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MARKET FORECAST

U.S. NETWORK SERVICES MARKET

1995-2000

U.S. Market Analysis Program

FEBRUARY 1996

U.S. NETWORK SERVICES MARKET

1995 - 2000

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Abstract

This report examines the issues, trends and other factors (including use of multimedia capabilities and new network technology) that will have an impact on the users and vendors of network services. The report also provides a forecast of the market for these services from 1995 to 2000.

The report analyzes and forecasts the market for the network services subcategories of electronic information services (or on-line databases) and network applications, which include electronic mail, electronic data interchange (EDI) and other applications using value-added networks. Electronic information services also include on-line data and textual information such as news services.

The various issues and trends affecting network services are analyzed from the perspective of both users and vendors in order to compare vendor plans and user needs and identify opportunities to satisfy such needs. Factors discussed in this study include the impact of the Internet and multimedia network services, both of which have high user interest. The analysis of these and other factors, together with other INPUT research, is used to project the growth in the market for network services across fifteen industry sectors over the next five years.

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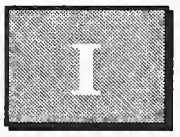
Exhibits



Introduction

A
Purpose and Organization

1. Purpose

This report has been developed to analyze the network services sector of the information services industry and develop a five-year forecast for this market. The report assesses market drivers and inhibitors, examines competitive trends and activities, and identifies leading vendors.

The report contains insights and information on the use of network services that can help vendors to:

- Understand the forces influencing market activities
- Assess the impact of the Internet on user demand and vendor costs and its potential for new market product opportunities
- Understand user interest in new multimedia and communication capabilities
- Identify new service opportunities
- Assess competitive trends and vendor activities
- Determine market directions

2. Organization

In addition to this introductory chapter, the report includes the following sections:

- Chapter II, Information Services Environment, analyzes user issues and needs in regard to the services supplied in the network services sector.
- Chapter III, The Internet, assesses the impact of this exciting new resource.
- Chapter IV, Market Forecast, provides the five-year forecast for the network services sector by industry and for certain generic markets.
- Chapter V, Competitive Analysis, identifies the issues influencing vendors of network services and analyzes the competitive environment.
- Chapter VI, Conclusions and Recommendations, summarizes INPUT's findings and offers recommendations for vendors in this market.
- Appendix A, Forecast and Reconciliation, provides the forecast database and reconciliation for network services.

B
Scope and Methodology

1. Scope

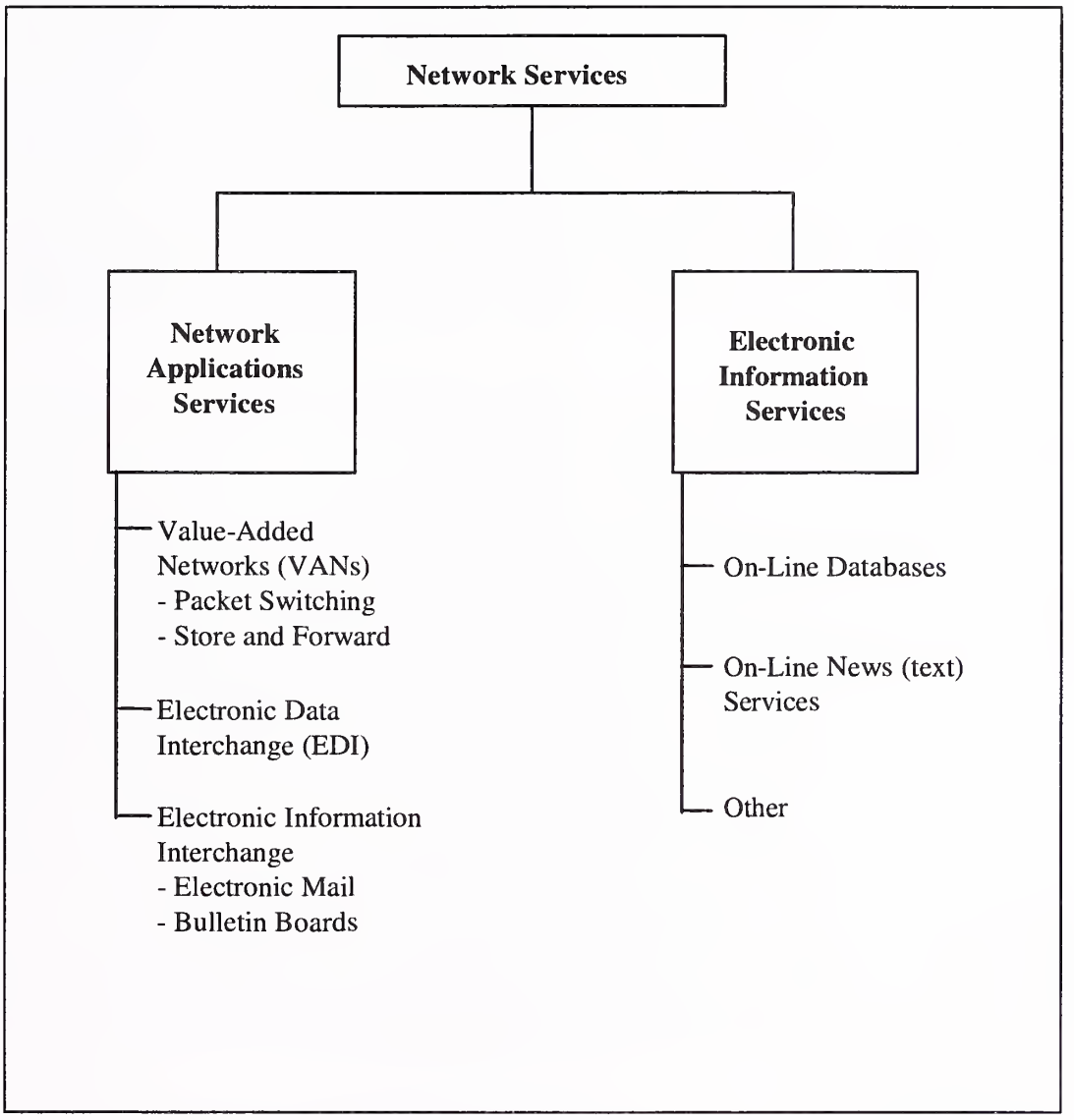
This report addresses the expenditures for network services that are supplied by vendors. Expenditures for this type of service that are supplied by in-house IS organizations are not included; expenditures that are captive, and not available for competitive bids, are also excluded.

2. Description of Network Services

Network services is divided into two submodes, electronic information services and network applications, as shown in Exhibit I-1.

Exhibit I-1

Network Services Market Structure



Source: INPUT

- Electronic information services, or EIS, consist of on-line databases and news or text services. They can be oriented to use in a specific industry market, such as the chemical industry, or be generic and used across industries, as are equity (stock market) prices.

- Network applications are bought for specific industry use and are classified as industry specific.

Network services can be purchased together with processing services. Expenditures would be separated by INPUT, in this case, so that the network services could be identified specifically.

3. Methodology

The data used in this report was gathered during 1995 from the ongoing interviews that INPUT conducts with users and vendors in the information services industries (about 5,000 in the U.S. annually), as well as from 30 targeted interviews with users of information services and 15 contacts and interviews with vendors interested in this delivery sector.

An analysis of the expenditure and revenue information obtained from the interviews is used to develop forecasts. These forecasts are then reconciled to those of the previous year and differences are analyzed.

C
General Business Overview

As documented by the U.S. Department of Commerce, economists and business journals, the U.S. economy ended 1994 on a high note—perhaps too high from the Fed's viewpoint—with growth at approximately 4.6%. Since employment has also returned to an acceptable level, there is some concern that the strong growth increases the threat of inflation in 1995. However, January's gain in employment—134,000 people—was well below 1994's monthly average gain of 290,000. This decrease has generally been regarded by both economists and the financial markets as the first solid evidence of slower growth. Most economic observers now feel that growth should slow to around 2% by the third quarter of 1995, giving the American economy what some economists are calling a "soft landing." There is also general agreement that the economy seems to be in a mid-cycle slowdown, and that long-term, the risk of that slowdown becoming another period of recession in late 1995 is low.

From a financial markets viewpoint, in 1994 bond yields rose nearly 200 basis points, and the Federal Funds rate was up 250 basis points. In 1995 most market analysts expect the Fed rate to top out at 6% (which it has—see below), bond yields to move sideways and S&P 500 earnings to increase approximately 7%—an amount smaller than in 1994. In general, most sectors of the U.S. economy should grow more slowly in 1995 than they did in 1994—the result of slight decreases in productivity and price/cost pressures. U.S. manufacturers are still restructuring, emphasizing cost-cutting and downsizing, and, coupled with the early-1995 weakness of the dollar (especially against the yen), world markets should find U.S. goods attractively priced. Imponderables remain the short-term impact of supports for Mexico's peso and trade disputes with China and Japan. These situations have the potential for significant short-term volatility, but in the long run should have little effect on the U.S. economy's return to modest, steady growth. Inflation in 1995, as measured by the Blue Chip consensus of approximately 50 private-sector economists, is expected to be at a

conservative 2.9%, growing slightly through the year 2000 to a maximum of 3.3% (1996 and 1997) and then declining to 3.0% by the millennium.

In support of the long-term economic theories summarized above, the most encouraging (and pragmatic) sign of a healthy economy was seen on July 7, 1995, when after a prolonged period of rate increases dating back to early 1994, the Federal Reserve lowered the Federal Fund Rate by 1/4%—from 6% to 5.75%. The amount of adjustment is small, but the direction of the move is seen by most financial and business analysts as extremely positive, and a signal that the economy has stabilized and that inflationary influences are now under control.

Overall, however, the outlook for the U.S. economy in 1995 has been for controlled, steady growth in the 5.7% range with inflation at about 3%, and corporate after-tax profits at approximately 7%, down slightly from 1994's 10%.

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II

Information Services Environment

A
Market Structure

Benefits that users can obtain from network services are being driven by Internet growth and advances in networking technology, as well as by the information needs of users. This situation is similar to the historical relationship of factors that was the genesis of network services, as illustrated in Exhibit II-1.

Exhibit II-1

Role of Technology in Network Services

Period	Network Services Technology-Driven Changes
1960	Network services are initiated when network capabilities enable vendors to meet user needs for timely, on-line data access and rapid data interchange between users. Timesharing was an early application that also involved remote processing—initially using programs written in FORTRAN.
1970-1980	Faster network technology accelerates acceptance and use of vendor-provided network services
1990s	Increase in network bandwidth, faster modems and multimedia capabilities enhance use of vendor information (via EIS) and inter-unit data flow via vendor services and the Internet

Source: INPUT

Question: What was the first major network service? Answer: Airline reservation systems.

Why: Airlines sold a product (airplane seats) with a finite shelf life; very high user access demand, peaking near take-off time; and massive on-line data storage requirements.

In a sense, network services came into being as a result of the development of network capabilities that could provide timely interconnection of computing installations; the connection of terminals to remote systems; and access to remote data bases. Data processing vendors that were supplying batch data established on-line delivery to supply electronic information to clients and to send EDI and other messages between clients.

The capabilities being added now, through expanded proprietary network capabilities and multimedia technology, will add significant benefits and cause an increase in the volume of network services.

The basic structure of the network services market (as shown in Exhibit II-2) will not change, but the value and quantity of vendor services will change over time and cause increasing differentiation among vendors.

(Note: Exhibit II-2 is a restatement of Exhibit I-1 showing the differentiation of network services between those that are service-based and those that are product-based.)

Exhibit II-2

Network Services Market Structure

Service-Based Offerings	Network Applications • EDI • Electronic mail • Internet access • Other VAN capabilities such as shared spreadsheets • Application services (on-line purchasing)
Product-Based Offerings	Electronic Information Services • On-line databases -Security, fixed income, foreign exchange and other market data -Credit data -Economic, technical, product schedule and other data • On-line unstructured data - Bibliography, text - News - Illustrated summaries

Source: INPUT

The network services noted in Exhibit II-2 are divided into those that perform a service by exchanging data between organizational units (network applications) and those that are product-based and supply structured or unstructured data to clients (EIS). The latter can include on-line databases or textual collections of data accompanied by graphs, voice messages and other information. Vendors of EIS or on-line databases are usually not the vendors who offer network applications.

B
Use of Network Services

1. Trends in the Use of Network Services

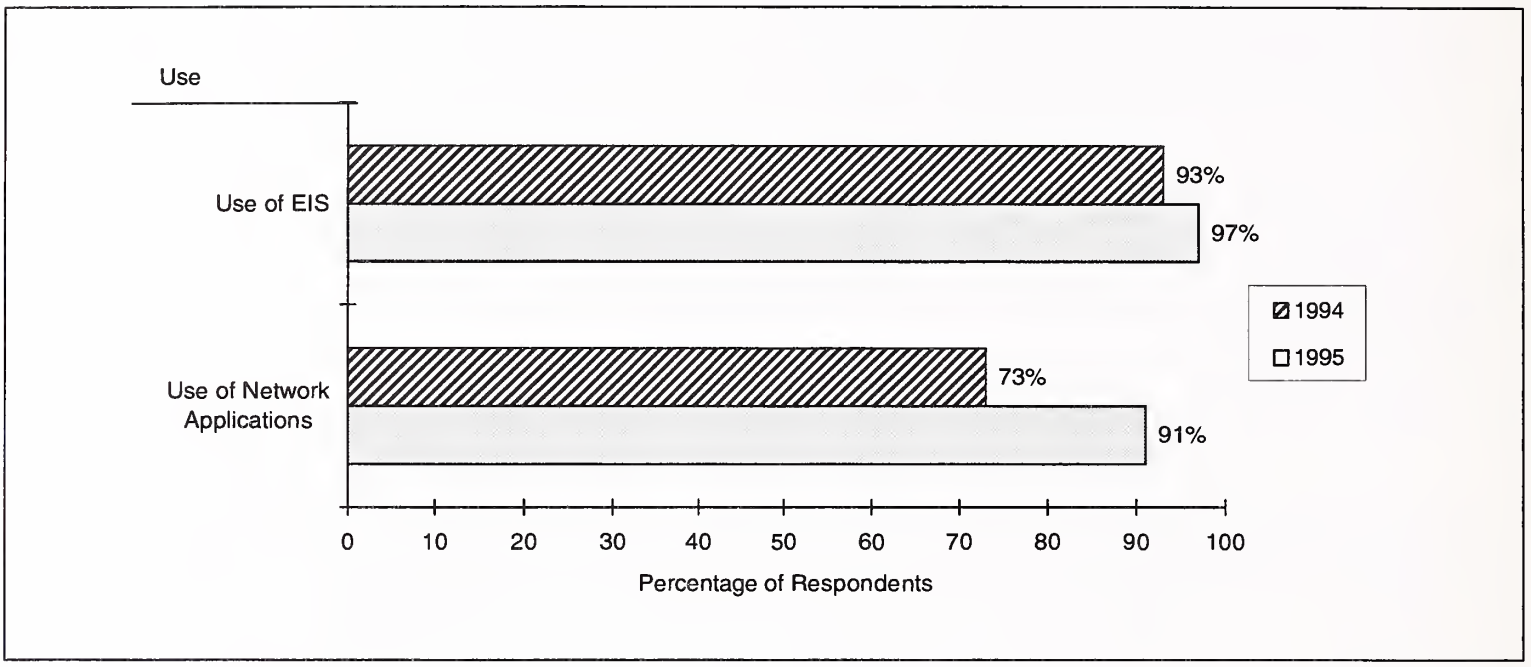
Thirty interviews of end users (from a cross-section of U.S. industry, including corporate, government, retail, etc.) regarding their frequency of use of network services were conducted by INPUT staff in 1994 and 1995. Exhibit II-3 shows the results for both 1994 and 1995. 1995 results showed a strong improvement over 1994 in terms of network services use.

