.8	4.1	0.1	5.73	0.27
2000.03	171.2	1.0	4.0	-0.1	5.85	0.12
2000.04	171.1	-0.1	4.0	0	6.02	0.17
2000.05	171.3	0.2	4.1	0.1	6.27	0.25
2000.06	172.2	0.9	4.0	-0.1	6.53	0.26
2000.07	172.7	0.5	4.0	0	6.54	0.01
2000.08	172.8	0.1	4.1	0.1	6.50	-0.04
2000.09	173.6	0.8	3.9	-0.2	6.52	0.02
2000.1	173.9	0.3	3.9	0	6.51	-0.01
2000.11	174.3	0.4	4.0	0.1	6.51	0
2000.12	174.6	0.3	4.0	0	6.40	-0.11
2001.01	175.7	1.1	4.2	0.2	5.98	-0.42
2001.02	176.2	0.5	4.2	0	5.49	-0.49
2001.03	--	--	4.3	0.1	5.31	-0.18

- Consumer price index (all urban consumers) Seasonally Adjusted (SA)
- Civilian Unemployment Rate (Seasonally Adjusted)
- Federal Funds Rate (Averages of Daily Figures)

(Source: U.S. Department of Labor, Bureau of Labor Statistics and H.15 Release -- Federal Reserve Board of Governors)

APPENDIX B:
FINANCIAL ANALYSIS

Table 1: ADS' share price, relative % change in US\$ over Month



(Source: NASDAQ, May 2001)

Table 2: Monthly Share volumes of NASDAQ, NYSE, and DJ

Month	Nasdaq Composite	% Change fr. previous Month	NYSE Composite	% Change fr. previous Month	Dow Jones Industrial	% Change fr. previous Month
Jan-00	3940.4	--	621.7	--	10,940.5	--
Feb-00	4696.7	19.19	592.6	-4.68	10,128.3	-7.42
Mar-00	4572.8	-2.64	647.7	9.30	10,921.9	7.84
Apr-00	3860.7	-15.57	644.2	-0.54	10,733.9	-1.72
May-00	3400.9	-11.91	643.6	-0.09	10,522.3	-1.97
Jun-00	3966.1	16.62	642.9	-0.11	10,447.9	-0.71
Jul-00	3767.0	-5.02	640.6	-0.36	10,522.0	0.71
Aug-00	4206.4	11.66	674.5	5.29	11,215.1	6.59
Sep-00	3672.8	-12.69	663.0	-1.70	10,650.9	-5.03
Oct-00	3369.6	-8.26	666.0	0.45	10,971.1	3.01
Nov-00	2597.9	-22.90	629.8	-5.44	10,414.5	-5.07
Dec-00	2470.5	-4.90	656.9	4.30	10,786.9	3.58
Jan-01	2772.7	12.23	663.6	1.02	10,887.4	0.93
Feb-01	2151.8	-22.39	626.9	-5.53	10,495.3	-3.60

(Source: NASDAQ Market Data, May 2001)

Table 3: RATIO COMPARISON

Valuation Ratios	ADS	*Industry	Sector	S&P 500
P/E Ratio (TTM)	NM*	41.09	32.59	28.28
P/E High - Last 5 Yrs.	164.8	90.52	66.66	49.92
P/E Low - Last 5 Yrs.	9.2	21.47	17.61	17.19
Beta	1.68	1.8	1.74	1
Price to Sales (TTM)	0.40*	7.33	6.65	3.78
Price to Book (MRQ)	0.67	4.98	6.31	6.13
Price to Tangible Book (MRQ)	5.58	6.41	7.54	8.59
Price to Cash Flow (TTM)	NM	28.88	25.1	19.81
Price to Free Cash Flow (TTM)	NM	55.12	38.71	41
% Owned Institutions	5.75	38.81	41.89	57.41

*Industry--ADS is categorized in Telecommunication Industry in NASDAQ.

