INPUT

STRATEGIC MARKET PERSPECTIVE

Using the Internet for Business Operations

Internet Opportunities Program

FEBRUARY 1996

USING THE INTERNET FOR BUSINESS OPERATIONS

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Abstract

This report identifies the ways in which the Internet is being used to support business functions.

It provides benefits, challenges, and future directions that the Internet can bring to businesses processes.

This report is based on a subset of data from a primary research project involving over 200 telephone interviews conducted with leading North American companies across a number of industries.

The report contains 51 pages and 17 exhibits.

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List of Exhibits

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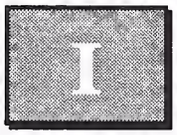


Introduction

A
Background and Objectives

The objectives of this report are to:

- Identify the ways in which the Internet is being used to support business processes
- Examine the benefits that the Internet can bring to business processes
- Identify common challenges that companies face in realizing these benefits
- Indicate possible new directions for use of the Internet for business processes

B
Scope

This report focuses on Internet use relating to internal business processes and does not include areas that can be considered sales and marketing functions. It therefore excludes advertising, public relations, pricing and channel issues, as well as pure sales and marketing. The larger part of most companies' involvement with the Internet is directly related to sales and marketing—the creation of a Web page to establish a corporate presence, for example.

This report also excludes discussion of hardware or software products related to the Internet.

C
Methodology

This report is based on a subset of data from a primary research project involving over 200 telephone interviews conducted with leading North American companies across a number of industries. All interviews were conducted during the second quarter of 1995.

The subset was chosen on the basis of the strength with which respondents felt the Internet would impact business processes over the next five years. Fifty respondents rated the impact sufficiently highly to warrant inclusion in this report, and they comprise the sample used for this analysis.

In addition, in-depth interviews were conducted with European and North American companies to gain even better understanding of their motivation and needs and to break down precisely their current and future applications of the Internet for business processes.

The industry profile of the respondent group is shown in Exhibit I-1 along with the revenue size of the smallest and the largest companies in each industry category. Revenues for all 50 companies average out at $6 billion. We can see a wide spread of industries among the sample, with process manufacturing, services, utilities and banking/finance representing 56% of respondents.

Representation from the education and government fields is low; these sectors were deliberately de-emphasized in favor of more commercial endeavors for the purposes of this study.

Exhibit I-1

Industry and Revenue Profile of Respondents' Companies

Vertical Market	Proportion of Total Population (%)	Minimum Sales ($B)	Maximum Sales ($B)
Discrete Manufacturing	6	0.07	2.75
Process Manufacturing	20	0.2	12
Transportation	6	0.21	3
Utilities	12	1.4	11
Communications	4	3	3.2
Retail	4	2.5	14
Wholesale	4	0.4	2
Banking/Finance	10	2	40
Insurance	2	7	7
Medical	2	3	3
Services	14	0.00015	63
Education	8	NA	NA
State/Local Government	4	3	3
Other Industry Specific	4	0.11	2

n = 50 *Source: INPUT*

Companies active on the Internet were contacted through their Internet manager, if the contact name was known. If not, contacts were made through the sales/marketing departments which, in turn, directed INPUT to the contact "most knowledgeable about the company's Internet activities."

In order to obtain the clearest picture of Internet use, this report categorizes respondents according to their position on the Internet development map. Respondents were classified under the following descriptions:

- Active presence
- Developing a presence
- Seriously considering a presence
- Gathering information

Companies with an already active presence far outnumber others—they form 60% of the sample for this report.

D
Report Organization

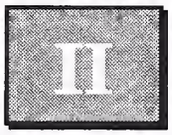
The remaining chapters of this report are:

- Executive Overview
- Current and Future Use of the Internet to Support Business Processes
- Issues and Concerns Facing Internet Users
- Real-World Internet Use for Business Processes
- Conclusions and Recommendations
- Appendixes

E
Related INPUT Reports

Other INPUT reports and related material include:

- *Internet Sales and Marketing Directions,* 1995
- *Internet Application Case Studies,* 1995
- *The Impact of Firewalls on Client/Server Applications,* 1995
- *Connectivity World Newsletter*



Executive Overview

A
Early Adopters Are Racing Up the Experience Curve

The Internet has created a revolution in low-cost, global business communication. However, only a small minority of companies are exploiting the new networked environment to gain significant advantages.

This minority is using the Internet not just to advertise on the World Wide Web, but to develop applications and systems for their internal operations—their business processes.

These early adopters are racing up the experience curve and are gaining invaluable skills for future network-centric business. This presents a significant challenge for future Internet users and a considerable opportunity for vendors to provide stepping stones for the rest of the business community.

Several key ideas are emerging:

- Experience brings value
- There is strong emphasis on the Web for business processes
- The Web is challenging Lotus Notes
- Staffing uncertainties are creating service opportunities

B

Experience Brings Value

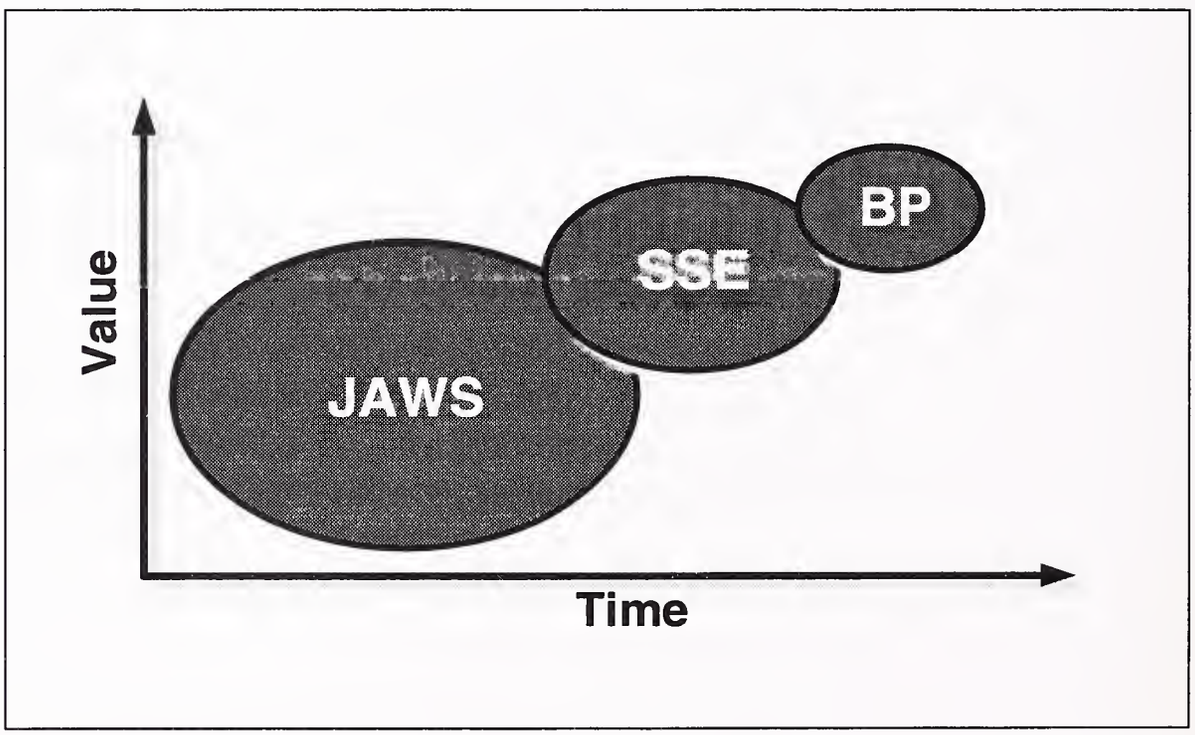
Three broad categories of business Internet use exist:

1. Reactive and passive—the JAWS ("Just Another Web Site") syndrome
2. Active marketing—the serious sales engine
3. Practical and operational—business processes

These three categories require progressively more experience but bring greater value (see Exhibit II-1).

Exhibit II-1

Finding Value Along the Internet Food Chain



Source: INPUT

Internet experience is one of the best tools a company can acquire to prepare for the future of networked business.

Companies inexperienced in Internet matters fully understand neither how the Internet can benefit them nor what they can expect the Internet to deliver successfully. They place importance on management control, yet older hands know this is one of the least important benefits of the Internet. They place importance on improving quality, yet the more experienced company knows quality improvements will not occur simply as a result of an Internet connection.

Project plans become more focused as companies gain more Internet experience. The most coherent and achievable future Internet goals are consistently heard from organizations that already have the weight of experience behind them.

C
Internal Webs Are Driving Business Processes

Despite the current climate of Internet-as-marketing, practical business process-oriented applications are being widely deployed.

Companies are using the Internet—more specifically, the Web—not only to share information within the enterprise, but also to automate business functions.

This information-sharing function is reflected in the uses to which the Internet is being put. For example:

- Sharing of product development plans
- Scheduling information
- Technical support databases
- Distribution of white papers
- Internal and external company recruitment
- Telephone directories
- Visitors' register
- Meeting room scheduling
- Software upgrades

In all of these cases, information is disseminated between departments over a company Web—using the World Wide Web technology and protocols to construct a private Web purely for internal use.