Use of Network Services—Overall, the 1995 interviews revealed a high rate of network services use—in fact, only one respondent did not use electronic information services (EIS). Use of network applications was also high, but not as universal as the use of EIS. Two of the three corporate respondents not using network applications at present, however, plan to be using them within a short time. Respondents' reasons for using network services are summarized in Exhibit II-4. Responses for both the 1994 and 1995 surveys are shown.

Reasons for Use of Network Services—All 1995 respondents reported that the use of network services was determined chiefly by the departments that were users of these services. Reasons given for using these services are savings of cost and time, although many users point out that it would not be possible to carry on present operations without having certain types of information available on-line, as indicated in Exhibit II-4. Some respondents gave multiple reasons for the use of network services, including competitive pressures and a need for better service than could be provided internally. Service and necessity were more important in 1995, while cost/time savings and competitive pressures declined in importance.

Exhibit II-3

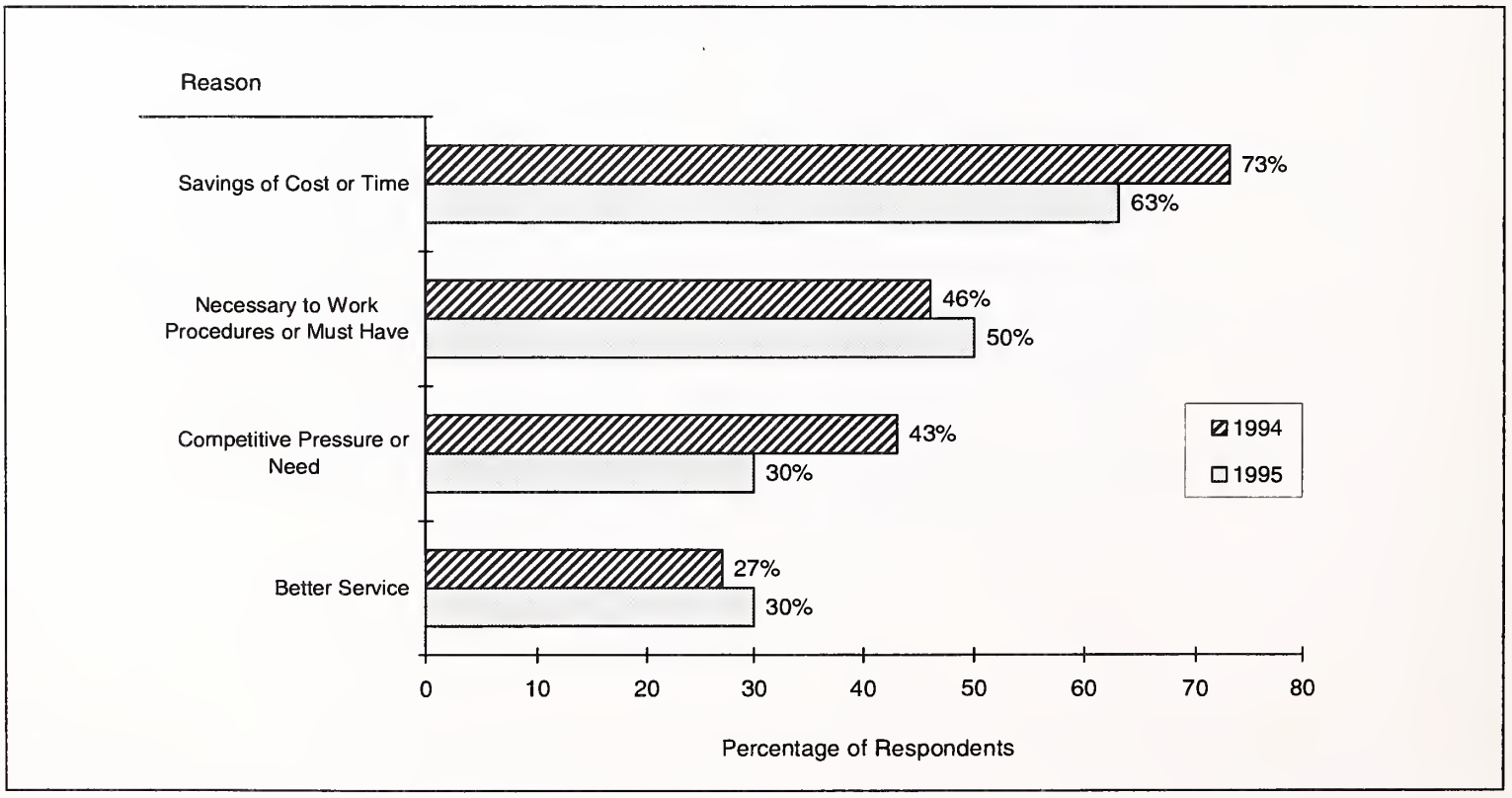
Frequency of Use of Network Services



Source: INPUT

Exhibit II-4

Reasons for Using Network Services



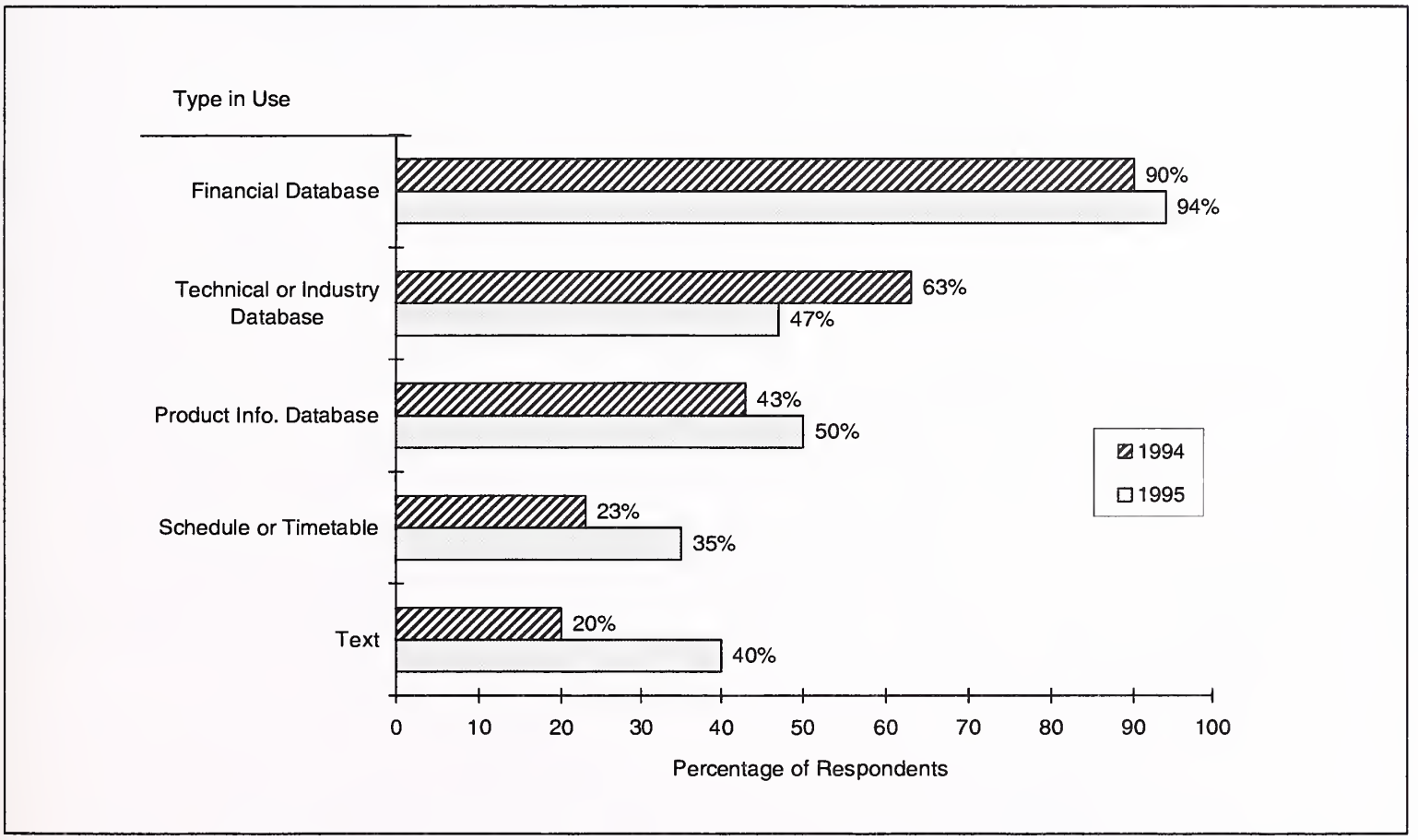
Note: Multiple responses permitted.

Source: INPUT

Types of EIS Use—The use of EIS (or on-line databases, as many users and vendors refer to them) is heavily focused on the use of financial databases such as equity prices, economic statistics or credit information, as noted in Exhibit II-5. Many of the other databases in use (such as those that have product or technical information) can also be vital to business activities, according to the respondents who use them. Variances between 1994 and 1995 responses are reasonable and expected as business needs change—except for the consistency of use of financial data and the strong growth in the use of text databases, such as pharmaceutical interaction information or credit reports.

Exhibit II-5

Types of EIS in Use



Note: Multiple responses permitted.

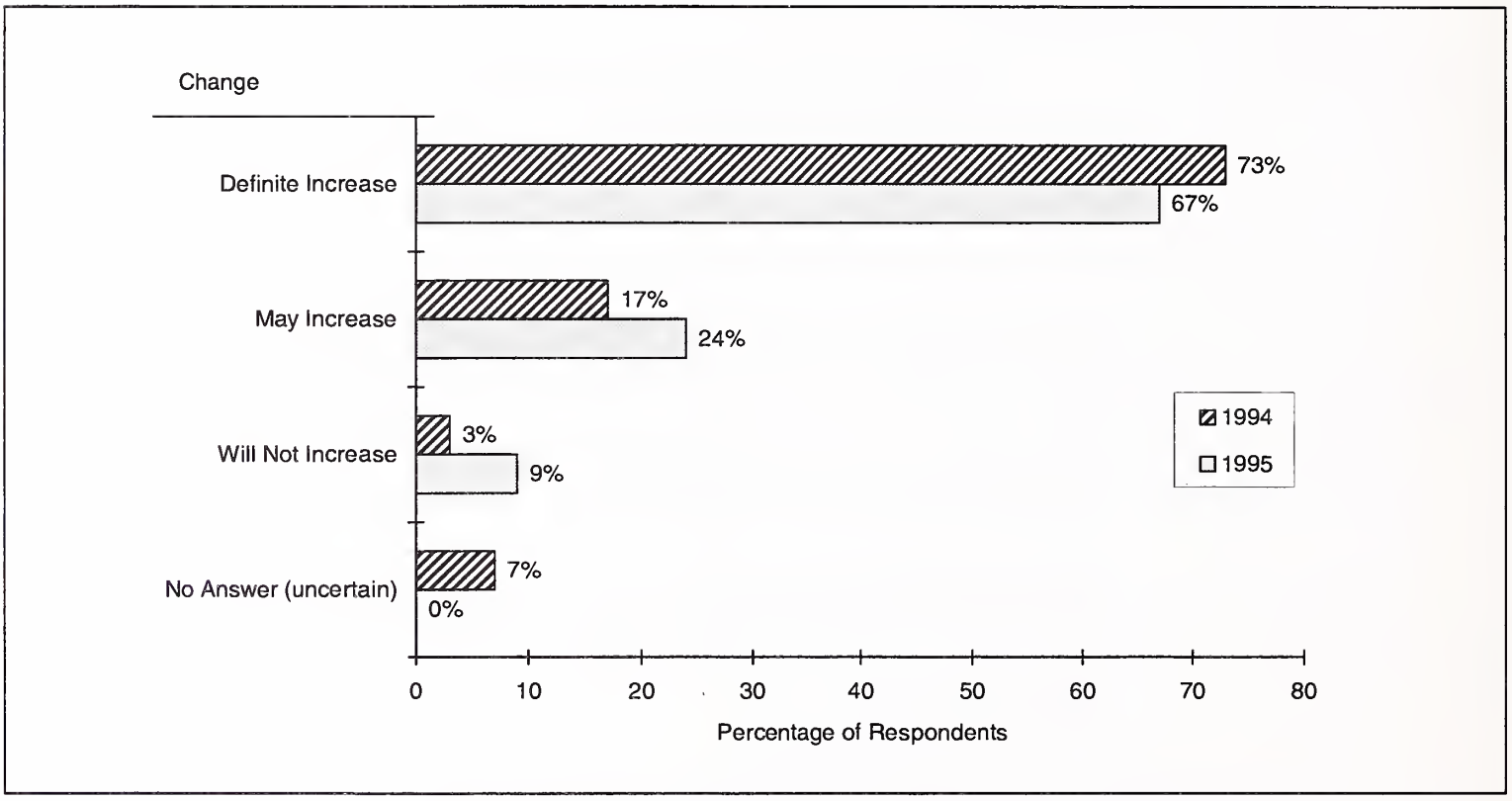
Source: INPUT

The totals shown in Exhibit II-5 indicate the relative range of use of EIS by content, but don't clearly describe exact usage patterns, since data on the use of EIS in large corporations is not generally audited. According to respondents, for instance, in some companies a user may be willing to quickly justify or try new sources of information that can aid in performing work or save time or money, without informing IS or other coordinators.