(Source: NASDAQ, April 2001)

Table 4: Growth Rate

Growth Rates (%)	ADS	Industry	Sector	S&P 500
Sales (MRQ) vs Qtr. 1 Yr. Ago	-64.53*	19.16	24.6	18.77
Sales (TTM) vs TTM 1 Yr. Ago	-22.76*	22.25	29.71	20.1
Sales - 5 Yr. Growth Rate	301.4	40.59	33.71	17.12
EPS (MRQ) vs Qtr. 1 Yr. Ago	NM*	-9.02	9.11	7.58
EPS (TTM) vs TTM 1 Yr. Ago	NA*	-2.67	31.36	21.02
EPS - 5 Yr. Growth Rate	5.04	34.01	38.5	20.1
Capital Spending - 5 Yr. Growth Rate	242.1	26.43	15.79	10.98

(Source: NASDAQ, April 2001)

Growth Rate Measures for EPS

- Current year/last year % growth shows the percent change between the current year's Forecasted mean EPS estimate and the last reported actual EPS
- Next year/current year % growth shows the percent change between next year's forecasted mean EPS estimate and the current year's forecasted mean estimate
- Historical EPS growth % (historical 5 year growth) shows the average annual EPS growth for the company over the past five years
- 5 year growth median is the median annual growth forecast over the next five years
- 12 Month Forward % Growth is the projected growth in the company's EPS over the next 12 months (PEG Ratio)

Table 5: Financial Strength

Financial Strength	ADS	Industry	Sector	S&P 500
Quick Ratio (MRQ)	1.2	3.36	2.37	1.09
Current Ratio (MRQ)	2.12	4.2	2.88	1.6
LT Debt to Equity (MRQ)	0.41	0.22	0.22	0.61
Total Debt to Equity (MRQ)	0.44	0.3	0.29	0.89
Interest Coverage (TTM)	-3.02	4.8	12.3	11.31

(Source: NASDAQ, April 2001)

*50 Companies in the Communications Equipment industry listed in order of descending market capitalization:

NOK, ERICY, NT QCOM ALA, LU, MOT, JDSU, GLW, UNPR, MONI, CIEN, TLAB, CMVT, SFA, TCM, ADCT, SONS, ONIS, AV, MCDT, LLL, EMS, FNSR, CORV, SCMR, GRMN, NNDS, PLCM, HRS, TKLC, FDRY, ANDW, AFCI, INRG, DIGL, PWAV, MLT, ADTN, SNWL, PLT, CTLM, CTV, CDT, IDCC, VG, ECIL, DSPG, NXTV, STXN

Alphabetical Listing of all Industries in the Technology Sector:
Communications Equipment, Computer (Hardware, Peripherals, Storage Device, Networks, & Services), Electronic Instr. & Controls, Office Equipment, Scientific & Technical Instr., Semiconductors, and Software & Programming

Table 6: ADS' revenue

REVENUE				
Quarters	1997	1998	1999	2000
MAR	18,127	38,784	51,573	85,153
JUN	24,744	53,680	72,955	63,863
SEP	29,195	59,044	107,262	73,846
DEC	31,093	55,573	104,951	37,223*
Totals	103,159	207,081	336,741	260,085*
Note: Units in Thousands of U.S. Dollars				

(Source: NASDAQ, April 2001)

Table 7: ADS' Earnings per share

EARNINGS PER SHARE				
Quarters	1997	1998	1999	2000
MAR	0.05	0.02	-0.04	-0.02
JUN	0.06	0.07	0.01	-0.35
SEP	0.08	0.05	0.01	-0.03
DEC	0.02	0	0.1	-0.230*
Totals	0.21	0.14	0.08	-0.630*
Note: Units in U.S. Dollars				

(Source: NASDAQ, April 2001)