Company Webs are rapidly becoming the standard environment in which company-specific information is shared. They are currently used in different ways:

- Purely internally—departments run their own Web servers and communicate over the company LAN and a private WAN
- Purely externally—company information is put on a public Web server and access is restricted to staff only
- Both internally and externally—a company adopts the internal Web model, but uses the public Internet to connect remote offices

D
The Web Challenges Notes

The Web is a low-cost, flexible, hypermedia environment. It allows rapid navigation of large data spaces containing text, graphics, audio, video, software, and any other type of binary information.

Many companies are taking a serious look at the Web as their future information platform. This positions the Web directly against proprietary products, specifically Lotus Notes.

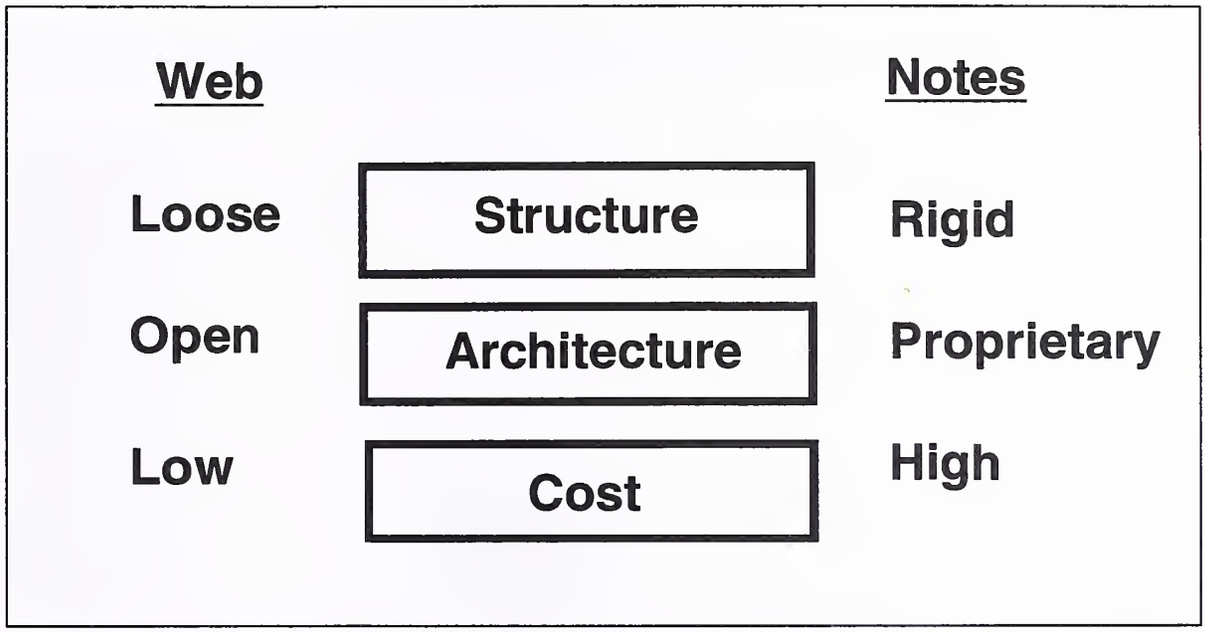
Both the Web and Notes have their own distinct advantages (see INPUT's report on Notes, *IBM's Repositioning of Notes for the Internet*). The low-cost, unstructured nature of the Web, however, makes it ideally suited to large-scale, free-form information distribution.

The Web gives companies an easy-to-use front end for the seamless transfer of any computer-storable data. There is enormous flexibility in the design of the front end, not just in terms of its styling, but in its interactive potential.

In offering such flexibility, however, the Web sacrifices rigid data structuring. Some applications require very powerful data structures and are more suited at the moment to proprietary solutions such as Notes (see Exhibit II-2).

Exhibit II-2

The Web Challenges Notes



Source: INPUT

E
Staffing Uncertainty Opens Door to Services Providers

There are three fundamental elements of an Internet presence:

1. Technology
2. Content
3. Marketing

Each element corresponds to a different functional area within a company.

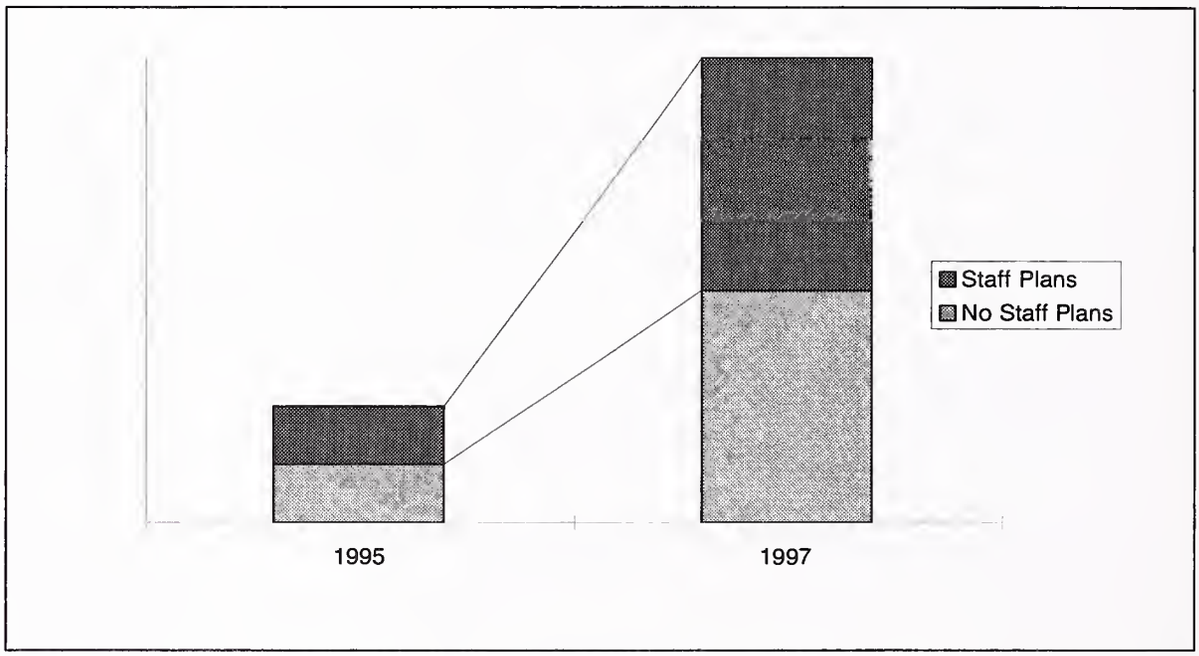
The marketing element relates almost exclusively to a public Web presence and not to an internal Internet system. Most companies with internal Webs also have a public Internet presence, however, and so the marketing function inevitably crosses over into internal operations.

Creating an Internet system for internal use puts a staff requirement overhead on all three departments. Due to lack of communication between departments, or lack of a coherent Internet plan, staffing levels are currently an area of uncertainty and even confusion.

Very few companies have a clear idea of the staff resources required to design, implement, and successfully run an Internet project. Estimates range from the absurdly optimistic (no staff required) to impractically large numbers. About half of the companies interviewed for this report could not put a number on current or future staff requirements.

Exhibit II-3

Staffing Uncertainty Creates Services Opportunities



Source: INPUT

There is a clear opportunity for services vendors to target this uncertainty (see Exhibit II-3). In both Europe and the U.S., for example, business operations is the fastest growing sector of the outsourcing market; in Europe, the business operations outsourcing market will grow at a 27% CAGR, from $300 million in 1995 to $1 billion in 2000.

As the Internet population continues to grow at an exponential rate and ever-larger numbers of companies go on line, an increasing proportion of the business operations being outsourced will be directly related to the Internet.