Anticipated Changes in EIS Use—Exhibit II-6 illustrates that the expectation of a steady increase in the use of EIS decreased slightly from 1994 to 1995, while "may increase" responses went up by 7%. The number of stability responses ("will not increase") tripled, from 3% to 9% of respondents, and in 1995, due to the growing awareness of this on-line resource, there were none who were uncertain ("no answer") about anticipated EIS use.

Exhibit II-6

Change Anticipated in Use of EIS

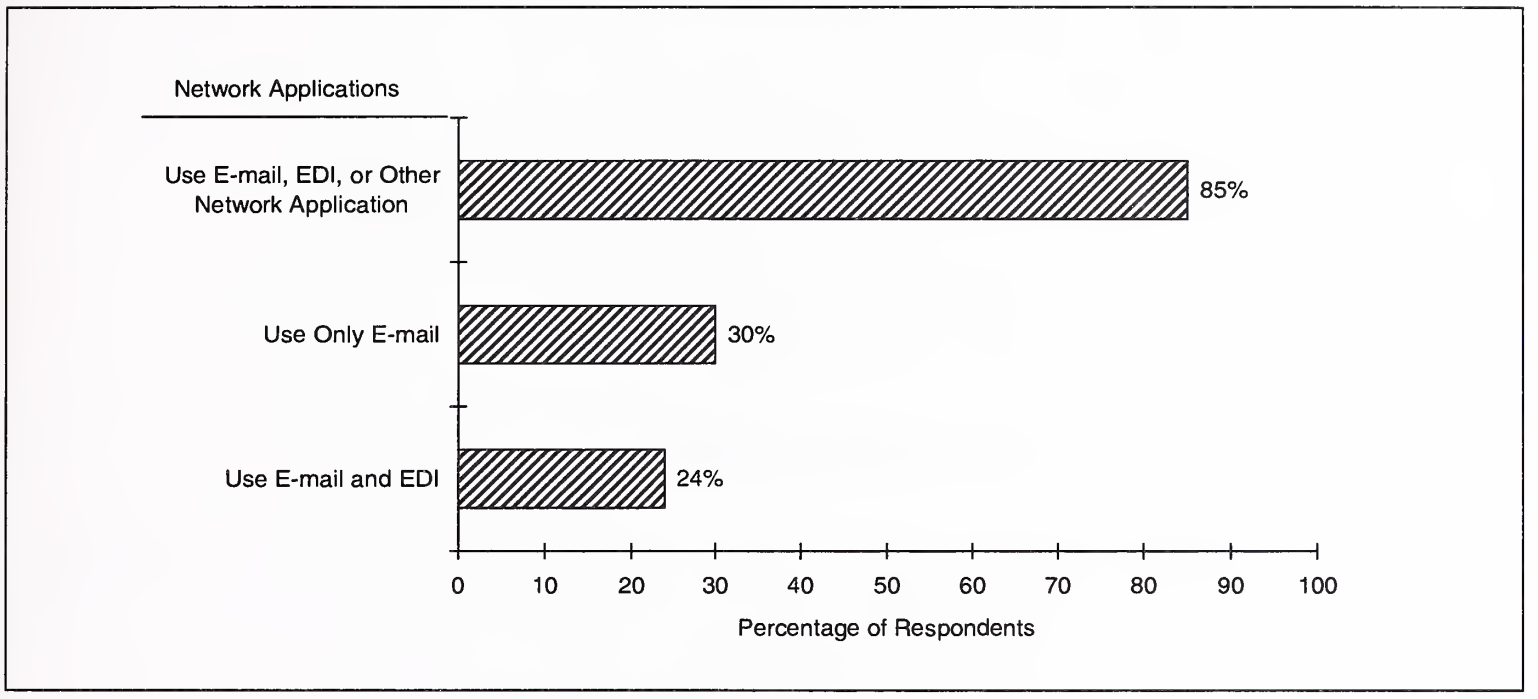


Source: INPUT

Use of E-Mail and EDI—Network applications is divided into three product areas—E-Mail, EDI and VANs. In 1995, INPUT queried businesses regarding their use of E-mail and EDI. The responses are summarized in Exhibit II-7. Most respondents (85%) used either EDI, E-mail or some related network application. Those using only E-mail grew from 23% in 1994 to 30% in 1995, while those using both EDI and E-mail more than doubled—from 11% in 1994 to 24% in 1995.

Exhibit II-7

Use of Network Applications

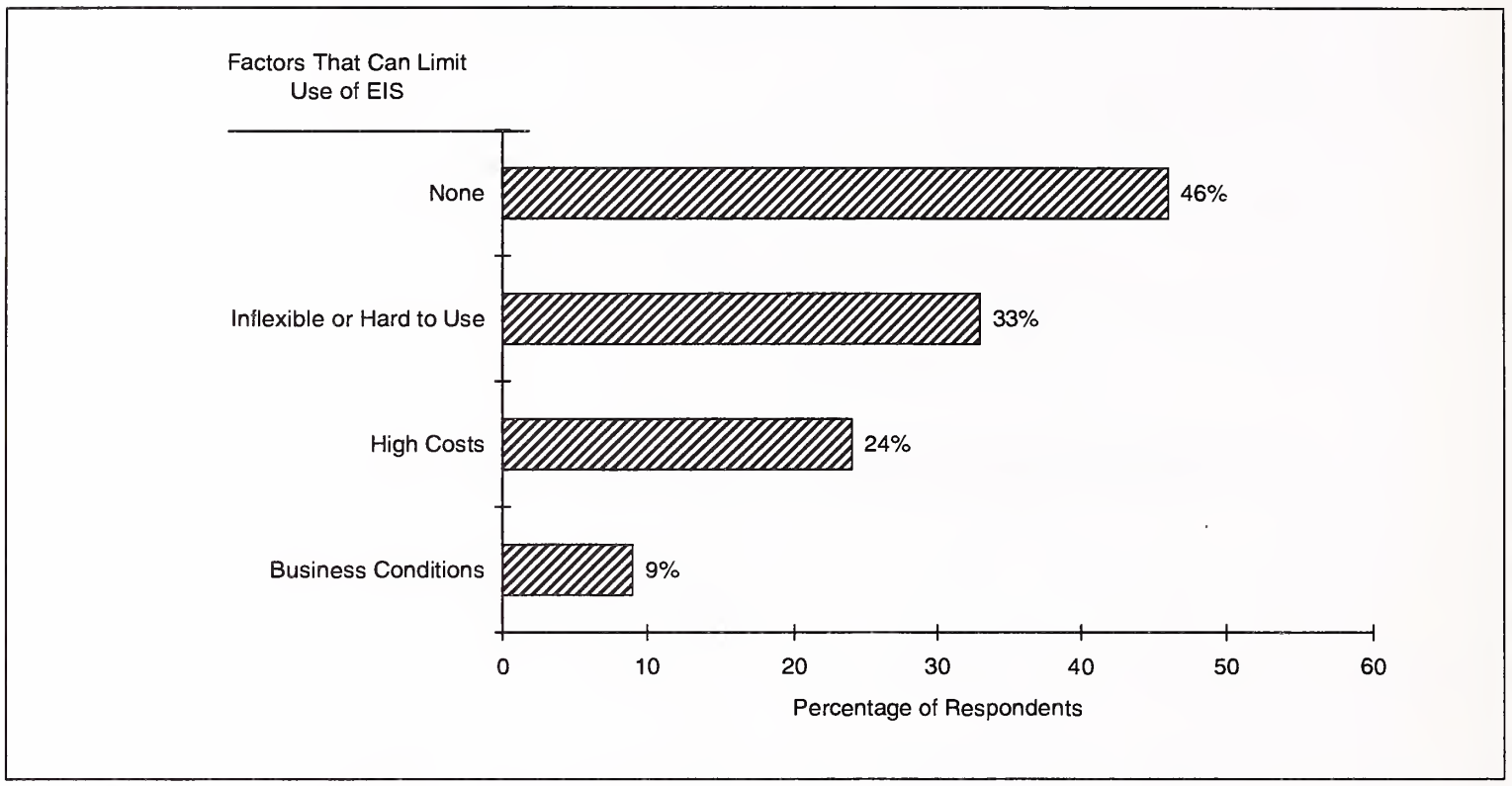


Source: INPUT

Inhibitors to the Use of Network Services—Factors that can inhibit or discourage the use of network services are shown in Exhibit II-8. (Multiple responses were permitted.) Almost half (46%) of the respondents feel that there are no deterrents to use, as noted in the exhibit. Ease of use was a concern for one-third of the respondents, while high costs for services was the third most noted reason (24%). Some of the respondents who mentioned cost had not done complete examinations of competitive costs and benefits recently, however, and network services vendors should encourage these users to review their analyses of costs. Uncertain business conditions worried less than 10% of the respondents.

Exhibit II-8

Factors That Can Inhibit Use of Network Services



Note: Multiple responses permitted.

Source: INPUT

2. Anticipated Impact of Multimedia Services

Based on the interest of network services users, the availability of multimedia capabilities will be a strong driver for the use of network services, and vendors will find that it can differentiate and promote their services. As illustrated in Exhibit II-9, 52% of respondents have a definite or probable interest in the use of multimedia.

- Interest is higher in the use of multimedia with EIS than with network applications. Several users and vendors anticipate that interest will grow in the use of multimedia with network applications, particularly through the use of products such as Lotus Notes, capabilities such as the World Wide Web and the expansion of electronic commerce.

Fifteen percent of the respondents report no interest in the use of multimedia.

Exhibit II-9

Interest in Use of Multimedia

Interest Level	Percentage of Network Service Respondents - 1995
Definite Interest	31
Probable Interest	21
Not Sure	33
No Interest / NA	15

Source: INPUT

C
Role of the Internet in Network Services

In 1995, network services (NS) end users were questioned by INPUT regarding the role of the Internet in NS usage and IS plans. Their responses are summarized in Exhibit II-10.

Internet Connection—Three-quarters of the respondents to INPUT's user survey said they were already connected to the Internet. All those not connected in 1995 planned to be connected in 1996.

Method of Connection—Users said that on-line computer services such as America Online were the primary method of Internet connection.

NS Usage Patterns—About half of the users said that the Internet would change their NS usage patterns. Thirty-three percent said they saw no change and 19% didn't know what their reaction would be.

Why the Internet?—Users agreed that three features explain why the Internet is attractive: lower costs; global coverage; and ease of access. Service features are less important at this time, although as users become more sophisticated, service will become more important.

Increased Use of the Internet—Users identified three features that will lead to increased use of the Internet: E-mail applications and interconnectivity; new on-line services such as electronic commerce and medical records access; and customer support services.

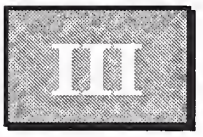
Exhibit II-10

Role of Internet in Network Services

Issues and Questions	Response (%)
1. Are you connected to the Internet?	Yes 75% No 25%
If "No," when planned? All No's said ...	1996
2. How connected?	
- On-line computer service	61%
- VAN, access providers	21%
- School, government agency	18%
3. Will Internet change your NS usage patterns?	Yes 48% No 33% Don't Know 19%
4. Why use Internet? (Multiple responses possible)	
- Lower costs	69%
- Global coverage	67%
- Ease of access	67%
- Service features	33%
5. Key Internet Usage drivers	
- E-mail	63%
- New services (Electronic Commerce, Medical Records)	42%
- Customer support	42%
- Reduced costs	33%
- Other benefits (Multiple responses possible)	33%

Source: INPUT

Lack of security for Internet transactions and payments was identified by 70% of the respondents as an inadequacy and a barrier to increased usage.



The Internet

A
Internet Impact

The advent and acceptance of the Internet as a communications and information dissemination vehicle is one of the most prominent technical phenomena of this decade. Although business/commercial usage presently emphasizes messaging, information distribution and some limited business activities, individuals and businesses alike believe that the Internet will become a key communications conduit connecting people and enterprises in this decade and the ubiquitous communications resource of preference for the next millennium. In support of this belief, most businesses have already established an Internet presence by establishing a Web (World Wide Web or WWW) site, and those that haven't are planning to do so within the next year. Some sites are sophisticated and complex; others are simply a Web presence with an address and little else. But all reflect the belief that the Internet is a key resource and will become a dominant facilitator of business activity in the future.

In the context of network services, a case study based on the stock quotation/news distribution business of PC Quote, a Chicago-based network services vendor, helps to illustrate the potential of the Internet and its impact on the information services business.

The stock quotation business, which includes business news and historical records on stock performance, earnings, etc., is one of the most venerable database markets in network services. After airline reservations, it was probably the most economically attractive database to automate. In the late 1950s, development efforts were undertaken by Quotron and others to deliver real-time quotes to stock broker and investment advisor terminals. Such quotation capability is now a large business and has growth potential for existing markets as well as for the consumer/nonprofessional marketplace.

PC Quote—along with other vendors, including ADP, Reuters, Bloomberg, and Bonneville—provides quotation and news services to professional investment firms (including brokers, traders and advisors) at a cost of approximately $400 to $500 per terminal per month. Delivery can be by land lines, satellite, or FM radio side band. Streams of quotation data are delivered at very high speeds, so that specialized modems and communication gear, including satellite station equipment, are required. This is the basis of the relatively high cost for delivering real-time quotes.

Recently, PC Quote offered a new service that would use the Internet to deliver a nonprofessional-level service to consumers and individual investors. This would provide for time-delayed quotes (at least a 15-20-minute wait), similar to provided by over America Online, CompuServe, etc. PC's objective is to open up a new market, e.g., nonprofessionals desiring current security quotation data.

INPUT wondered whether the Internet-based service could be used as a replacement for the existing professional-level service delivering real-time data. To determine this, INPUT interviewed PC Quote, communication service vendors and stock-quotation service competitors, and determined that in the future, using the Internet for delivery of real-time quotations is both feasible and an attractive alternative for vendors.

Exhibit III-1 shows a comparison between the current level of PC Quote's professional service with what might be accomplished by using the Internet. INPUT cautions that no single vendor, including PC Quote, has indicated that this is a specifically planned service, nor would PC Quote confirm the total efficacy of INPUT 's Internet scenario; but there is agreement that this is a valid analysis and well "in the ballpark."

Specific potential impacts of the Internet are as follows:

- *Cost*—It is probable that an Internet-based real-time quotation and news service can be delivered to professionals at a price 40-50% less than the current market rate of $400-500. First of all, the Internet is free. Second, the costs required to set up satellites or engineer land lines mostly go away. Also, modem or network inter- connection costs are reduced.