Table 8: ADS' Total Revenue by Divisions

TOTAL REVENUE						
In Millions of U.S. Dollars	12 Months Ending 12/31/2000		12 Months Ending 12/31/1999		12 Months Ending 12/31/1998	
Application Technology	33.3	23.80%	28	21.70%	10.2	13.70%
Telecommunications	40	28.60%	59.2	46.00%	33.3	44.80%
Network Infrastructure	43	30.80%	27.2	21.10%	21.3	28.60%
Advanced Wireless	23.4	16.70%	14.4	11.20%	9.6	13.00%
Internet	0	0.00%	0	0.00%	-	-
Inteletek	0	0.00%	0	0.00%	-	-
Non-Core Business	0	0.00%	0	0.00%	-	-
Segment Total	139.7	100.00%	128.8	100.00%	74.3	100.00%
Eliminations	-5.1		0		0	
Corporate Overhead	0.2		0.3		0	
Consolidated Total	134.8		129.1		74.3	

(Source: YahooMarketGuide, May 2001)

Table 9: ADS' depreciation/amortization

DEPRECIATION/AMORTIZATION						
In Millions of U.S. Dollars	12 Months Ending 12/31/2000		12 Months Ending 12/31/1999		12 Months Ending 12/31/1998	
Application Technology	1.1	55.20%	1.8	44.90%	0.8	51.30%
Telecommunications	0.1	2.60%	1.5	39.00%	0.4	24.90%
Network Infrastructure	0.2	8.80%	0.1	3.30%	0	2.60%
Advanced Wireless	0.7	33.50%	0.5	12.80%	0.3	21.20%
Internet	0	0.00%	0	0.00%	0	0.00%
Inteletek	0	0.00%	0	0.00%	0	0.00%
Non-Core Business	0	0.00%	0	0.00%	0	0.00%
Segment Total	1.9	100.00%	4	100.00%	1.5	100.00%
Eliminations	7		1.6		1.3	
Corporate Overhead	1.6		1		0.1	
Consolidated Total	10.6		6.6		2.9	

(Source: YahooMarketGuide, May 2001)

Table 10: ADS' Total Assets

TOTAL ASSETS						
In Millions of U.S. Dollars	12 Months Ending 12/31/2000		12 Months Ending 12/31/1999		12 Months Ending 12/31/1998	
Application Technology	29.3	26.20%	20.4	44.30%	12.6	25.30%
Telecommunications	30	26.80%	11.3	24.60%	22	44.20%
Network Infrastructure	21	18.70%	6.7	14.50%	5.5	11.10%
Advanced Wireless	31.7	28.30%	7.7	16.60%	9.6	19.40%
Internet	0	0.00%	0	0.00%	0	0.00%
Inteletek	0	0.00%	0	0.00%	0	0.00%
Non-Core Business	0	0.00%	0	0.00%	0	0.00%
Segment Total	112.1	100.00%	46.1	100.00%	49.7	100.00%
Eliminations	-202		-142.6		-126	
Corporate Overhead	411.6		207.8		147.5	
Consolidated Total	321.4		111.3		71.6	

(Source: YahooMarketGuide, May 2001)

APPENDIX C:
APPLIED DIGITAL SOLUTIONS

Figure 1: Branch offices

Head office: Florida



(Source: Applied Digital Solutions, 2001)

Figure 2: Organizational Chart (i3 strategy)