III

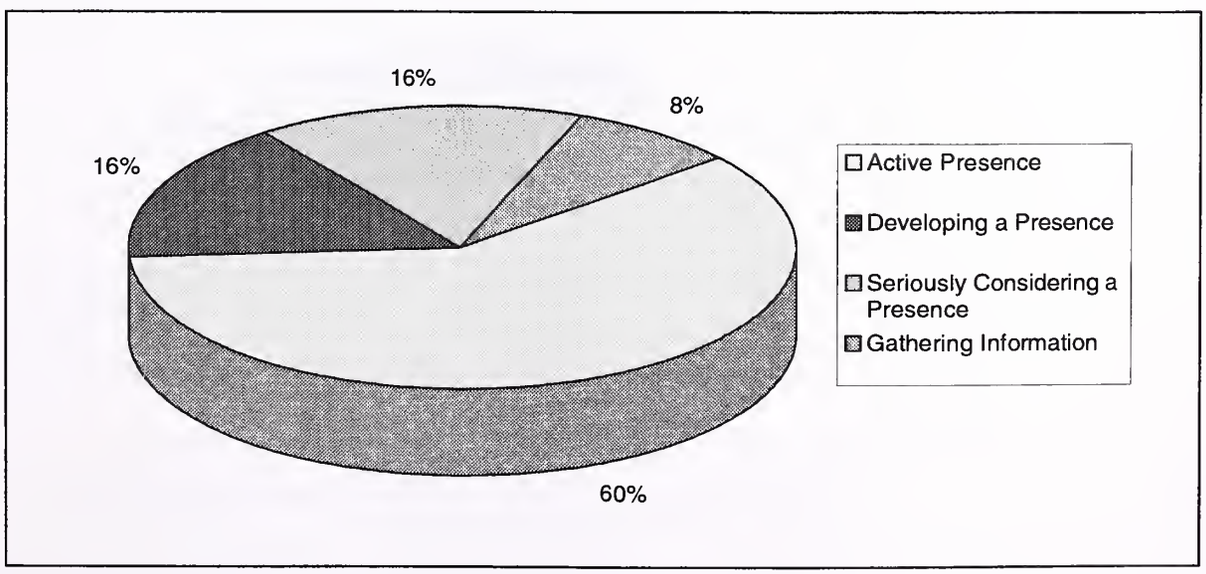
Current and Future Use of the Internet to Support Business Processes

A
Current Internet Status

It is clear from the profile of respondents that Internet activity is well under way in most large organizations. The average size of company surveyed for this report was $6 billion, and 60% of these companies are already active on the Internet (see Exhibit III-1). Only a very small proportion are still at the data-gathering stage. Overall, the sample represents a body of motivated and mostly experienced users.

Exhibit III-1

Current Internet Status



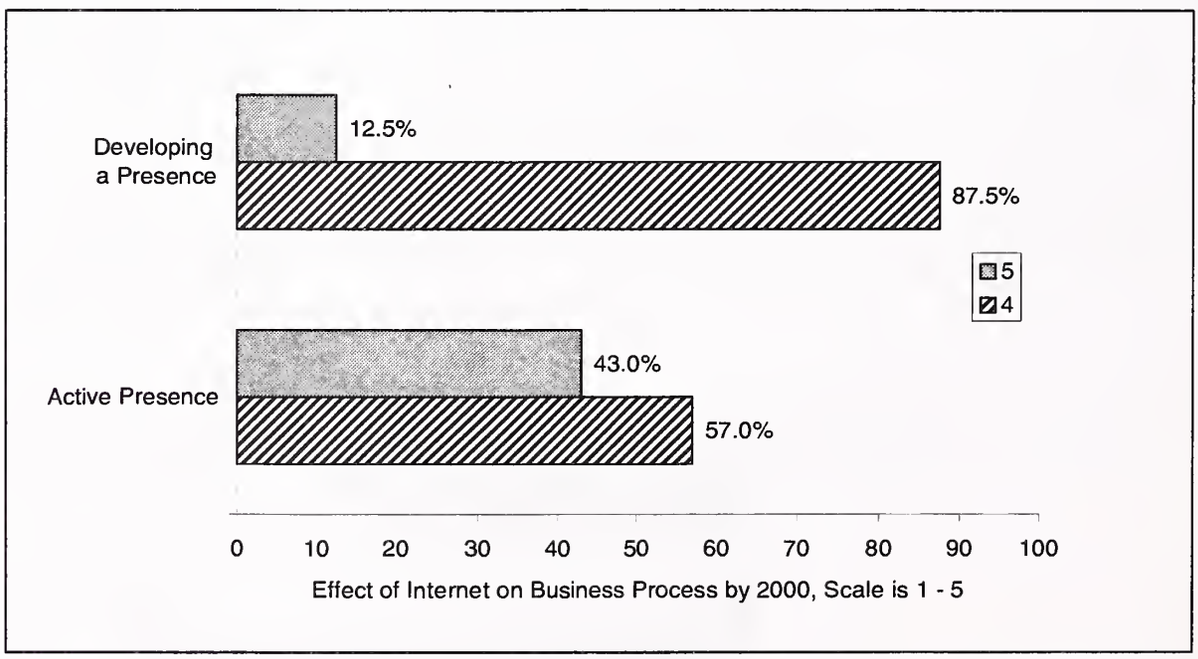
Source: INPUT

None of the respondents gave either of the two other possible answers to the question of current Internet status: "Have not considered it" or "Considered it and rejected it." Rejection may follow, of course, but is an unlikely action on the part of the 76% of respondents who already have or are developing an Internet presence. Rejection of the Internet is most likely to come from the 24% of companies that have not yet embarked on a course of action, but if the existing implementation rates are maintained, all or nearly all companies that believe that the Internet will have a serious impact on their business processes will be active on the Internet.

The sample for this report was chosen on the basis of companies' expectations of Internet impact on their business processes by the year 2000. There is a striking difference between the expectations of those companies already on the Internet and those still in the process of developing a presence. Of the already active respondents, 43% rated the Internet's impact on business processes by 2000 as "5," with the remainder rating the impact at "4." Of those respondents still developing a presence, though, only one (representing 12.5%) rated the impact at "5," with, again, the remainder rating it at "4" (see Exhibit III-2).

Exhibit III-2

Expectations of the Internet's Impact on Business Processes of Active and Developing Users



Source: INPUT

This chart provides another clear indicator that those who have practical experience of conducting a portion of their business and running part of their operations over the Internet can see the considerable impact that the Internet's use will have on operations over the next few years. Those

currently developing an Internet presence recognize the impact, too, but may not appreciate the significance of the globally networked environment fully.

In Internet matters, hands-on experience is one of the best tools a company can acquire. It behooves organizations to gain this experience in order to understand better the environment they will be working with in the future.

B
Current, Developing and Future Internet Projects

Experienced Internet users (those already active on the Internet or who have started developing a presence) were asked to describe their current Internet projects.

Less experienced Internet users (those who were considering an Internet presence or who were still gathering information) were asked why they had turned their attention to the Internet and what factors were affecting the decision process.

1. Experienced Internet Users

Of companies with an *active presence*, approximately half are on the Internet primarily or only to publicize themselves and their products and services—the sales and marketing function. This was indicated with the common statement, "Have Web page to provide information" or something similar. The remaining companies are taking the medium a little further, with varying levels of application being used over the Internet. These include:

- Company recruitment
- Law research
- Geological research
- Ticketing system
- Commonwealth exchange project
- Environmental compliance services
- Customer interaction: product evaluation, reporting, purchase, and registry

All these applications have a potential impact on business processes.

Of those fewer companies that are *developing a presence*, the "me too" response is even stronger: the clear majority stated their intent to develop a Web presence primarily or solely in order to promote themselves and their products and services. This widespread reaction to the Internet is echoed succinctly in the response of one company within this group, which was: "Putting up a home page and just going with the flow."

The pattern of Internet use is clear from this. Organizations very often adopt a reactive stance initially, which may be the result of a senior management imperative to "do something and do it quickly" or experimentation at a lower level within a company. Both achieve the same result: often a generic home page that does little to further business, customer interaction, or operational practices.

When the Web page has been designed and established on the Internet, more serious thought is given to its role within the company and its potential, beneficial use. Resourcing, designing, developing and maintaining an Internet presence is not a trivial matter, and the wastage engendered by this imperative/experiment/rethink process is substantial. Large savings will be made in time, resources and money by designing and evaluating a presence thoroughly, and agreeing on what is expected of the Internet for the company as a whole before tackling technical issues or creating significant numbers of HTML documents.

Respondents who rated the impact of the Internet on business processes by the year 2000 as "5" gave proportionately more examples of applications already in use or being developed that related directly to business processes than did respondents who rated the impact as "4."

Companies using the Internet for business processes today, therefore, are seeing the positive effects the Internet can bring:

- Faster communications
- Open access to internal information
- Reduced overhead and cost

These more experienced companies are reflecting this unfolding knowledge in their estimation of the future. By learning from these early adopters, we can appreciate that business processes will be impacted significantly in the future, and probably to a greater extent than many of the survey respondents currently imagine.

2. Less Experienced Internet Users

The plans of companies not as far along the development path were less certain. This, again, follows the pattern identified above: that the Internet connection is made before thorough plans are developed.