- *Business operations simplified*—Without the need for satellites or networking interconnection/modem devices or local servers, many business operations required to deliver stock quotations are reduced, if not eliminated. Currently, for example, once a customer decides to use the PC Quote service, a site survey has to be carried out, installations scheduled and building permits obtained. These activities require that a substantial staff be maintained to monitor and carry out these functions. This infrastructure largely disappears when the Internet is used—the customer simply "dials up."

Exhibit III-1

PC Quote's Stock Market Quotation Service for Professionals — Potential Internet Impacts

Issue/Capability	Current Environment	Via the Internet
Connection to a PC	Satellite dish (90%); also land lines	Internet connection
Connection cost	Included in basic monthly fee	Up to $50.00 a month
Type of quotation service	Real-time data	Real-time data
Basic fee	$395 per month per PC	$200 per month per PC (estimated)
Setting up the customer site	• Has to be scheduled; dedicated vendor staff inspects and designs the site • Install satellite and on-site server	• Simple sign-up by telephone; much smaller vendor staff • No installation; customer arranges connection; server is on the WWW
Security	Standard	Better: Netscape software
Nonprofessional investor market	Hard to sell at current cost of almost $400 per month; most use delayed quote services via CompuServe and other on-line services (at up to $50 per month)	Full on-line service at up to $250 per month; good growth potential

Note: All trading exchange access fees are included in monthly fees. *Source: INPUT*

- *New markets opened*—At least two new markets are opened for quotation services at a price of $250 per month. First, more investment advisors and other semi-professionals will opt for real-time as opposed to time-delayed quotes. Second, some nonprofessional private investors will select real-time quotes and news services when the price is half the current level. In addition, PC Quote may be able to design services on a menu basis and vary prices according to the individual needs of investment advisors and other nonprofessionals and semi-professionals.

The bottom line is that the Internet will make a substantial change in the way the quotation business is run. There will be major operational improvement and simplification, lower costs, and new users to be sold to and brought into the marketplace.

INPUT believes that the Internet will have a similar impact on other network services businesses, and that this type of impact—e.g., the

emergence of a cost-efficient, viable alternative with functionally equivalent or improved performance—will provide both users and vendors with exciting new opportunities.

INPUT will monitor this marketplace very carefully over the next several years as one of its primary analytical targets.

B
Background

By any measure, the Internet—and its implications and potential for business, societal and individual use—is one of today's hot topics. Although relatively small now, Internet use is expected to grow at rates far exceeding the projected information systems and information services industry growth averages over the remainder of this decade. For instance, INPUT estimates that information systems budgets will grow at a modest 5% or less from 1995 through 2000, while the information services market is expected to increase at a 14% compound annual growth rate (CAGR). The network services business will grow at a 19% CAGR, as shown in this report—the highest growth rate of any of the information services product/service categories. In terms of just commercial (e.g., individual company) connections, there are an estimated 30,000 companies worldwide connected to the Internet, and the rate of increase, through the millennium, is forecast to be a strong 70% per year.

Individual Internet connections (e.g., clients and IDs) were estimated to be 30 million worldwide at the end of 1995. By 2000, this number is expected to grow to more than 200 million, of which 50 million would be institutional (including 30 million U.S.) and 150 million individual (75 million U.S.).

In another example of the Internet growth phenomenon, the World Wide Web now contains some 27,000 sites, and this number is doubling every two to three months!

An Internet support service market has also been created to provide specialized network access software, Web browser software, electronic commerce services and overall Internet consulting services. Hambrecht & Quist, the technology investment firm, has estimated that this market is at about half a billion dollars now and will grow to $10 billion by 1999.

The growth of the Internet and related capabilities, such as the World Wide Web, has been so rapid that accurate usage and growth data, statistics and projections simply have had a hard time keeping up. INPUT recognizes the importance of this new telecommunications-based information phenomenon and has established a new program to track Internet service and growth. Research efforts address who is using (and will use) the Internet, identify

buying patterns, estimate Internet-related expenditures and identify the strategies and tactics of leading Internet service providers.

Five-year market forecasts will be developed for the worldwide Internet software products, professional services and network services market sectors. As these figures are identified and refined, and the Internet market analyzed, related U.S. Internet market data will be developed, which will be included in future INPUT reports.

C
Internet Impact on Network Services

The Internet offers significant benefits to users and vendors of network services. A number of the most important advantages are noted below. Also provided is a sampling of the vendors active in developing applications to run on the Internet.

1. Internet Benefits

Integrated Communications—The Internet puts everyone on common ground. It is, in effect, a network of networks. No other communications resource even approaches the capabilities of the Internet. Network companies that were developing their own strategies only a short time ago have, in general, capitulated and are now investing funds in building access to the Internet and making connections to it appear seamless for users.

Lower Communication Costs—The Internet can eliminate or significantly reduce a large portion of the communication costs of providing an on-line service. Once connected to Internet, the Internet transmissions are basically free. The savings can amount to as much as three-quarters of the total communication portion of the network service costs.

Global Coverage—The Internet is a global resource; whatever implementation or application has been done in the United States can be replicated in other countries, where appropriate. Using the Internet, it is as easy to communicate with Paris or Sydney as it is with New York.

Network Services are Facilitated by the World Wide Web (WWW)—Another area in which the Internet can support the expansion of the network services business is through the use of the WWW. The Web structure allows retail merchants and others to establish Web pages on which can be described the information services, products, and terms and conditions offered by the vendor. Currently, most of these pages are essentially static, but in the future, with extended Internet bandwidth, they will become more interactive and even provide full motion video presentations. In fact, the increasing

wideband backbone expansion of the Internet will dramatically expand the electronic commerce (EC) features and make purchasing and procurement on the Internet even more attractive.

In a confirmation of the advantages of the Internet to EC, several on-line vendors have announced a closer affiliation and integration with the Internet. Prodigy, for example, has stated that it will become part of the Internet—meaning that it will develop improved access and specific services to make it easier for its customers to use the Internet. This is being done because Prodigy intends to rely upon the Internet for portions of its long-distance communication needs.

2. Network Services Vendors' Use of the Internet

Existing Vendors and Start-ups—Existing vendors and startups developing Internet-based applications or using the Internet for connectivity include local, regional and international access providers (PSINET, UUNET and NETCOM), commercial Internet providers such as MCI and SprintLink, and new commercial startups that use the Internet or plan to develop future business commercializing the Internet. This latter group includes the following:

- MCC of Austin, Texas, the first Internet commercial application vendor
- CommerceNet, a Silicon Valley startup organized in early 1994 and acquired by Verifone in 1995

On-Line Vendors—On-line service vendors such as Prodigy, America Online, Delphi, CompuServe, Apple's E-World and Microsoft's MSN have established some level of Internet connectivity and expect to build upon the basic E-mail applications and assist those who want to use the Internet commercially.

Telcos—Telcos and RBOCs (Ameritech, AT&T, MCI, and other communication industry firms, such as cable TV operators) have also announced plans for Internet connections to support commercial applications.

Software Vendors—Software companies such as Netscape, Microsoft, Spry and Spyglass are also becoming major players in the Internet marketplace.

3. Timing of Enhancing the Internet

By 1998-1999, or within two to three years, most of the necessary value-added features will be sufficiently established to support EC applications on the Internet. Security, transaction accounting/billing and sales support will get immediate attention. Closely following these will be customer service and the establishment of a management structure for accountability. Full reliability and 24-hour operation will probably be achieved late in the period.

Applications such as E-mail and marketing services, which are more tolerant of downtime, will enjoy earlier implementation on the Internet. The highest value EC applications, such as POS transactions, EDI and financial services, will be the last to be implemented.

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IV

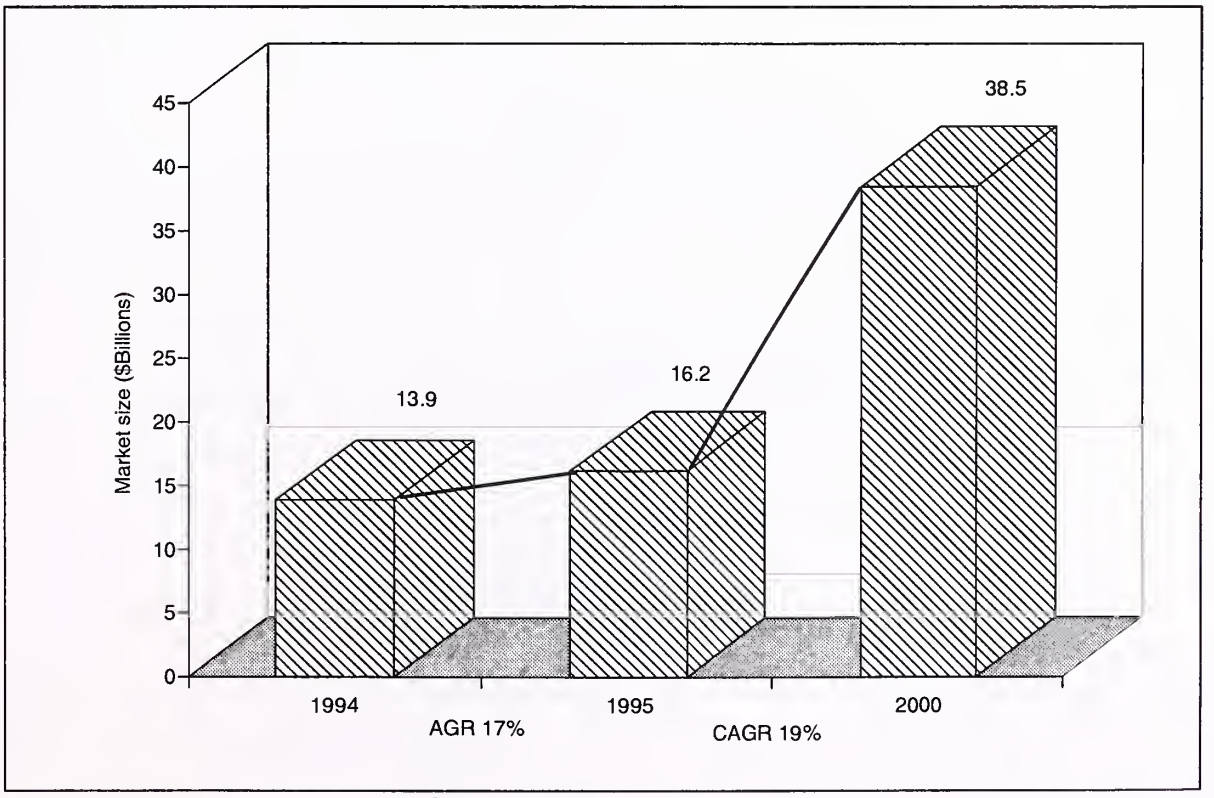
Market Forecast

A
Overall Network Services Market

Network services will grow from a 1994 market of almost $14 billion to more than $38.4 billion in 2000, as illustrated in Exhibit IV-1. The growth rate will increase from 17% from 1994 to 1995 to a compound annual growth rate (CAGR) of 19% between 1995 and 2000.

Exhibit IV-1

U.S. Network Services Market, 1995-2000



Note: Numbers are rounded.

Source: INPUT

The healthy growth of network services is due to the need for current (virtually real-time) information to aid decision making, conduct research, or keep business processes functioning—as well as the need for applications on vendor networks that can provide intra- and inter-company messaging services. These services:

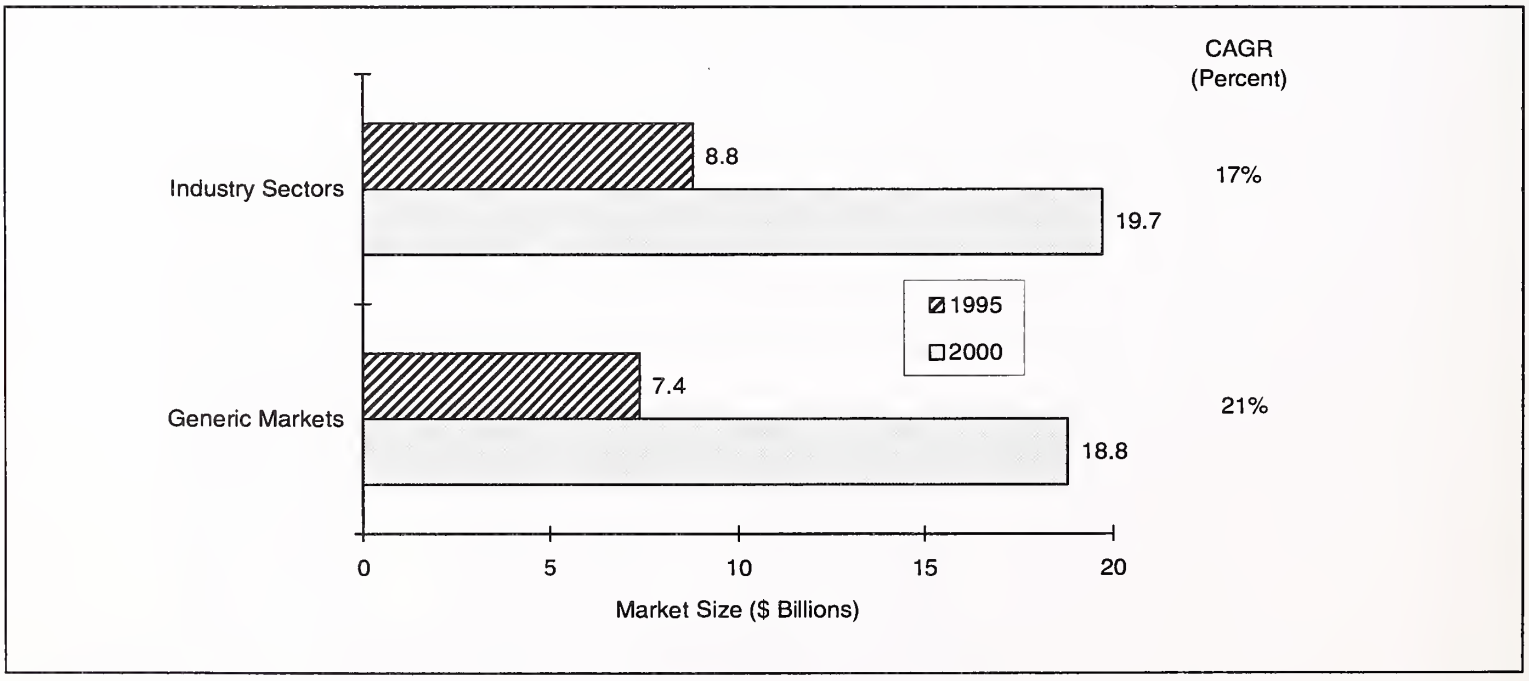
- Can help a client generate revenues or save costs, perform research to solve problems or provide better service and save business from going to competitors
- Provide electronic rather than paper means of conducting business

B
Market Size by Industry and Generic Sectors

The network services market, forecast to be $16.2 billion in 1995 and $38.5 billion in 2000, can be divided into services for industry markets and services for generic markets, as shown in Exhibit IV-2.