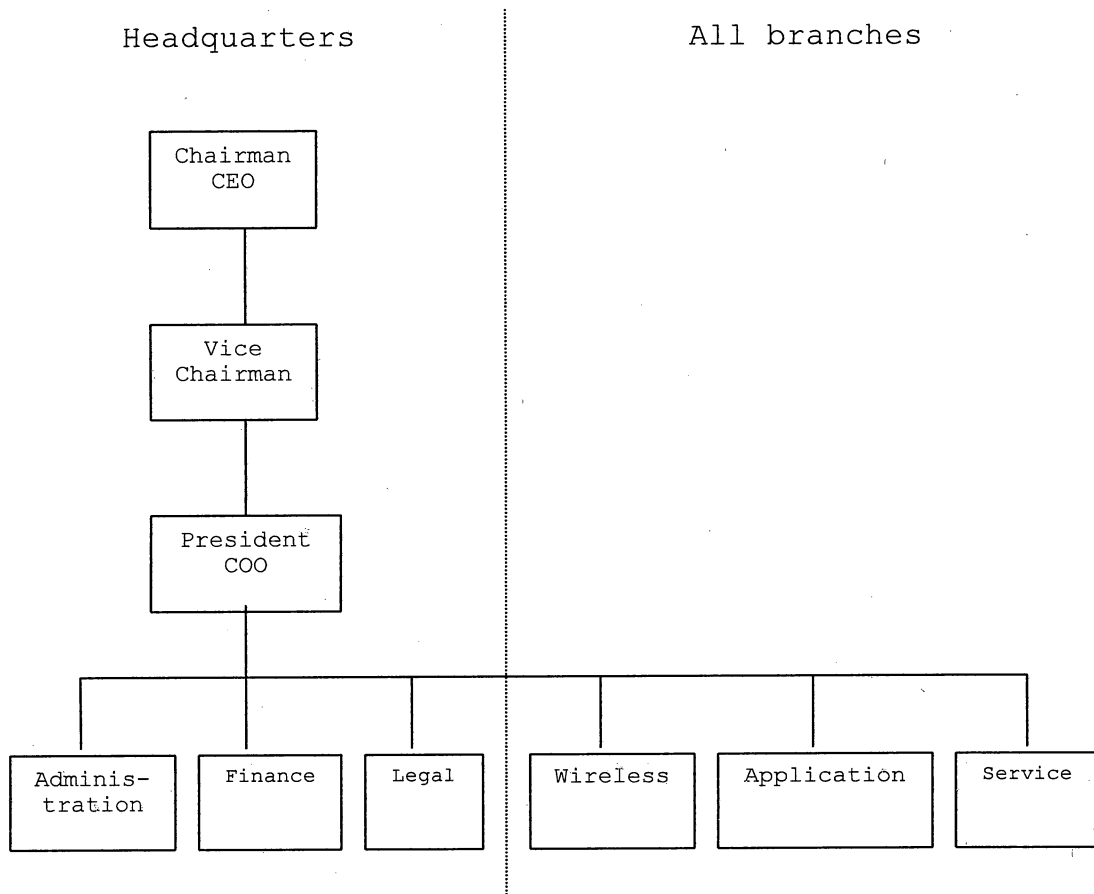
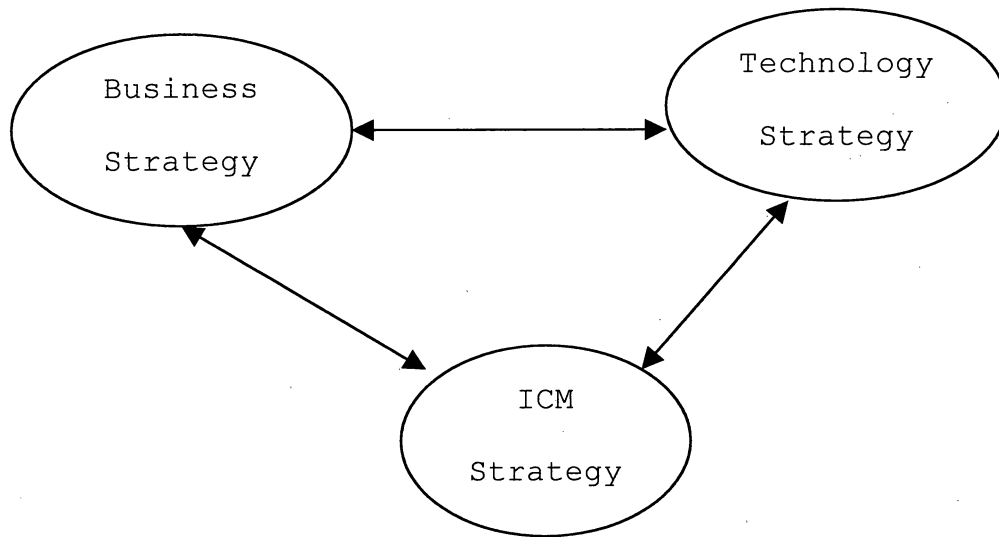