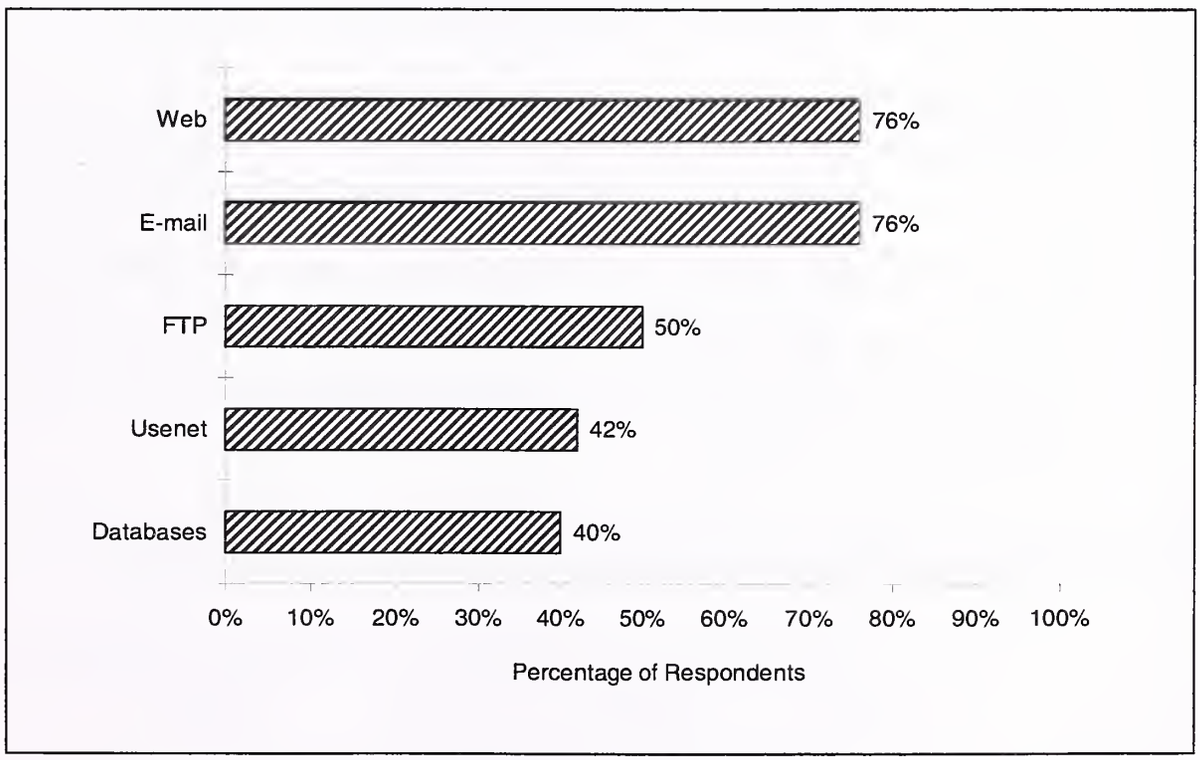
The reasons for considering an Internet presence typically related directly to sales and marketing functions, although one respondent, still at the data-gathering stage, identified cross-departmental support functions as a primary reason for looking to the Internet.

C
Internet Service Usage

Usage of the various foundation Internet services remains fairly uniform across the groups of active users and developing users. Usage patterns follow the norm, with E-mail and the Web being used by most companies (see Exhibit III-3).

Exhibit III-3

Use of Foundation Internet Services



Source: INPUT

It is surprising to find that there are even some respondents who claim not to use E-mail. Among both active and developing users, between 20% and 30% claim not to do so.

Only one respondent used neither the Web nor E-mail, however. It is therefore possible that E-mail is being used but that some respondents who use their Web browser's internal mail facility regard this as a Web function, not as E-mail.

The uses to which the different foundation Internet services can be put vary enormously, but some stand out as clear candidates for business process functions.

E-mail is undoubtedly the base standard for Internet connectivity and provides the simplest, yet most flexible means through which to transfer information. Its uses are not easily limited, particularly with the adoption of multimedia extensions (MIME) that allow any kind of file to be delivered coherently, and security mechanisms that allow confidential information to be mailed securely. Clearly, E-mail is an essential part of nearly any company's communications infrastructure.

FTP is another candidate for business process use and may be the best-suited mechanism, apart possibly from an internal Web system, for distributing company-specific documents. FTP is easy to develop and manage, and although it certainly lacks the bells and whistles of the Web, this should not necessarily be a big issue for company internal use.

The *Web* is most often used as a sales and marketing tool—to provide advertising and purchase ordering information and to place a company publicly in the competitive selling environment of the Internet. But many organizations use the Web as an internal information tool. By linking purely internal Web servers located anywhere in the world, physically and also culturally separate departments can share company information, work collaboratively, and communicate in ways previously impossible due to the cost and resources required to create an ubiquitous shared-information environment.

D
Importance of Internet Benefits to Business Processes

INPUT identified five benefits that Internet use can bring to organizations in their business processes:

1. Accelerating business processes
2. Speeding information flow
3. Ensuring management control
4. Obtaining scarce knowledge

5. Improving quality

Respondents were asked to rate, on a 1-5 scale, the importance of each of these benefits.

This section looks at each of the potential benefits from the point of view of:

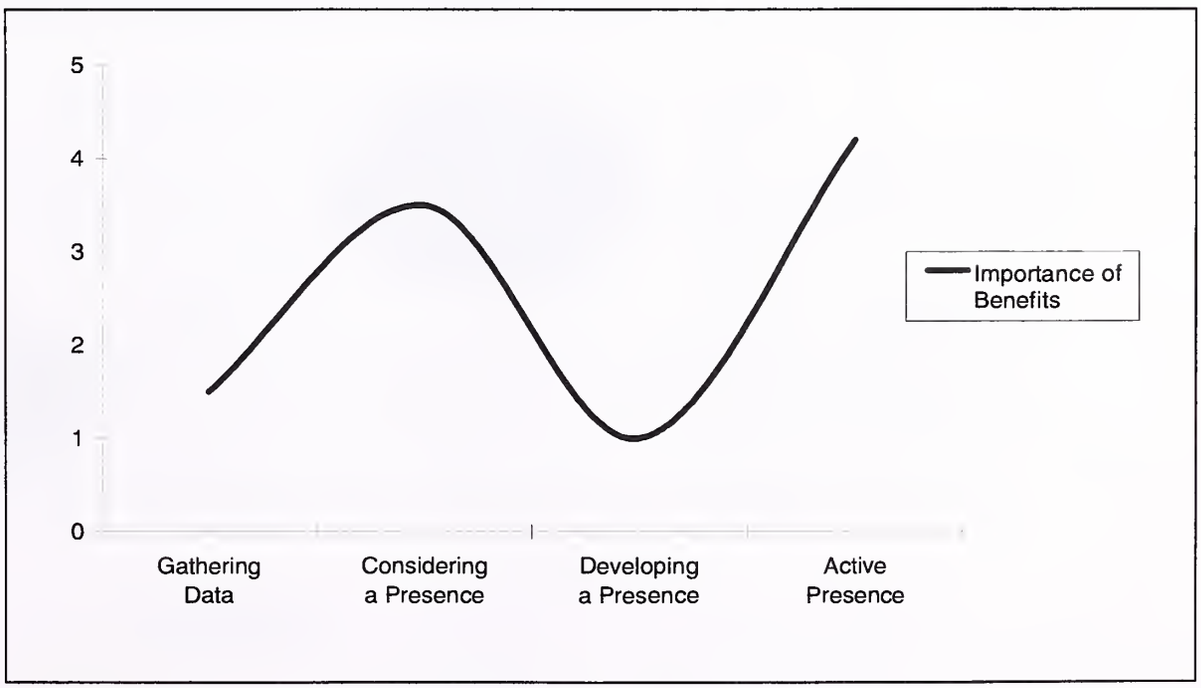
1. The organization's stage of Internet development
2. The category of potential benefit
3. Industry sector

1. Importance of Benefits by Organization's Stage of Internet Development

A definite trend exists that illustrates how the perceptions of users change as they travel down the development path. In all but one case (which differs only slightly), the change in perceived importance of benefits over time follows the curve illustrated in Exhibit III-4.

Exhibit III-4

Change in Perceived Importance of Internet Benefits



Source: INPUT

a. Organizations Gathering Data

At the earliest stage of Internet activity, data gathering, companies do not consider most of the potential benefits the Internet can bring as relatively very important.