Exhibit IV-2

Network Services
Industry and Generic Markets, 1995-2000



Note: Numbers are rounded.

Source: INPUT

- Industry-specific network services offerings include EIS and network applications that serve only one industry market, such as financial institutions, retail stores, manufacturing companies or other vertical markets.

- Generic services are not designed for any one vertical market, but have a broad generic application (such as on-line news services).

The growth of network services in some vertical markets is much higher than in others, as shown in Exhibit IV-3.

Exhibit IV-3

Network Services
Market Size by Industry, 1995-2000

Industry Sector	Market Size $ Millions		1995-2000 CAGR
	1995	2000	(%)
Retail Trade	420	1,450	28%
Wholesale Trade	640	2,100	27%
Discrete Manufacturing	190	520	22%
State and Local Government	220	590	22%
Telecommunications	200	550	22%
Transportation	600	1,500	20%
Process Manufacturing	1,550	3,600	19%
Education	350	780	18%
Banking and Finance	1,200	2,550	16%
Health Services	920	1,900	15%
Insurance	320	640	15%
Business Services	850	1,700	15%
Miscellaneous Industries	200	360	12%
Utilities	40	60	10%
Federal Government	1,200	1,500	5%
Industry-Specific Total	8,850	19,700	17%
Generic Markets	7,400	18,800	21%
Total Network Services	16,250	38,500	19%

Note: Numbers are rounded. *Source: INPUT*

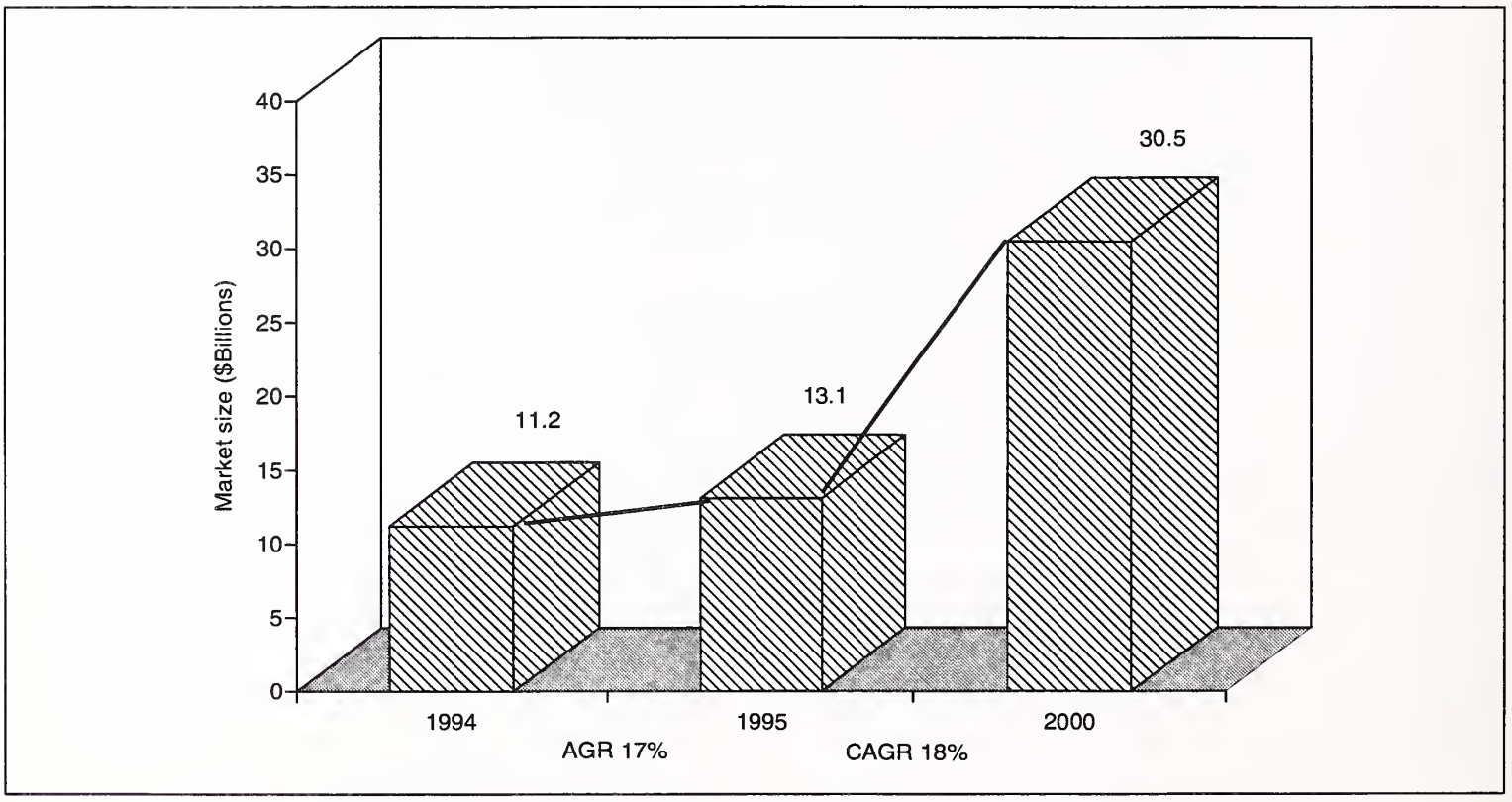
- A number of vertical markets, including retail and wholesale trade and state government, have a growth rate above 20%, as shown in the exhibit. As a result of its highly focused activities, the utilities industry stands out as a small and slowly growing market for network services.

C
Electronic Information Services (EIS) Market

EIS, which grew at a rate of 17% in 1995, will grow at the faster CAGR of 18% between 1995 and 2000 and account for almost $30.5 billion of user expenditures in that year, as shown in Exhibit IV-4.

Exhibit IV-4

U.S. Electronic Information Services Market, 1994-2000



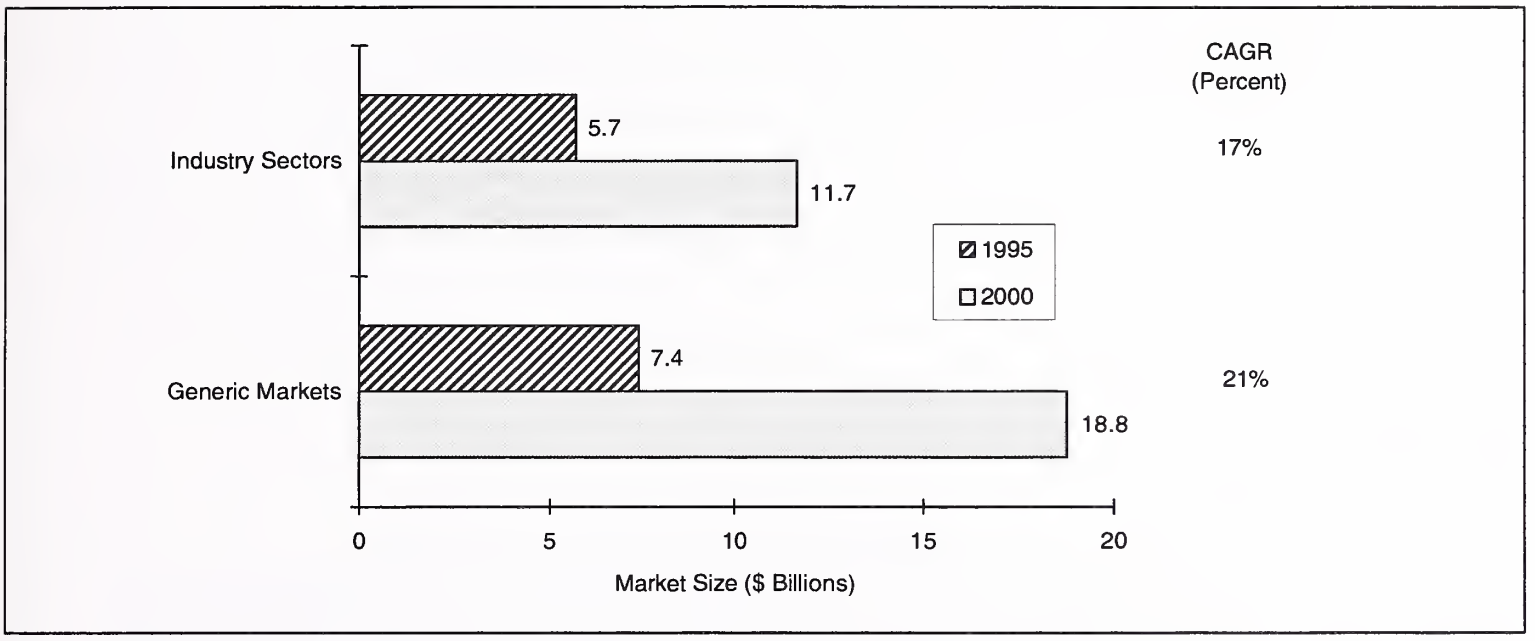
Note: Numbers are rounded. *Source: INPUT*

The expenditures for EIS grow faster for generic markets (as shown in Exhibit IV-5) because generic data also has an appeal to many vertical markets. For instance, equity pricing is used in banking and finance to evaluate collateral and in insurance companies and private educational institutions to evaluate investment opportunities; but it is also used in many other markets to evaluate possible investments, corporate holdings, the price and performance of competitors or possible acquisition candidates.

Similarly, authorizations for credit cards are required in retail banking and finance, health services, transportation and manufacturing.

Exhibit IV-5

Electronic Information Services Market
Industry Sectors and Generic Markets, 1995-2000



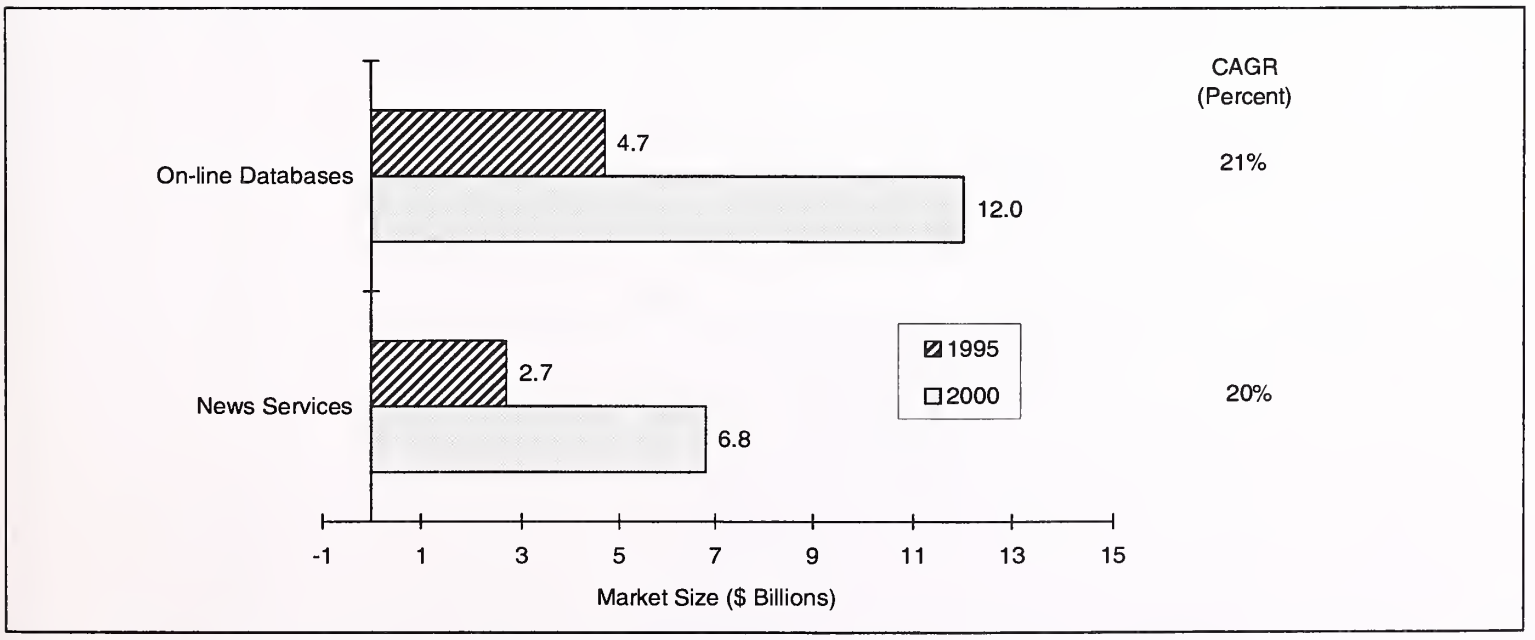
Note: Numbers are rounded

Source: INPUT

The information content of the generic EIS market can be divided into on-line structured databases and text services with news, legal and other textual information. Expenditures for the latter have been smaller, but they are growing at a slightly slower rate, as shown in Exhibit IV-6.

Exhibit IV-6

Generic Electronic Information Services Market by Subcategory, 1995-2000



Note: Numbers are rounded

Source: INPUT

Based upon total 1995 expenditures, EIS today are used much more in banking and finance, process manufacturing and business services than in other industry sectors, as shown in Exhibit IV-7.

The use of EIS is growing more rapidly in other sectors, however, including discrete manufacturing, education, telecommunications and retail trade. This growth is due, in part, to the fact that the use of EIS has been lower in these industries because the benefits were not as apparent as they were for banking, process manufacturing and business services, where the use of financial databases or information on specific processes for materials have been used for some time, are an integral part of many business processes, and are perceived to have real and immediate value by these companies and individuals using them.