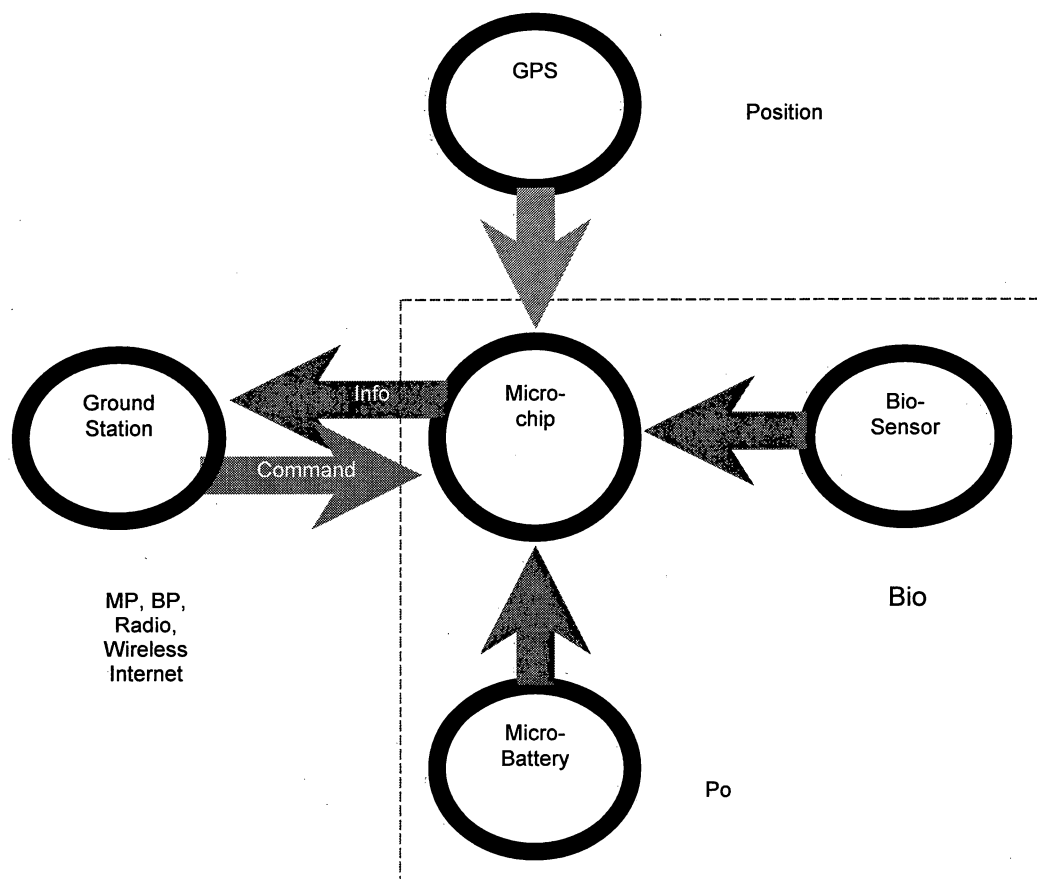
Figure 3: Strategic decision-making for a new business opportunity



(Source: Nickerson & Silver, 1998)