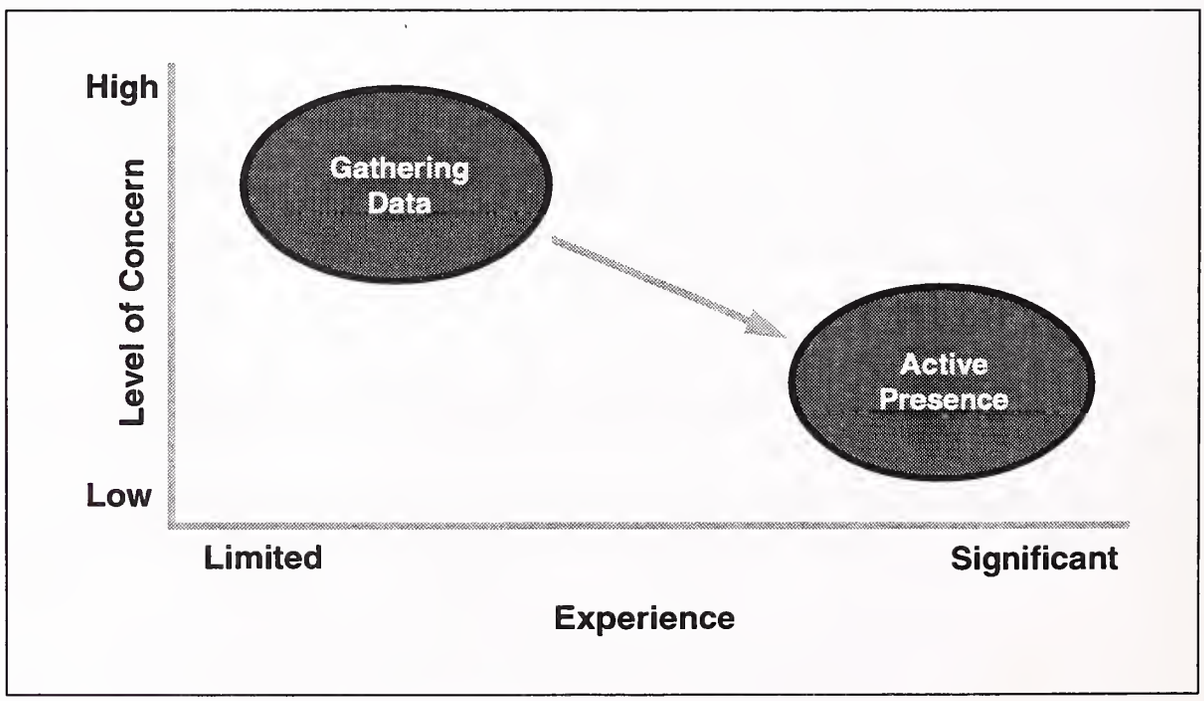
Firms might recognize that the Internet will speed their processes and information flow, improve quality and aid research, but they do not appreciate the potential magnitude of the positive effects that the Internet will bring to them in these areas. They may be dazzled by the hyperbole and not recognize the poor quality of the information that forms the bulk of Internet-related publishing.

It is at this data-gathering stage that fears of security, culture and value are most apparent, and when the Internet is most likely to be viewed with extreme suspicion. It is seen as an environment whose value and beneficial aspects to business are nebulous at best.

This phenomenon is observed elsewhere. Through interviews with users outside this survey, INPUT has identified the correlation between the negative perceptions of the Internet and the perceivers' inexperience, and, conversely, positive perceptions with hands-on experience (see Exhibit III-5).

Exhibit III-5

Internet Experience Allays Concerns



Source: INPUT

One category of benefit is a notable exception, and provides the only variation to the general curve. Companies very early in the development cycle consider the benefit of management control to be of greater importance than do any

other types of respondents. Though this inflated importance of management control is a deviation from the standard pattern identified in Exhibit III-4, it in fact reinforces the general trend. Inexperienced or unknowledgeable users fear the worst of the Internet. One way in which they imagine the Internet, and its users, can be harnessed is through management tools, and so they place great importance on control.

The reality, in contrast, is that as users progress in their implementation of an Internet connection and presence and become more knowledgeable, they consider control to be of decreasing importance, probably as they begin to cut through the hyperbole and see for themselves the facts about the Internet. In keeping with the common curve, however, this perceived importance picks up as companies launch their presence onto the Internet and face real-world issues such as audit procedures and software, staff use of the Internet, and ongoing maintenance of systems visible to the outside world. The category of management control received by far the lowest importance rating overall.

b. Organizations Seriously Considering a Presence

Respondents who have gone through the data-gathering stage naturally have a better understanding of the Internet. They see that there are real benefits to be experienced and have gained enough knowledge to be able to attach real-world importance to them. For these users, obtaining scarce information and improving quality are more important than they are for any other group of respondents.

c. Organizations Developing a Presence

A sharp dip in the importance attached to potential Internet benefits is seen from respondents who have decided to launch themselves onto the Internet and who are in the process of developing their presence.

For all categories of potential benefit, the turnaround is the same: as companies begin developing their Internet systems, they attach less importance to the very benefits that they are pursuing in their Internet projects. There is a large difference between this and the previous category of user: from merely considering a presence to taking the steps to bring it to fruition, there is a significant shift in attitude and immediate motives.

The development process is the time to get hands dirty, to get involved in the mechanics of the new medium—more so than at any other time. Problems are inevitable; rethinks of tactical considerations, technical issues and even overall strategy are commonplace. It is the timewhen a company is most likely to lose sight of the big picture and get bogged down in technical issues to the detriment of the overall project. Caught between the period of initial enthusiasm—when the Internet is a blank canvas on which to throw the

company—and the later flush of achievement as the project goes on line, these problems are almost inevitable, to some extent.

d. Organizations With an Active Presence

Again we see a change in perceptions according to the stage of implementation. By the stage of active presence, organizations will have surmounted many—but certainly not all—of their technical problems and will be concentrating on practical business use of the Internet: training, enhancement of the presence, etc.

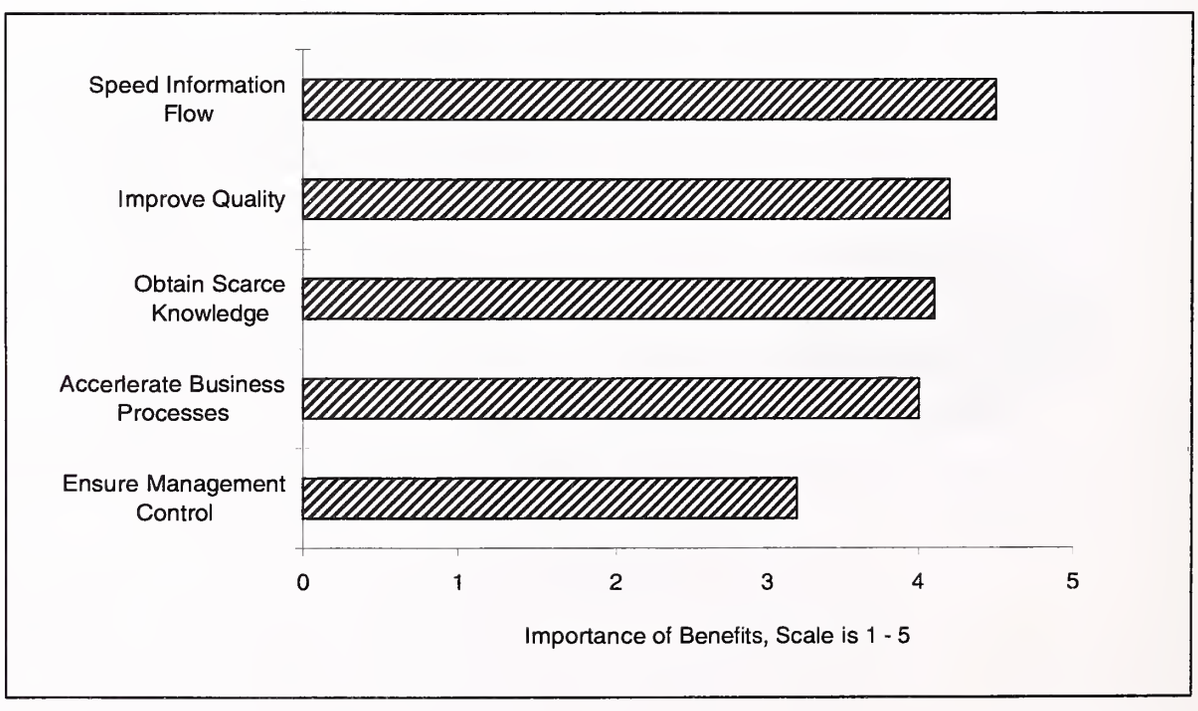
With practical, real-world experience behind them, companies can see more clearly than before how the Internet is going to benefit them. Only after the process of development and initial implementation, a process that is focused heavily on internal issues, do organizations really feel that there are tangible benefits to be gained from the Internet, and that their investment can really start working for them. At this stage, firms are far better able to match their current business processes to the new networked environment.

2. Importance of Benefits by Category of Potential Benefit

Exhibit III-6 shows the importance attached to each category of Internet benefit.

Exhibit III-6

Importance of Potential Internet Benefits



Source: INPUT

a. Accelerating Business Processes

This benefit was perceived similarly by respondents at all stages of the Internet development process. Few deny that the Internet will speed business processes overall, or that considerable time savings will be made in certain areas. But the category of business processes is a far-reaching one and encompasses many very different functions.

Some organizations' interpretation of the category will tie in very closely with the processes that the Internet is perfect for accelerating—digital information exchange—whereas others' will be somewhat removed from the Internet's *modus operandi*.

b. Speeding Information Flow

This category is seen as the most important benefit that the Internet can bring to commercial organizations.

In contrast with the category of management control, the importance attached to information flow over the Internet shows us that the greatest benefits, and the benefits uponwhich users are placing greatest emphasis, are the ones that are most easily achievable, the ones that the Internet is easily capable of delivering.

The Internet's greatest strengths include the rapid transfer of electronic files between arbitrarily located sites, and so this easily achievable factor is reflected in the perceived importance of information flow among existing, new and future Internet users alike.