Exhibit IV-7

Electronic Information Services
Market Size by Industry, 1995-2000

Industry Sector	User Expenditures $ Millions		1995-2000 CAGR
	1995	2000	(%)
Discrete Manufacturing	90	210	19%
Process Manufacturing	1,250	2,650	16%
Transportation	420	980	18%
Utilities	30	50	10%
Telecommunications	170	440	21%
Wholesale Trade	100	170	11%
Retail Trade	250	700	23%
Banking and Finance	1,000	2,250	16%
Insurance	240	440	13%
Health Services	480	860	13%
Education	230	530	19%
Business Services	810	1,600	14%
Federal Government	310	380	5%
State and Local Government	70	120	12%
Miscellaneous Industries	190	320	11%
Industry-Specific Total	5,700	11,700	16%
Generic Markets	7,400	18,800	21%
Total EIS	13,100	30,500	18%

Note: Numbers are rounded. *Source: INPUT*

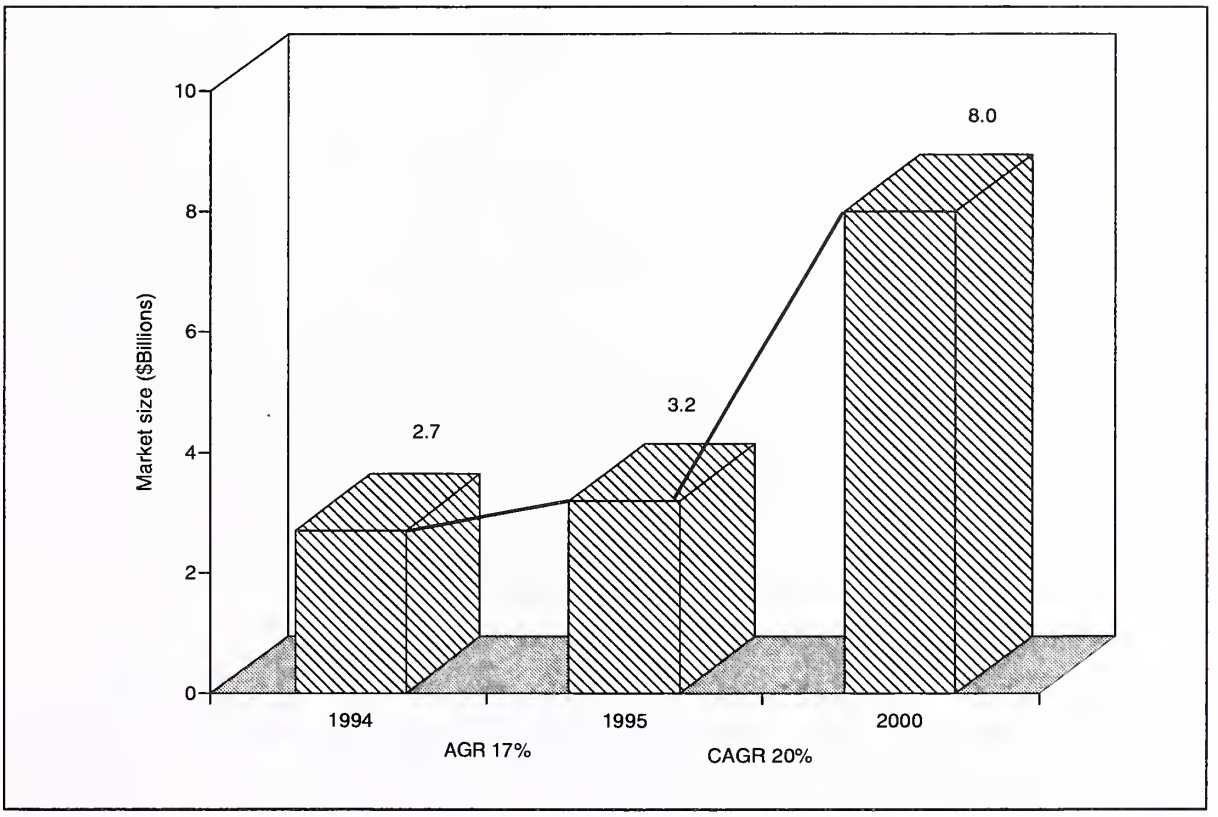
D

Network Applications Market

As illustrated in Exhibit IV-8, the growth of network applications will go from 17% in 1995 to a compound rate of 20% between 1995 and 2000. User expenditures are projected to increase to almost $8.0 billion in 2000.

Exhibit IV-8

U.S. Network Applications Market, 1994-2000



Source: INPUT

- Expenditures for network applications will grow somewhat more rapidly than EIS during the forecast period, but the total market will be only about one-quarter the size of the EIS market in 2000.

- Network applications are projected to grow more rapidly than electronic information services between 1995 and 2000 because they have the potential to lower operating costs, reduce paper movement, postage or other handling charges, and lessen labor and accounting expenses.

The more rapid growth is also a result of starting from a smaller market base.

The expenditures for network applications by industry sector are shown in Exhibit IV-9. As with EIS, use is much greater in some sectors than in others.

Exhibit IV-9

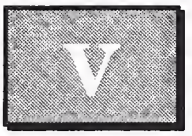
Network Applications
Market Size by Industry, 1995-2000

Industry Sector	User Expenditures $ Millions		1995-2000 CAGR
	1995	2000	(%)
Discrete Manufacturing	100	310	25%
Process Manufacturing	280	930	27%
Transportation	180	500	22%
Utilities	5	5	8%
Telecommunications	40	110	23%
Wholesale Trade	535	1,900	29%
Retail Trade	170	740	34%
Banking and Finance	135	290	17%
Insurance	80	210	22%
Health Services	440	1,020	18%
Education	120	260	16%
Business Services	40	120	26%
Federal Government	870	1,100	5%
State and Local Government	150	470	25%
Miscellaneous Industries	15	40	20%
Industry-Specific Total	3,200	8,000	20%
Generic Markets	N/A	N/A	N/A
Total Network Services	3,200	8,000	20%

Note: Numbers are rounded. *Source: INPUT*

- Use is highest in the federal government, where there is a considerable opportunity to realize savings using EDI as well as E-mail and VANs.
- Use is quite low in utilities and miscellaneous industries, due to the focused nature of the utility, agriculture and construction industries.

Very high rates of growth can be seen for network applications in manufacturing, retail and wholesale trade, where the use of EDI has been aggressively promoted. Aggressive growth is also forecast for state and local government and business services. The expanding use of the Internet, E-mail, bulletin boards and work group network applications will drive the growth of network applications.



Competitive Analysis

A Vendors

1. Revenues and Services Offered

The largest subcategory of the network services market is EIS, which accounted for over 75% of expenditures in 1995. As shown in Exhibit V-1 below, the major vendors in this subsector are also the largest vendors in the network services marketplace.

Exhibit V-1

Major Network Services Vendors—1995 Revenues (Est.)

Vendor	1995 Network Services Revenue (Est.)	Network Service Offerings
Dun & Bradstreet	900	EIS
Reuters	750	EIS
TRW	750	EIS
Equifax	700	EIS, Net Appl.
Reed/Mead Data Central	600	EIS
American Airlines	500	EIS, Net Appl.
CompuServe	400	EIS & VANs
Dow Jones	500	EIS
McGraw-Hill	400	EIS, Net Appl.
TransUnion	350	EIS
Knight-Ridder	275	EIS
GEIS	250	EIS, EDI, E-mail

Source: INPUT

- The five vendors of EIS at the top of the list in Exhibit V-1 account for almost 23% of the current annual revenues from network services.
- The largest vendors of EIS and network services (as a whole) also are focused on the delivery of financial information—including equity and credit data. Some of these vendors, including Dun & Bradstreet and Reuters, originally provided information on paper (written/printed material) before they offered electronic delivery.
- Dun and Bradstreet's position at the top of the list probably will not change as a result of the January 1996 announcement of a restructuring of the firm into three separate companies—Cognizant Corp., which will include IMS International, Nielsen Media Research and the Gartner Group; A.C. Nielsen (consumer packaged goods market research data); and Dun & Bradstreet Corp., which will now include only D&B Information Services, Moody's Investor's Service and the Reuben H. Donnelley publishing group. D&B Software and American Credit Indemnity will be sold. Even if some revenues go with the new spinoffs, D&B is still expected to be the dominant player in the network services market.

A number of network services vendors now provide both EIS and network applications services to customers, as exemplified by CompuServe and McGraw-Hill and noted in Exhibit V-1. Of over 10 EIS vendors that were interviewed, eight offered network applications as well.

- One of these vendors, GEIS, noted that it offered an on-line database service (EIS) through Genie, as well as network applications, including EDI, VANs and E-mail.
- Three of the larger vendors of EIS—Dun & Bradstreet, Knight-Ridder and CompuServe—also offer E-mail, and CompuServe offers VAN capabilities.

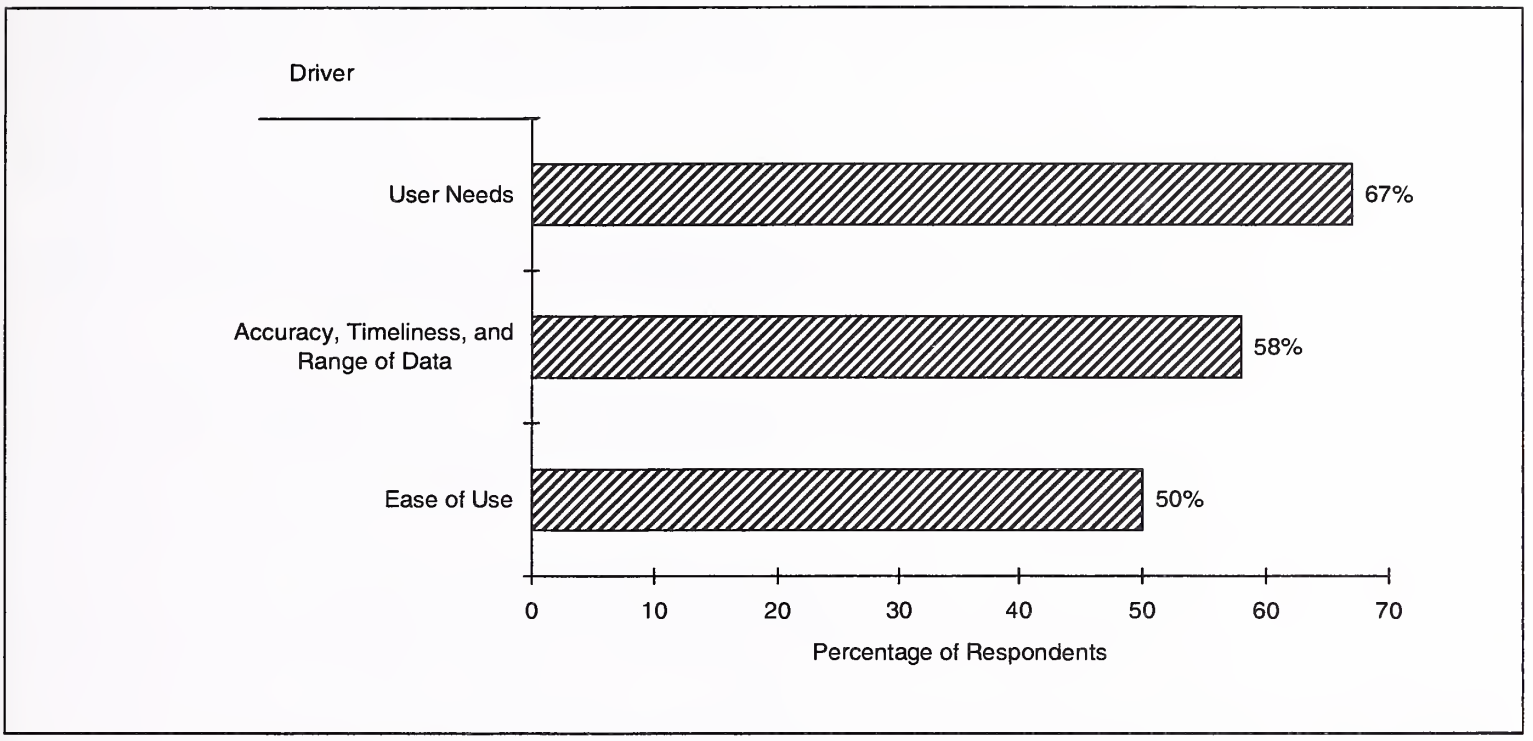
Some EIS vendors (including Reuters and D&B) have started to introduce some network applications—such as the delivery of special requests by E-mail (bond and stock trading)—in order to support their EIS business or obtain additional revenue. A respondent from Reuters stated that its main purpose in introducing new network services is to increase revenue from target markets.

2. Vendor Perspective on Drivers and Inhibitors

In a study done in early 1995, two-thirds of EIS vendors reported that their services were driven by user needs, whereas almost all vendors of network applications reported that their services were driven by cost savings and convenience, as shown in Exhibits V-2 and V-3. This tends to correspond in general with the findings reported by users in Chapter II.

Exhibit V-2

Vendor Assessment of EIS Drivers

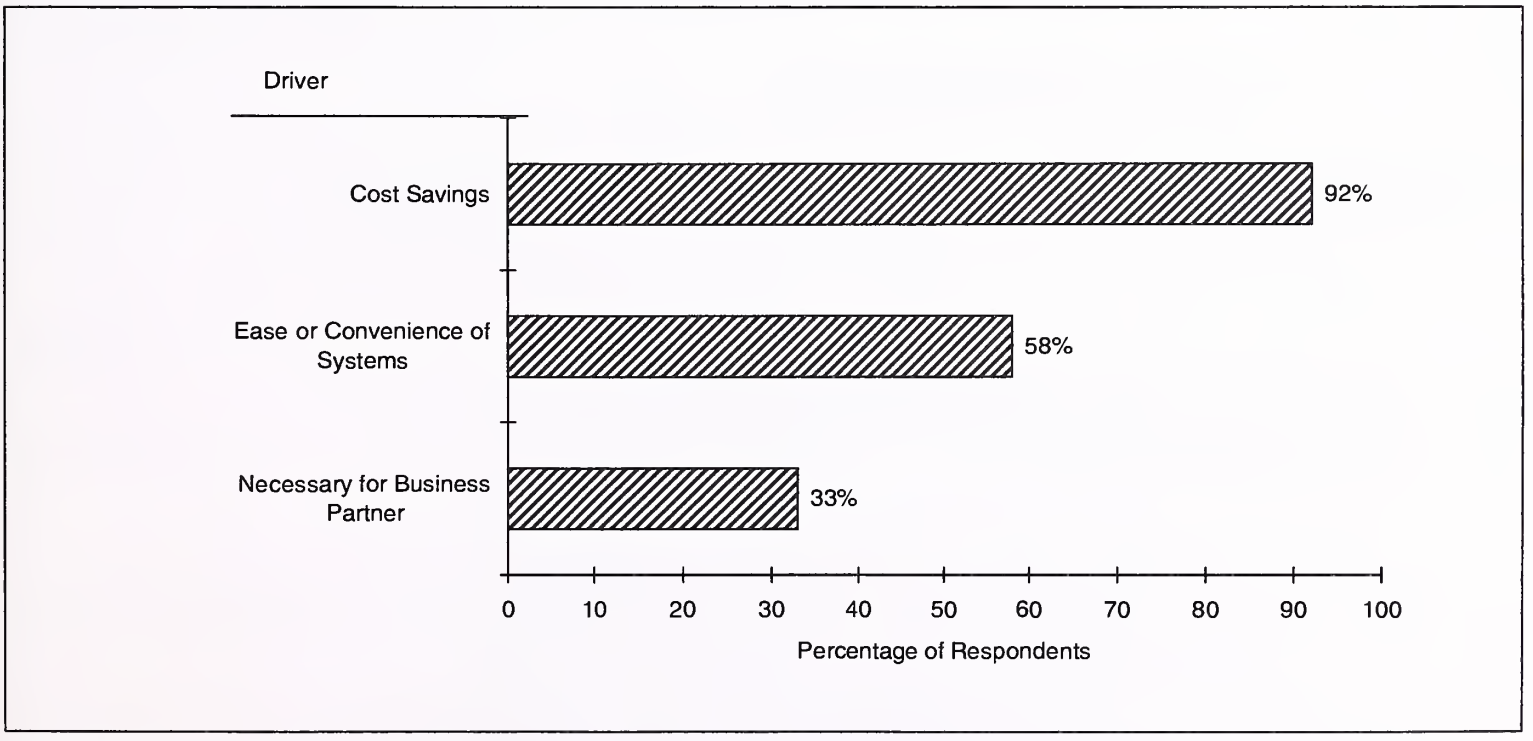


Note: Multiple responses by vendors.