APPENDIX D:
DIGITAL ANGEL™

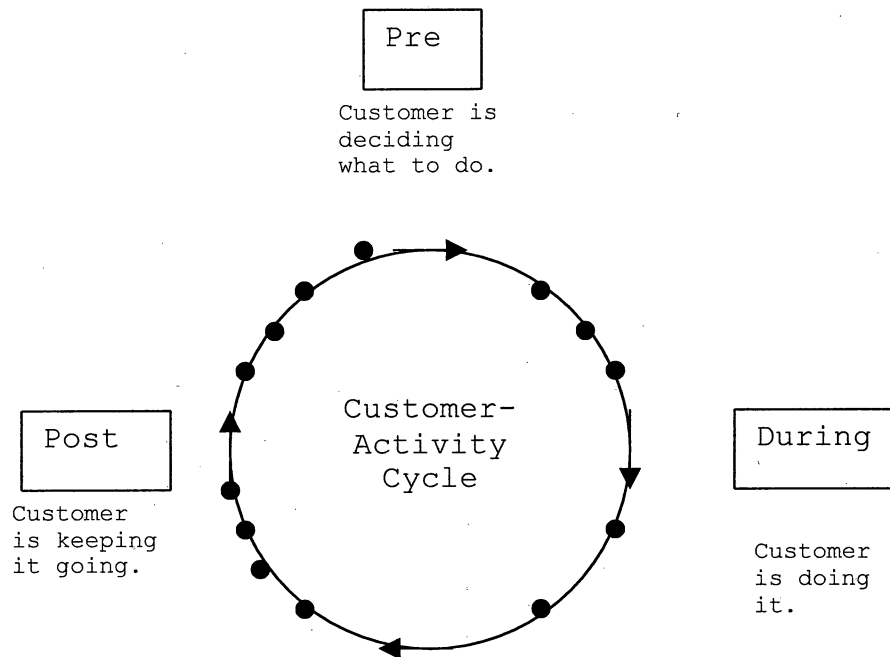
Digital Angel's Basic Concept



(Source: Digital Angel Corporation, 2001)