When looking at business processes, rapid and efficient information flow is essential for nearly any function and must be regarded as a prerequisite for any serious use of the Internet.

c. Ensuring Management Control

Conversely, the category of management control is seen as by far the least important benefit the Internet will bring. This category was alone in receiving the lowest possible rating, signifying that the issue is not important to any respondents.

The pattern of views on this issue is relatively linear: respondents with less experience place more importance on it, showing again that as organizations gain knowledge and experience, they recognize that the need for management control is not as great as they once imagined.

d. Obtaining Scarce Knowledge

Of particular relevance to R&D and marketing units, this category received a relatively uniform response from all categories of respondent. As a research environment, the Internet is an extremely potent medium, and respondents will in general be satisfied with the Internet's ability to assist in most research efforts.

For many companies, ease with which they can obtain information is one of the biggest attractions of the Internet. This covers the instantaneousness and far-reaching connectivity of E-mail, as well as the breadth and depth of search possible with the Web, Gopher, FTP, Archie and Veronica services in front-line research.

Although the Internet is an open environment, access to information can be restricted as required. 'Scarce knowledge' can take the form of publicly available *or* highly restricted data, and the Internet can be used in both cases. With the use of password control and domain authentication, highly confidential information can be made available on a selective basis. With the use of encryption, requests for information can be fulfilled through secure E-mail.

e. Improving Quality

Improving quality is the second most important potential benefit of the Internet to respondents. With this category, as with certain others, we see that the potential benefit tends to be more important to less experienced organizations, reflecting the trend to change of values and expectations as companies travel down the development path.

3. Importance of Benefits by Industry Sector

Of all the industry sectors represented in this report (see Exhibit I-1), five stand out in their assessment of the importance of Internet benefits (see Exhibit III-7).

Three stand to gain in particular from the Internet:

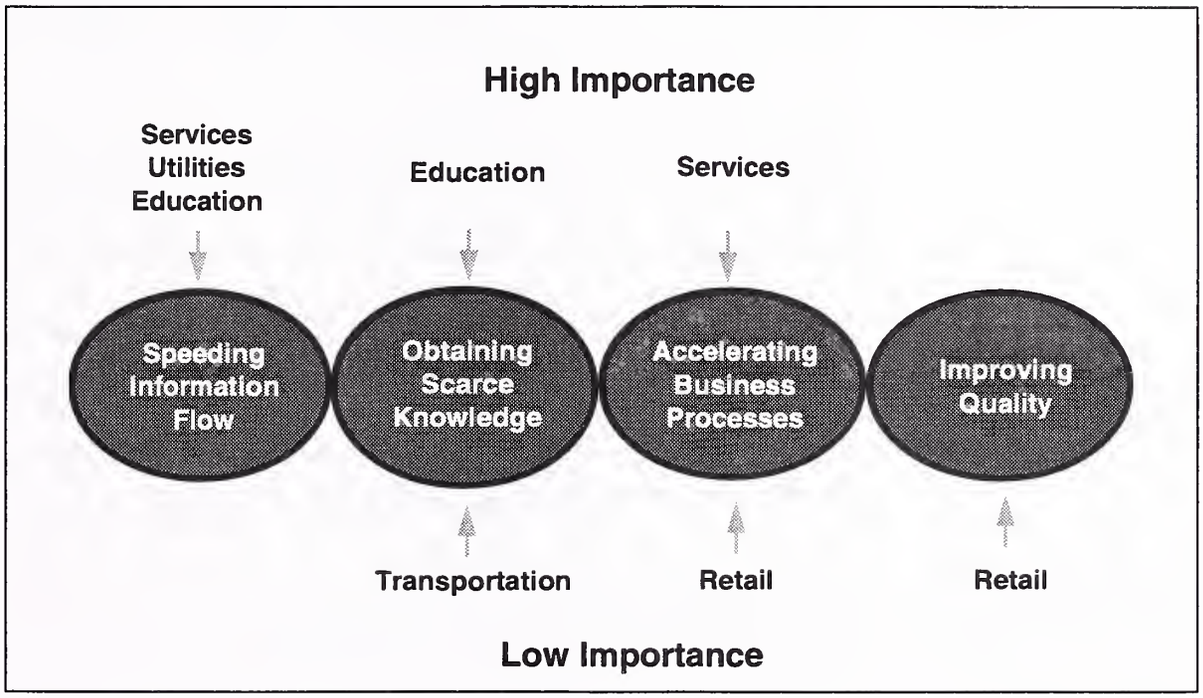
- Services
- Education
- Utilities

Two stand to gain relatively little:

- Retail
- Transportation

Exhibit III-7

Importance of Potential Internet Benefits by Industry Sector



Source: INPUT

Representatives of the retail and transportation industries consider the potential benefits of the Internet to be of under average importance in all cases, with the exception of improving quality, which respondents from the transportation industry perceive as slightly more important than average.

In the transportation industry, obtaining scarce knowledge is particularly unimportant. This is one of the most mature industry sectors, and information is relatively openly accessible. All respondents in this industry are active on the Internet already, and their response carries with it the authority of practical experience.

In the case of retail, similarly unimportant factors are accelerating business processes and improving quality. The former category is the perpetual hare to the retail greyhounds: in retail companies' constant drive to automate, streamline and optimize processes, they are well served by specialist equipment and service suppliers. The real-time, high-volume nature of retailing means that current use of the Internet is unlikely in many cases to be able to rival current internal systems of process.

The retail industry's 'product' is intrinsically entwined with its internal operations—the product is not the goods sold in shops, but the added value with which they are sold: service, price, support, environment. There may be no more ways that the Internet can improve these areas than there are ways in which it can improve (specifically in this report, 'accelerate') the general area of business processes. We see, therefore, very similar responses for both categories.

The utilities, services and education sectors are looking to the Internet to solve current problems, and so rate potential benefits as highly important.

The utilities industry voiced the need to speed information flow and the education sector expressed the importance of obtaining scarce knowledge. In both examples, all respondents placed the highest importance ranking on these areas in all cases. Clearly, these are problem areas.

Utilities are facing increasing worldwide deregulation and need to streamline operations inherited from their public past. Information and knowledge is at the heart of education, and access to both is a cornerstone. The Internet is extremely well suited to addressing both areas, and these sectors will gain particular advantages from use of the Internet.

E
Future Internet Usage, Staffing and Expenditure

1. Importance of the Internet by 2000

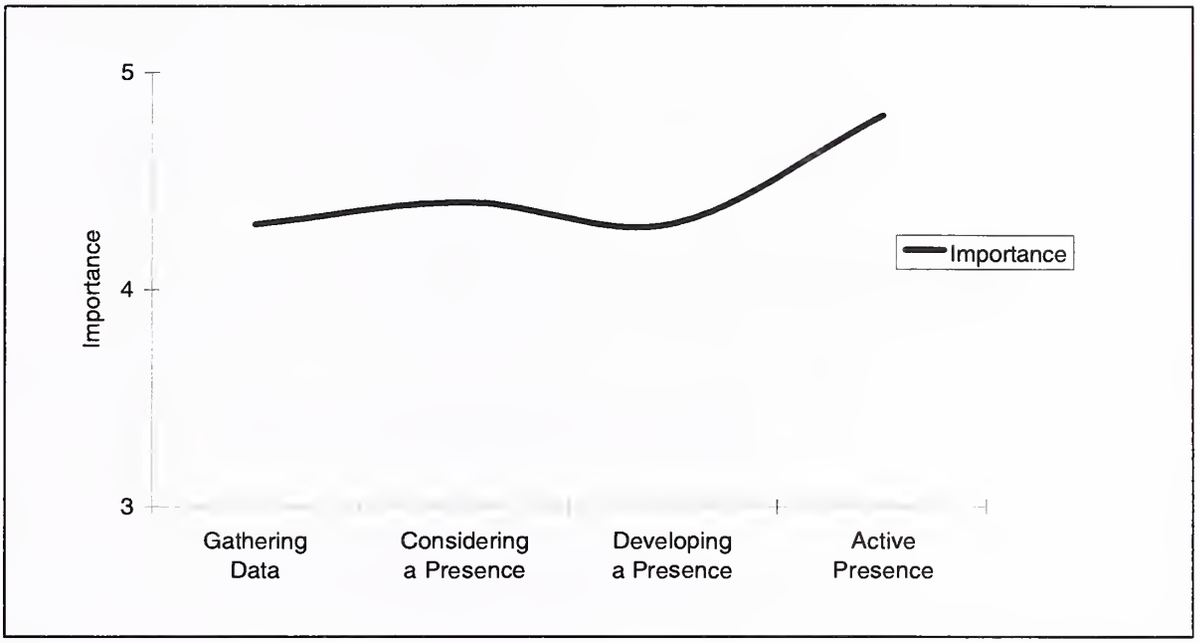
Respondents were asked how important they feel the Internet will be to the success of their organization by the year 2000. On a scale of 1-5, the average rating was 4.6.