Source: INPUT

Exhibit V-3

Vendor Assessment of Network Applications Drivers



Note: Multiple responses by vendors.

Source: INPUT

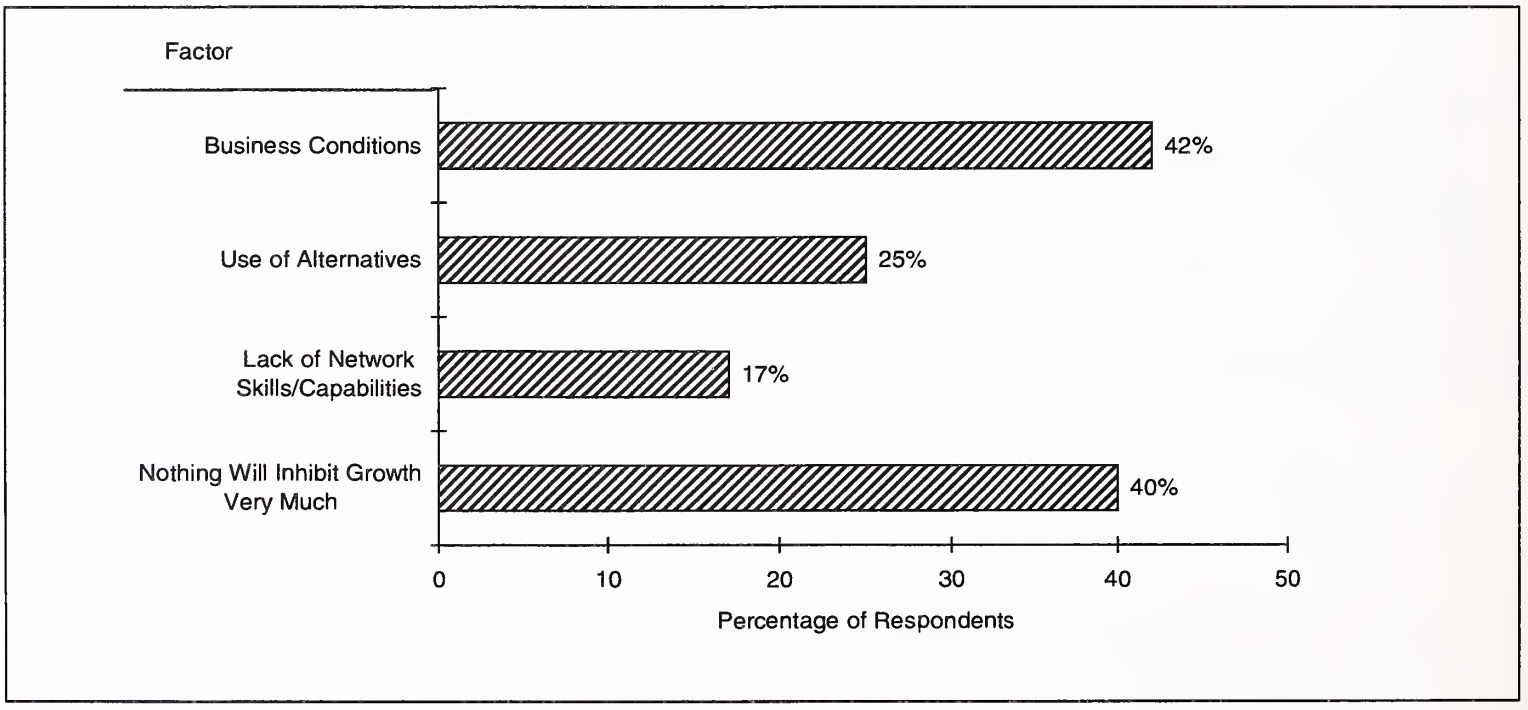
- Vendors offering network applications noted that cost savings and ease of use were key motivators, but also reported that features such as communication with overseas locations or the ability to speed up delivery were also important. In addition, they stated that expanded features for E-mail or EDI could drive use.

- EIS vendors also feel that breadth of information provided and ease of access or use can be drivers. Several EIS vendors pointed out that their service requires constant review of the information being offered and ease of access in order to maintain competitiveness.

Vendors are not highly concerned about factors that might inhibit growth of their services, as shown in Exhibit V-4. Users showed much more concern about inhibiting factors, as discussed in Chapter II.

Exhibit V-4

Factors that Can Inhibit Network Services Growth



Note: Multiple responses permitted.

Source: INPUT

- In a burst of market confidence about network services, 40% of vendors reported that there were no factors that could have a significant negative impact on market growth.

  - Vendors feel that the trend toward increased use of network services is sufficiently strong to overcome near-term factors that might inhibit use.

- Vendors also are not perturbed about the fact that some clients or prospects might seek alternatives to their services, as considered in Exhibit V-5, but they claimed to be prepared to broaden their service offerings if demand builds.

Exhibit V-5

Vendor Reaction to Service Alternatives

Possible Alternative	Reaction of Network Services Vendors
CD ROM in place of some use of EIS	Can only be used for static data We will sell it if users are interested
Fax in place of some E-mail or EDI	It will have limited use It will be used for less important items

Source: INPUT

Yet, because vendors feel that alternatives to their services will have little impact on their business, they may not pay sufficient attention to competitors offering such services or products at accounts of interest to them. As a result, some competitors will benefit from the provision of alternative services as a means of penetrating accounts.

B
Competitive Positioning

1. Vendor Strategies

As noted in section A, a number of network services vendors are expanding the number of network services that they offer. In addition, many services are being upgraded, as noted in Exhibit V-6.

Exhibit V-6

Expanded Features/Services Planned for Network Services Market

- Expansion of EIS to cover more industry niches
- More granularity of data in EIS
- Increased data available on CD ROM
- More powerful E-mail products
- EDI capabilities that support workflow moves
- Expanding use of or plans for multimedia
- Faster and more flexible network technology (e.g., satellite delivery)

Source: INPUT

- More categories of data and more granularity are included in EIS for financial markets as well as for technical, industry and other users. In addition, more textual material from financial and technical sources is being provided in text databases.

- There are improvements in user interfaces and controls being made and significant efforts are under way to provide or consider providing multimedia, including graphic, picture, film and sound capabilities, with on-line data.

In late 1995, Microsoft announced that it would fully integrate its Microsoft Network (MSN) with the Internet to broaden its utility to users. Software to use the MSN is bundled with Windows 95, which makes it automatically available (and tempting to try) to many individuals and companies. Microsoft has also announced that providers will have more say in the presentation and pricing of what they offer through the MSN, and users will benefit from decreasing charges for ongoing service. It now appears that Microsoft has abandoned its original plans for a ubiquitous private network capability in favor of providing an operating system-embedded access tool to the Internet.

Other vendors—including MCI, Oracle and leading foreign information services companies—are also taking or planning to take steps to use their technological capabilities in the network services sector.

In many cases, new or expanded offerings will offer multimedia functionality to provide additional capabilities and attract user attention.

2. Plans for Multimedia

Many vendors indicate that they have been considering the potential for multimedia products and services in their current business. Only two of 15 network services vendors that were interviewed or contacted during this study did *not* expect to use multimedia capabilities in the next three to five years.

- All respondents who offered EIS stated that they were offering or planning to offer multimedia services.

- Some of the respondents emphasized the use of software products such as Lotus Notes that could make it easier to deliver multimedia. Others were taking specific steps, such as making it easier for clients to choose the delivery of data in new graphical presentations rather than only in tables or spreadsheets.

Some of the multimedia services being offered or considered are shown in Exhibit V-7. Several industry experts have pointed out that these and other

so-called multimedia offerings do not really constitute multimedia because though they involve a variety of outputs (such as pictures or graphics as well as data), these are all only in one "medium." However, most vendors feel that a step beyond just data or text on the screen, such as still pictures as well as moving pictures or voice (audio), should be thought of as an additional medium.

Exhibit V-7

Multimedia-Related Plans and Offerings for Network Services

Dow Jones Telerate	Deliver video of trading data to customers
Reuters (newly formed subsidiary)	Plan to deliver multimedia services to financial market and also health and education markets
MCI (together with selected allies)	Offering on-line, interactive catalogs, EDI capabilities, E-mail and video-conferencing services
AT&T	Among other plans, tests of multimedia on phone lines and improved "help desk" capabilities
Prodigy	Integrated, interactive TV and E-mail in "America's Talking" program
Bloomberg Financial	Plan to deliver video clips, text, audio and still images to customers
Lotus Notes	Will be used on the Internet as a means of accessing EIS (on-line databases) and delivering EIS data together with graphs, films or other media

Source: INPUT

3. Plans for New Network Technology

Ninety percent of vendor respondents report that they have taken or plan to take steps to upgrade network technology. In most cases, vendors have kept users well aware of plans or pending changes. This is necessary because users would have to be prepared for changes to facilities. In addition, many users have definite ideas about the changes that they feel should be made to improve their services, as was indicated in Chapter II. In addition, the Internet is a key focus area for over 60% of the vendors questioned.

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Conclusions and Recommendations

A Conclusions

The overall rate of growth for network services increased again in 1995 and promises continued strength through 2000. Significantly, the network services market is growing more strongly than all other information services markets (see Exhibit VI-1).

Exhibit VI-I

Conclusions

- Expenditures for network services are growing at a faster rate than for all other information services.
- Significant new connection offerings, such as the Internet and Microsoft Network, will have a dramatic impact on all vendors.
- Users are interested in enhancements to network services that can improve the effectiveness of these offerings.
- Multimedia enhancements are of interest to both vendors and users of network services.
- Alliances and acquisitions are being made to improve network services capabilities.

Source: INPUT

- *Strong Market Growth*—The growth of user expenditures is greater for network services than for any other product/service sector. Outsourcing, software product submarkets for workstation/PCs and telecommunications have similar growth rates for user expenditures, reflecting the continued and growing importance of networking and network services to American industry.

- *The Internet and MSN*—The Internet is the most important issue facing network services vendors. The Internet will lower network costs, allow easier user access, open new markets for data and transactions and, in some cases, change the way network services are developed, sold, packaged and delivered. All network services vendors must consider the Internet a key resource (or competitor) in their plans for the future. Microsoft's easy network connection (click on an icon) imbedded in Windows'95 will further facilitate acceptance and use of network and network services capabilities and resources.

- *Service Enhancements*—Many changes and enhancements are taking place in network services to meet user needs as well as to differentiate services for competitive advantage. Vendors are adding new modes of delivery to their services and expanding the amount of data and/or capabilities offered with their services. In addition, vendors are adding or experimenting with multimedia services as a means of adding value to their services or attracting clients from competitors.

- *Multimedia*—Multimedia adds value to the use of information. Graphs (and new ways of presenting data graphically) make it possible to review data more rapidly. Pictures and film strips add value to textual material. "Voice-over" and other audio techniques can quickly point out items of interest.

  The high level of interest in multimedia (on the part of both users and vendors of network services) suggests that this service sector will play a leading role in the implementation of the concept of the information superhighway.

Together with expansions in the capabilities of network services vendors, there has been a considerable increase in the use of network technology. Some vendors have made use of new modes of network delivery, or the services of large communications carriers. Vendors are also planning means of expanding bandwidth in order to deliver multimedia.

- *Alliances*—The desire to offer more features and network capabilities has led to a number of arrangements, alliances and acquisitions by providers of network services. For instance:

  - Both Reuters and Dun & Bradstreet are using Lotus Notes to deliver expanded capabilities.

  - MCI purchased a 20% interest in content provider NewsCorp.

  - Reuters acquired Reality Technologies in order to gain access to 25,000 on-line subscribers in the consumer marketplace that need aid in monitoring investments and trading.

  - Dow Jones—which offers over 70 databases with information from over 1,700 sources, including data and news text—has made an arrangement with MCI to utilize its electronic mail service.

B
Recommendations

This is a time for vendors of network services to consider what enhancements or additions to their services can be made to gain increased market share or revenue, or to protect their offerings from powerful new competitors such as Microsoft. As user demand increases and acceptance of network-delivered services grows, there will be opportunities to add additional data to current EIS (on-line databases) or to market subsets of on-line data (that are relatively static) on CD ROM. E-mail will be used to deliver custom searches for or presentations of data from EIS. Multimedia service additions (even on an experimental basis) will be attractive and desirable to current customers or to prospects. INPUT's recommendations are summarized in Exhibit VI-2.

Exhibit VI-2

Recommendations

- Take advantage of expanding user interest in network services.
- Closely examine how the Internet can be used in cost reduction, market expansion, and product development efforts.
- Introduce or experiment with multimedia offerings.
- Consider alliances or acquisitions as a means of introducing service enhancements.
- Consider offering information and transmission services that can be used in conjunction with network services.

Source: INPUT

- *Research-Supported Service Growth*—Vendor research, conducted with customers and prospects, is needed to determine or confirm which specific new offerings or services will be of value to clients and what will cause them to consider the new or enhanced offerings of a competitor. Proceeding without research will involve a high degree of risk.

- *The Internet*—The opportunities and possible threats from the Internet are huge and must be proactively studied, not just monitored. The Internet is a ubiquitous resource, well received by individuals, and it is enjoying growing business acceptance. Determine how it can be used to to expand, enhance or deliver your products and services.