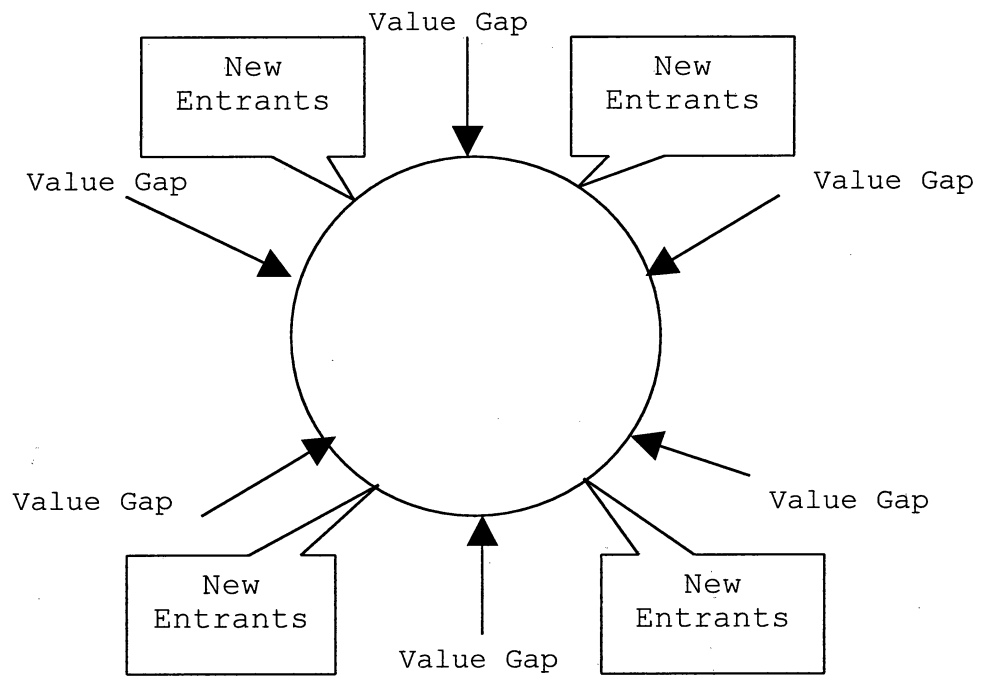
APPENDIX E:
THE CUSTOMER-ACTIVITY CYCLE

Figure 1: The Customer-Activity Cycle



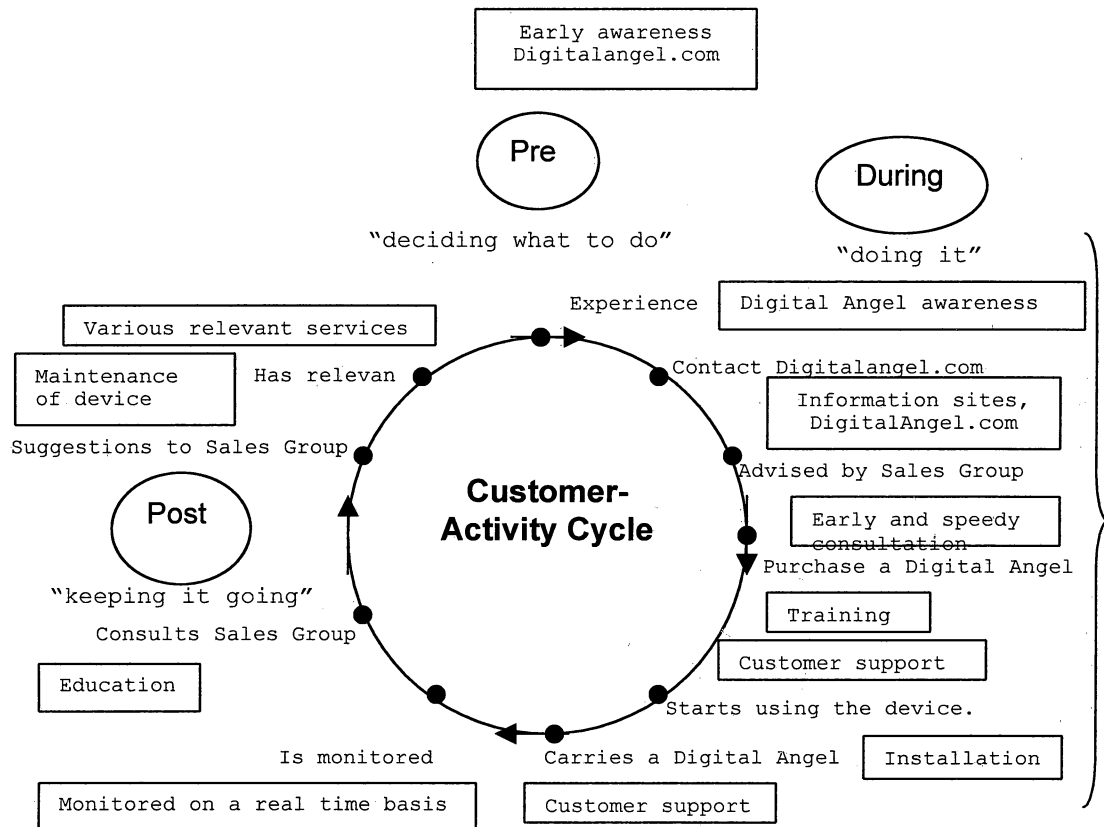
(Source: Vandermerwe, 2000)