Throughout this survey, we have seen that hands-on experience increases the recognition of the importance of the Internet and the benefits it can potentially bring. Among active Internet users, only the highest scores of "4" and "5" were recorded. Lower scores were found only in those users yet to launch their Internet presence.

The perceptions of the importance of the Internet among the four categories of users follow *exactly* the same pattern as the perceptions of Internet benefit (shown in Exhibit III-4). See Exhibit III-8 for this curve.

Exhibit III-8

Importance of the Internet by 2000



Source: INPUT

2. Planned Usage in 1997 and 2000

The message of future use is increased and more efficient communications:

- Business to business
- Business to consumer
- Business internal

In estimations of two-year plans (1997), the further down the development path companies were, the more detailed their plans were. This linearity was not echoed in the five-year activity forecast (2000), which shows a similar level of detail (or lack of detail in many cases) across all levels of experience. Companies on the Net now have a reasonable idea of their usage in 1997, but few are so certain about their position in 2000.

By industry, responses were mostly similar. Those in the process manufacturing sector gave the most detailed forecasts for 1997 and 2000, but were also among the most conservative interviewed. They did indicate, however, a strong increase in the use of the Internet for business processes. Examples of applications use expected by 2000 by the process manufacturing sector include video conferencing, order receipt and internal administration transfer.

The utilities sector was also enthusiastic about Internet usage in 2000, and saw the integration of the Internet into routine commercial life.

The commercialization of the Internet has made itself felt in the education sector in many ways, and this segment no longer feels as in control as it once was. Nearly all of the forecasts of future Internet activity were noncommittal or little more than hopeful guesses, and gave no clear indication of future use of the Internet for educational purposes.

3. Current and Planned Internet Staffing

Respondents were asked for details of their staff resource plans for both 1995 and 1997 in terms of:

- In-house staff
- Consultants
- Outsourcing services

Organizations interviewed have, overall, minimal staffing resources with which to develop and maintain their Internet projects.

A common thread among statements of staffing requirements for both 1995 and 1997 is that there is simply "a need" for staff, but few gave estimates of figures.

The overall trend for staff resources is to keep most development in-house. Internal staffing will increase from 1995 to 1997, but estimates were very low.

Use of external consultants is low, and will face negative growth in some quarters between 1995 and 1997 as more companies gradually bring development resources in-house.

Use of outsourcing services is also low, but will grow slightly by 1997.

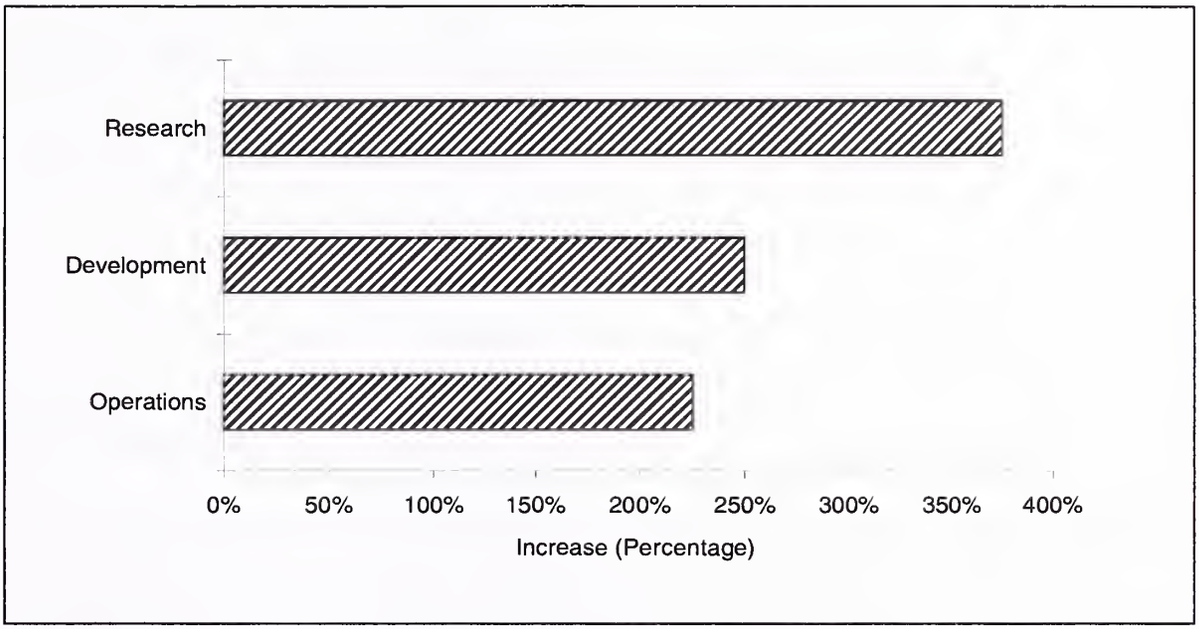
4. Current and Planned Internet Expenditure

Among respondents currently active on the Internet who gave qualitative expenditure estimates for 1995 and 1997, 80% indicated an increase in Internet spending overall. The remaining 20% estimated no increase or even a decrease in spending.

Of these respondents, the average increase in expenditure from 1995 to 1997 was 200%. This takes into account research, development, and ongoing operations costs (see Exhibit III-9).

Exhibit III-9

Change in Internet Expenditure Among Active Users, 1995-1997



Source: INPUT

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IV

Issues and Concerns Facing Internet Users

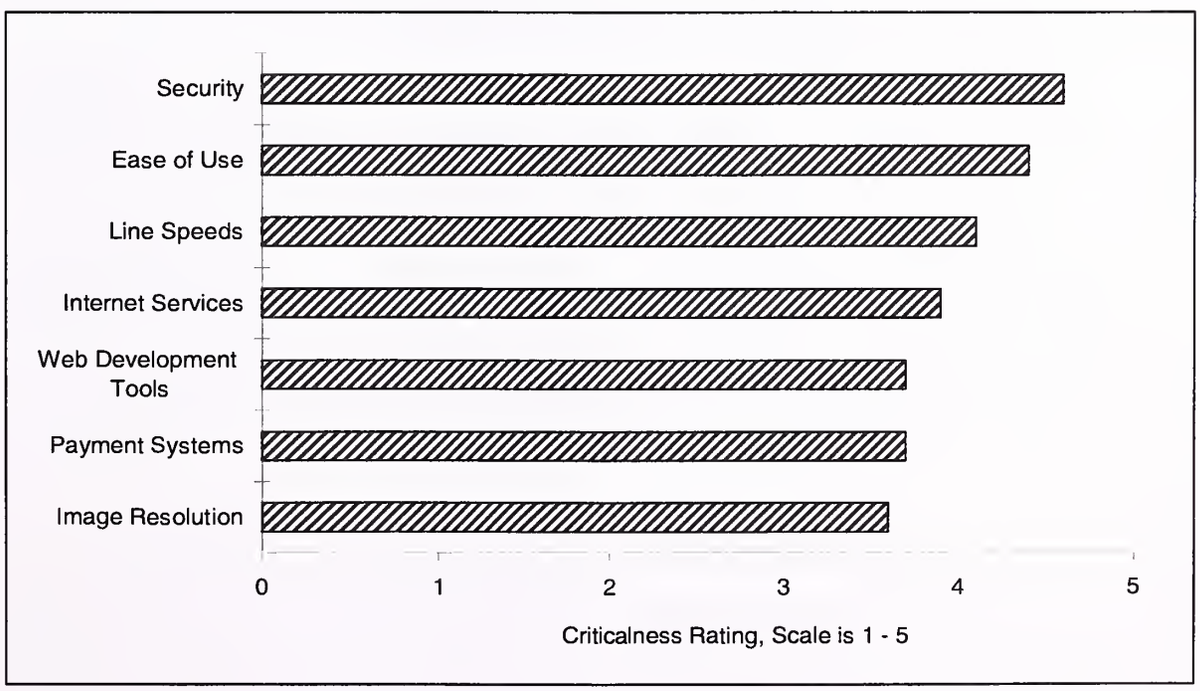
A
Barriers to Internet Success

The Internet is not yet a commercial paradise. Many issues must be resolved before the Internet is adopted as a mainstream component of many companies' business. Exhibit IV-1 shows how critical respondents felt the major barriers to Internet acceptance are.

This section discusses those issues, and then looks at areas of particular concern to certain groups of organizations.

Exhibit IV-1

Barriers to Internet Acceptance



Source: INPUT

B
Security

Security takes many forms and affects most Internet activities in some way. Security is most often seen as an issue for commerce over the Internet: secure payment mechanisms, electronic cash, purchase orders, etc. Security is just as relevant to use of the Internet for business processes, though.

Sharing information internally within a company has security implications of its own, for example. The biggest threat to company security comes *not* from outside access to private networks, but from within a company itself. Malicious or just mischievous employees and ex-employees pose a larger threat than do outside hackers.