- *Alliances and Acquisitions*—The use of allies or acquisitions should be considered in the supply of new or enhanced services in order to deliver them faster and at less cost.

- *Multimedia*—The use of multimedia must also be seriously explored by all vendors, because users of network services expect to use this capability in the near future. It improves the effectiveness of information delivery and makes vendor offerings more competitive.

- *Complementary Services*—Another opportunity for vendors of network services is to offer services or products that can aid in the use of EIS or network applications, such as processing, outsourcing, software products and/or professional services consulting, training, or software development that might be needed by clients of network services. These services might be used, for instance, to support the use of EDI for complex payment procedures or the use of on-line equity pricing for the evaluation of collateral.

Forecast and Reconciliation

A
Forecast Database

Exhibit A-1 presents the overall 1994-2000 forecast data for the network services market. Forecast data bases for the electronic information services (EIS) and network applications submarkets are shown in Exhibits A-2 and A-3.

Exhibit A-1

NETWORK SERVICES

Market Size by Industry Sector, 1994-2000

INDUSTRY SECTORS	1994 ($M)	Growth 94-95 (%)	1995 ($M)	1996 ($M)	1997 ($M)	1998 ($M)	1999 ($M)	2000 ($M)	CAGR 95-00 (%)
Total All Sectors	13906	17%	16235	19137	22732	26977	32193	38479	19%
Vertical Industry Markets	7691	15%	8838	10172	11897	13967	16536	19684	17%
Banking and Finance	1038	14%	1182	1358	1572	1835	2157	2536	16%
Business Services	764	11%	848	945	1079	1245	1450	1700	15%
Discrete Manufacturing	159	21%	192	232	284	347	423	522	22%
Education	297	17%	348	407	475	560	661	782	18%
Federal Government	1124	5%	1178	1191	1273	1320	1391	1472	5%
Health Services	791	16%	915	1050	1215	1400	1640	1880	15%
Insurance	281	14%	319	365	420	481	556	643	15%
Miscellaneous	183	12%	205	233	265	292	325	361	12%
Process Manufacturing	1305	17%	1526	1782	2100	2502	2975	3580	19%
Retail Trade	340	24%	420	535	682	874	1120	1434	28%
State & Local Government	184	21%	222	268	325	395	482	594	22%
Telecommunications	173	20%	208	250	304	369	450	554	22%
Transportation	506	19%	600	715	855	1025	1225	1475	20%
Utilities	34	6%	36	40	44	49	53	57	10%
Wholesale Trade	512	25%	639	801	1004	1273	1628	2094	27%
Other Markets	6215	19%	7397	8965	10835	13010	15657	18795	21%
- On-line Databases	4005	18%	4710	5700	6890	8275	9975	11990	21%
- On-line News Services	2210	22%	2687	3265	3945	4735	5682	6805	20%

Source: INPUT

Exhibit A-2

ELECTRONIC INFORMATION SERVICES

Market Size by Industry Sector, 1994-2000

INDUSTRY SECTORS	1994 ($M)	Growth 94-95 (%)	1995 ($M)	1996 ($M)	1997 ($M)	1998 ($M)	1999 ($M)	2000 ($M)	CAGR 95-00 (%)
Total All Sectors	11210	17%	13068	15419	18268	21609	25652	30481	18%
Vertical Industry Markets	4995	14%	5671	6454	7433	8599	9995	11686	16%
Banking and Finance	918	14%	1047	1203	1392	1630	1912	2245	16%
Business Services	735	10%	810	897	1020	1170	1355	1580	14%
Discrete Manufacturing	75	19%	89	105	125	149	178	212	19%
Education	191	18%	225	265	312	370	440	526	19%
Federal Government	292	4%	305	310	331	343	362	383	5%
Health Services	425	12%	475	530	595	670	760	860	13%
Insurance	216	12%	241	268	302	339	383	435	13%
Miscellaneous	170	12%	190	214	242	264	292	324	11%
Process Manufacturing	1080	15%	1242	1425	1647	1922	2240	2650	16%
Retail Trade	210	20%	252	309	379	464	570	698	23%
State and Local Government	62	13%	70	79	89	100	112	124	12%
Telecommunications	141	20%	169	203	246	297	361	444	21%
Transportation	358	17%	420	495	585	695	825	980	18%
Utilities	30	7%	32	35	39	43	47	51	10%
Wholesale Trade	92	13%	104	116	129	143	158	174	11%
Other Markets	6215	19%	7397	8965	10835	13010	15657	18795	21%
- On-line Databases	4005	18%	4710	5700	6890	8275	9975	11990	21%
- On-line News Services	2210	22%	2687	3265	3945	4735	5682	6805	20%

Source: INPUT

Exhibit A-3

NETWORK APPLICATIONS

Market Size by Industry Sector, 1994-2000

INDUSTRY SECTORS	1994 ($M)	Growth 94-95 (%)	1995 ($M)	1996 ($M)	1997 ($M)	1998 ($M)	1999 ($M)	2000 ($M)	CAGR 95-00 (%)
Total All Sectors	2696	17%	3167	3718	4464	5368	6541	7998	20%
Vertical Industry Markets	2696	17%	3167	3718	4464	5368	6541	7998	20%
Banking and Finance	120	13%	135	155	180	205	245	291	17%
Business Services	29	31%	38	48	59	75	95	120	26%
Discrete Manufacturing	84	23%	103	127	159	198	245	310	25%
Education	106	16%	123	142	163	190	221	256	16%
Federal Government	832	5%	873	881	942	977	1029	1089	5%
Health Services	366	20%	440	520	620	730	880	1020	18%
Insurance	65	20%	78	97	118	142	173	208	22%
Miscellaneous	13	15%	15	19	23	28	33	37	20%
Process Manufacturing	225	26%	284	357	453	580	735	930	27%
Retail Trade	130	29%	168	226	303	410	550	736	34%
State & Local Government	122	25%	152	189	236	295	370	470	25%
Telecommunications	32	22%	39	47	58	72	89	110	23%
Transportation	148	22%	180	220	270	330	400	495	22%
Utilities	4	0%	4	5	5	6	6	6	8%
Wholesale Trade	420	27%	535	685	875	1130	1470	1920	29%

Source: INPUT

B
Forecast Reconciliation

Exhibits A-4, A-5 and A-6 present reconciliations of the 1994 and 1999 market figures in this 1995 network services report with the network services, EIS and network applications forecast databases contained in the 1994 network services report.

Exhibit A-4

NETWORK SERVICES MARKET
1995 MAP Database Reconciliation
($ Millions)

INDUSTRY SECTORS	1994 Market				1999 Market				94-99 CAGR per data '94 Rpt	94-99 CAGR per data '95 Rpt
	1994 Market (Forecast)	1995 Report (Actual)	Variance From 1994 Forecast		1994 Market (Forecast)	1995 Report (Forecast)	Variance From 1994 Forecast			
	($M)	($M)	($M)	(%)	($M)	($M)	($M)	(%)	(%)	(%)
Total All Sectors	13824	13906	82	1%	31597	32193	596	2%	18%	18%
Vertical Industry Markets	7704	7691	-13	0%	16571	16536	-35	0%	17%	17%
Banking and Finance	1011	1038	27	3%	2109	2157	48	2%	16%	16%
Business Services	754	764	10	1%	1383	1450	67	5%	13%	14%
Discrete Manufacturing	156	159	3	2%	410	423	13	3%	21%	22%
Education	298	297	-1	0%	638	661	23	4%	16%	17%
Federal Government	1219	1124	-95	-8%	2056	1391	-665	-32%	11%	4%
Health Services	795	791	-4	-1%	1712	1640	-72	-4%	17%	16%
Insurance	280	281	1	0%	530	556	26	5%	14%	15%
Miscellaneous	181	183	2	1%	319	325	6	2%	12%	12%
Process Manufacturing	1281	1305	24	2%	2780	2975	195	7%	17%	18%
Retail Trade	331	340	9	3%	963	1120	157	16%	24%	27%
State and Local Gov't	182	184	2	1%	468	482	14	3%	21%	21%
Telecommunications	169	173	4	2%	420	450	30	7%	20%	21%
Transportation	505	506	1	0%	1205	1225	20	2%	19%	19%
Utilities	35	34	-1	-3%	57	53	-4	-7%	10%	9%
Wholesale Trade	507	512	5	1%	1521	1628	107	7%	25%	26%
Other Markets	6120	6215	95	2%	15026	15657	631	4%	20%	20%
- On-line Databases	3937	4005	68	2%	9594	9975	381	4%	19%	20%
- On-line News Services	2183	2210	27	1%	5432	5682	250	5%	20%	21%

Source: INPUT

Exhibit A-5

ELECTRONIC INFORMATION SERVICES

1995 MAP Database Reconciliation
($ Millions)

INDUSTRY SECTORS	1994 Market				1999 Market				94-99 CAGR per data '94 Rpt	94-99 CAGR per data '95 Rpt
	1994 Market (Forecast) ($M)	1995 Report (Actual) ($M)	Variance From 1994 Forecast ($M)	Variance From 1994 Forecast (%)	1994 Market (Forecast) ($M)	1995 Report (Forecast) ($M)	Variance From 1994 Forecast ($M)	Variance From 1994 Forecast (%)	(%)	(%)
Total All Sectors	11094	11210	116	1%	24861	25652	791	3%	18%	18%
Vertical Industry Markets	4974	4995	21	0%	9835	9995	160	2%	15%	15%
Banking and Finance	882	918	36	4%	1855	1912	57	3%	16%	16%
Business Services	725	735	10	1%	1315	1355	40	3%	13%	13%
Discrete Manufacturing	75	75	0	0%	185	178	-7	-4%	20%	19%
Education	194	191	-3	-2%	424	440	16	4%	17%	18%
Federal Government	304	292	-12	-4%	410	362	-48	-12%	6%	4%
Health Services	451	425	-26	-6%	838	760	-78	-9%	13%	12%
Insurance	208	216	8	4%	361	383	22	6%	12%	12%
Miscellaneous	169	170	1	1%	295	292	-3	-1%	12%	11%
Process Manufacturing	1073	1080	7	1%	2106	2240	134	6%	14%	16%
Retail Trade	201	210	9	4%	507	570	63	12%	20%	22%
State and Local Gov't	67	62	-5	-7%	124	112	-12	-10%	13%	13%
Telecommunications	137	141	4	3%	335	361	26	8%	20%	21%
Transportation	361	358	-3	-1%	839	825	-14	-2%	18%	18%
Utilities	31	30	-1	-3%	50	47	-3	-6%	10%	9%
Wholesale Trade	96	92	-4	-4%	191	158	-33	-17%	15%	11%
Other Markets	6120	6215	95	2%	15026	15657	631	4%	20%	20%
- On-line Databases	3937	4005	68	2%	9594	9975	381	4%	19%	20%
- On-line News Services	2183	2210	27	1%	5432	5682	250	5%	20%	21%

Source: INPUT

Exhibit A-6

NETWORK APPLICATIONS MARKET
1995 MAP Database Reconciliation
($ Millions)

INDUSTRY SECTORS	1994 Market: 1994 Market (Forecast) ($M)	1994 Market: 1995 Report (Actual) ($M)	1994 Market: Variance From 1994 Forecast ($M)	1994 Market: Variance From 1994 Forecast (%)	1999 Market: 1994 Market (Forecast) ($M)	1999 Market: 1995 Report (Forecast) ($M)	1999 Market: Variance From 1994 Forecast ($M)	1999 Market: Variance From 1994 Forecast (%)	94-99 CAGR per data '94 Rpt (%)	94-99 CAGR per data '95 Rpt (%)
Total All Sectors	2730	2696	-34	-1%	6736	6541	-195	-3%	20%	19%
Vertical Industry Markets	2730	2696	-34	-1%	6736	6541	-195	-3%	20%	19%
Banking and Finance	129	120	-9	-7%	254	245	-9	-4%	15%	15%
Business Services	29	29	0	0%	68	95	27	40%	19%	27%
Discrete Manufacturing	81	84	3	4%	225	245	20	9%	23%	24%
Education	104	106	2	2%	214	221	7	3%	16%	16%
Federal Government	915	832	-83	-9%	1646	1029	-617	-37%	12%	4%
Health Services	344	366	22	6%	874	880	6	1%	21%	19%
Insurance	72	65	-7	-10%	169	173	4	2%	19%	22%
Miscellaneous	12	13	1	8%	24	33	9	38%	15%	20%
Process Manufacturing	208	225	17	8%	674	735	61	9%	27%	27%
Retail Trade	130	130	0	0%	456	550	94	21%	29%	33%
State and Local Gov't	115	122	7	6%	344	370	26	8%	25%	25%
Telecommunications	32	32	0	0%	85	89	4	5%	22%	23%
Transportation	144	148	4	3%	366	400	34	9%	21%	22%
Utilities	4	4	0	0%	7	6	-1	-14%	12%	8%
Wholesale Trade	411	420	9	2%	1330	1470	140	11%	26%	28%

Source: INPUT

Network Services—The actual 1994 network services market values varied between a 3% understatement and an 8% overstatement of the actual market size noted in the 1995 report. The major variance is the 8% drop in federal government expenditures resulting from budgetary constraints and increasing federal cost-consciousness regarding usage-sensitive expenditures. Variances for the 1999 forecast were between-7% and 7%, except for the federal government (-32%), where continuing cost controls will hold down expenditures, and the retail trade market, where continued strong growth in retail applications is expected, as consumer spending continues to show increased confidence in the economy.

EIS—For the 1994 EIS market, most vertical markets held to the 1994 forecast made in late 1994, with variations of 7% or less. The 1999 reconciliation shows a slight overall increase in usage. This increase is due to the mounting demand for more detail or granularity in information, as well as the use of information in new business areas. The biggest increase is in retail trade. The federal and state and local government sectors spending reflects the growing spending constraints in the public sector, while the wholesale trade sector continues to see an erosion in market size as more local wholesalers consolidate into regional multiline businesses with reduced EIS needs.

Network Applications—The reconciliation of the network applications submarket shows that there was a shortfall in anticipated expenditures of less than 7% in all market sectors except insurance and government, where greater cutbacks are anticipated. The shortfall is due to delay in business use of network applications resulting from the slow recovery in 1993-1994. The longer range (1999) variances reflect the impact of the Internet, strong growth in the use of E-mail and bulletin boards, and the increased impact of electronic commerce and EDI on this product/service subsector. Variances for many industry sectors, such as miscellaneous, are exaggerated due to the small size of the market base.