Figure 2: Capitalizing on Value Gaps



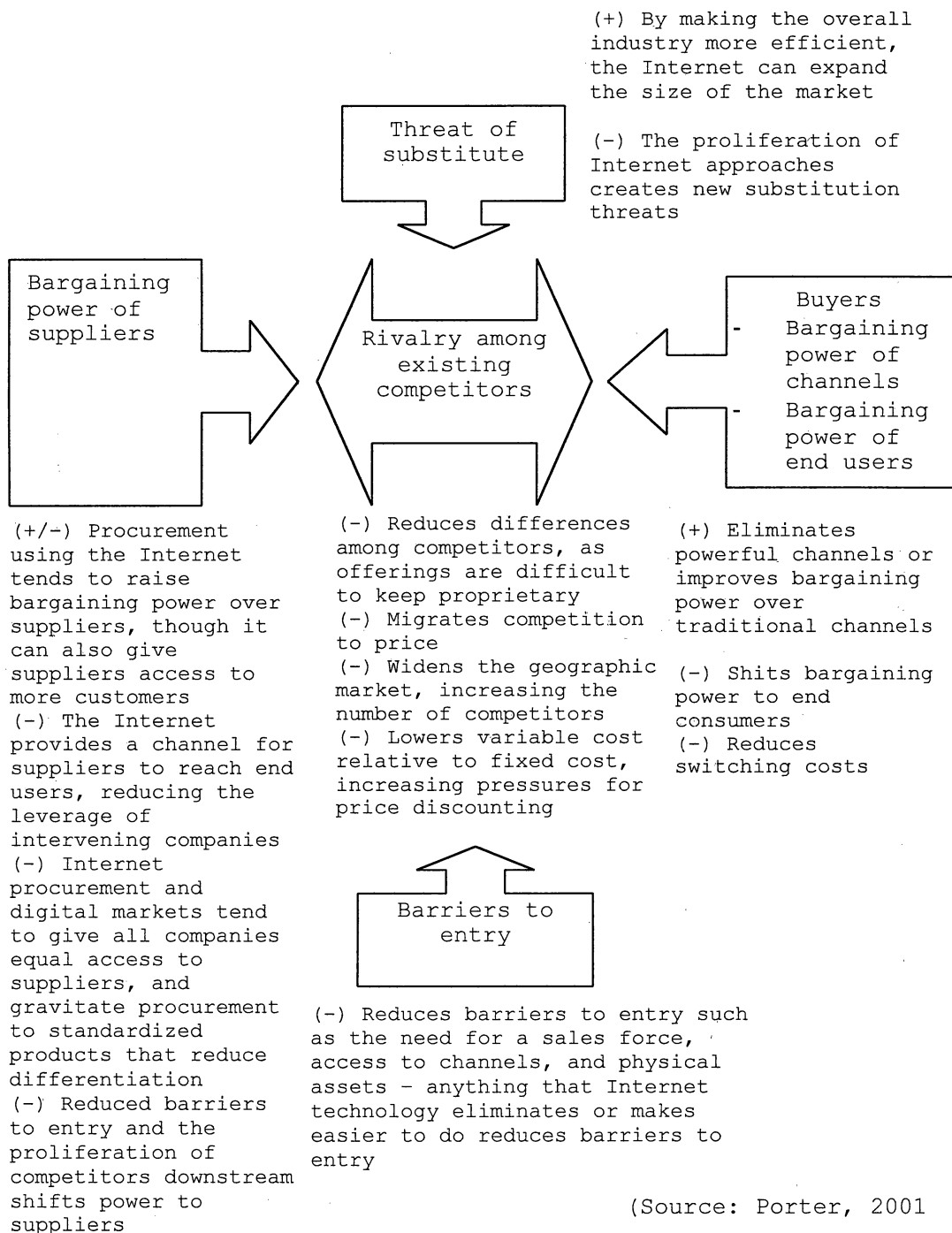
(Source: Vandermerwe, 2000)

Figure 3: The Customer-Activity Cycle for Digital Angel by Adding Value at Each Point



APPENDIX F:
PORTER'S FIVE FORCES

How the Internet Influences Industry Structure



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