Required methods of securing company data differ according to Internet usage:

- *Sales and Marketing*—typically centers around a public Web page from which customers make orders, pay for goods, and possibly receive goods. The main security issue is:
  - Encryption of credit card numbers sent over Web forms or E-mail
- *Business Processes*—typically center around internal Internet use for sharing information and processing customer orders in-house. Security issues include:
  - Defining and containing internal information so it cannot leak outside the company
  - Sending confidential information (financial, product plans, other company-sensitive data) to remote sites and to corporate partners
  - Restricting access to information internally

Security can be broken down into several broad categories, including:

- Physical security
- Network access
- Education
- Encryption

1. Physical Security

This includes building security, business continuity and backup, and is outside the scope of this report.

2. Network Access

Network access covers two topics—how open a company uses access to its public sites, and who within the company has access to the internal network. In terms of business processes, certain departments will be granted access to certain regions of the network. But the emergence of the Web as a framework for internal information distribution loosens these restrictions.

The Web is an inherently loose environment and was designed to spread in an organic, even haphazard, fashion. Open access is the key to the Web, and overlaying security measures in this environment may be difficult.

At present, Web servers must run on top of network operating systems such as UNIX and Windows NT, and so network file access can still be managed locally through the network operating system. This is not an integrated approach, however. For an internal Web to bemade properly secure, Web servers must in the future offer such security features as file, directory and group locking and backup.

3. Education

This is the cornerstone of any successful security policy. Without adequate staff education, any technological security solution may be rendered useless.

The U.S. and much of Europe, among other regions of the world, have taken part in so much of the development and evolution of information technology—computing, local networking, and now global networking—that business culturein these areas is well used to computing and networking. In many other parts of the world, however, use of computers and networks is still in the early stages. As networks such as the Internet grow in size, the consequences of their misuse also grow. Where an office of standalone workstations may have been tolerant of security mistakes made during a rough learning curve, the same is not true of a globally networked office, visible to the outside world through the Internet. Security education is now more important than ever, particularly in less technologically mature countries.

4. Encryption

Encryption must be used when sending sensitive data over the public Internet to remote sites or channel/development partners. This is a very common activity for internal departments—R&D, accounting, human

resources, etc.—and its use must be made transparent if it is to be adopted as a default factor in information sharing.

Encryption is one of the issues in which geography currently plays an important part. The most secure form of encryption is public key encryption, where messages are encoded using a bit stream (a key) of fixed length. The longer the bit stream, the more difficult the message is to decrypt if intercepted en route.

In the U.S., encryption technology can be used to its full potential by using the longest key available. Messages sent within the U.S. using PGP for mail or RSA for Web transactions, for example, can be secure enough to resist decryption.

The U.S. government has restricted export of encryption technologies, however, classing them as munitions. Only shorter keys can be used legally in the rest of the world, which ensures a significantly lower level of security. Outside the U.S., therefore, security remains a critical issue.

C
Ease of Use

For internal use, Internet front ends must be as easy to use as existing network clients. There is little point in replacing, for example, a sophisticated and well-used corporate E-mail front end with an Internet-specific E-mail package if that package requires much more technical ability to use. The staff member working in a nontechnical department such as human resources or finance should not care that messages are sent over the Internet instead of a private WAN, and will consider a more difficult-to-use interface as a step backward.

The Web is easy to use—it is a hypermedia environment in which pages can be designed to be reasonably intuitive to use. Other Internet services are more daunting to the nontechnical user. There is little point in indexing all company documents into a WAIS (wide area information search) database if the WAIS front end is incomprehensible to most users.

Similarly, the take-up of the E-mail encryption system PGP (Pretty Good Privacy) has been hampered by its unfriendly interface. Until encryption such as PGP is integrated *transparently* into E-mail, clients with encryption will become a de facto standard within an organization.

The Internet is fundamentally an open and consistent environment. Development of an easy-to-use interface for one type of task or one type of user will not be restricted to that task or user, but might instead spread to become a standard in its own right.

D
Bandwidth

The issue of bandwidth is of great importance to organizations using the Internet for business processes. Currently, much communication takes place over E-mail, but much more would take place over interactive, real-time media were the bandwidth in place to support these applications.

Video conferencing has the potential to change business communications radically, but is not yet practical over the Internet.

Bandwidth will always be an issue, but the Internet is currently so congested that some users are having to ration strictly, or abandon some applications. One company that INPUT interviewed stated that a major problem in its efforts to connect all remote offices via the Internet was that the bandwidth available out of one Asia/Pacific country was decreasingly able to support the country's Internet population. As a result, the company's communications suffer.

Organizations can control the bandwidth they are responsible for via their local networks and their connection to their Internet service provider (ISP). But in many cases, performance of certain applications will not improve when a company increases the size of its pipe to its ISP. The majority of performance problems are beyond individual organizations' control. Congestion at the ISP's site, the regional or national backbone, or congestion at the regional backbone to which a desired service is linked can cripple performance. Similarly, each packet of information sent over the Internet has to travel through multiple Internet nodes. Each node will add its own performance hit in varying degrees. Nearly all of these points are related directly to bandwidth.

Since the U.S. government pulled out of publicly funding Internet development through the National Science Foundation (NSF), it has been left to private carrier companies to upgrade and install new infrastructure. The key to future Internet performance is ATM (asynchronous transfer mode). As private companies build in ATM switches to the Internet infrastructure, users will see significant improvements in performance. ATM is sufficiently scaleable and robust to enable Internet growth to continue for many years.

In the meantime, to ensure maximum performance, companies can only:

- Select their ISP with care—not all ISPs have the same high-speed connections to their Internet backbones
- Ensure they take sufficient leased line bandwidth to their ISP
- Optimize their internal networks to minimize 'own goal' performance hits

E
Internet Services

A small number of underlying Internet services represent the bulk of Internet usage (see Exhibit III-3). E-mail and the Web are the most commonly used services. Usenet, FTP, telnet and gopher are others.

The use of these fundamental Internet services forms the basis of all Internet activity. Their continued existence and development is crucial for existing and new applications.

Unfortunately, it is not easy in most cases to transfer an application developed for one service to another service. A Web page can be presented only in the context of the Web itself; it has no meaning in the context of a gopher server or an FTP server.

For this reason, it is critical for many companies that the service (or delivery mode) that their applications run on remain available. With the advent of the Web came an enormous transition phase as organizations migrated their Internet presence and applications from gopher to Web.

F
Web Development Tools

A company developing any kind of Web facility, external or internal, needs the best development tools available. Tools include:

- HTML editors
- Java development kits
- Graphics tools
- CGI tools

Every Web page is written in HTML (hypertext markup language). HTML is a DTD (document type definition) of SGML (standard general markup language) and is a simple system that uses ASCII tags to represent actions and properties.

HTML can be learned and mastered in a very short time, but it is not the most efficient way to create Web pages. The world has moved on from Wordstar's 'dot' command; companies now need advanced HTML editing systems that automate the time-consuming drudgery of manual HTML tag management.

Java is a programming language that enables 'applets' to be embedded in a Web page. Developed by Sun Microsystems and based on C++, Java will bring the Web to life. Currently, most Web pages are static affairs, essentially replicating magazine-style design on the Internet. Java-based applets will bring the functionality and interactivity of standalone applications to the Web. Users will be able at last to interact with the data stored on a Web site in any way the Web designer chooses. Examples of potential Java applets include:

- Sophisticated front-end access to company documents
- Real-time component stock price monitoring and purchase
- Company internal video conferencing and 'live' E-mail
- Enterprise-wide client software upgrade systems
- Company-specific search engines
- Real-time collaborative accounting spreadsheets

Development tools for internal company Internet use must extend beyond existing tools, which are designed for creating Web pages for public consumption. Tools must be able to work with local, internal *and* external Web servers and be able to distinguish between them.

G
Payment Systems and Image Resolution

Payment systems and image resolution relate directly to sales and marketing functions:

- *Payment Systems*—the ordering of good and services and the receipt of customer orders over the Internet using secure mail or a Web transaction
- *Image resolution*—the quality of display used to view a company's Web page, which directly affects the design of commercial Web sites

H
Areas of Particular Concern

Certain key areas of concern emerge from respondents' answers.

Three industries rate the issue of payment systems as significantly more critical than average (see Exhibit IV-2).

Exhibit IV-2

Industries Looking to Payment Systems

Industry Sector	Rating Given to Payment Systems
Utilities	4.50
Services	4.40
Process Manufacturing	4.10
All Industry Sectors	3.61

Source: INPUT

Two user categories each diverged from the norm over two issues (see Exhibit IV-3).

Exhibit IV-3

Special Case Ratings Given to Criticality of Issues

Organization's Stage of Development	Issue	Rating Given	Average Rating for Issue
Developing a Presence	Bandwidth	3.50	4.23
	Payment Systems	4.25	3.61
Gathering Data	Services	3.25	4.23
	Web Development Tools	2.50	3.95

Source: INPUT

Respondents also stated what new technologies would have an impact of their use of the Internet. Reflecting the concern felt among organizations shown in Exhibit IV-1, the top two issues by far were:

- Bandwidth
- Security

Bandwidth was stated slightly more often than security. Multimedia (audio and video) was also mentioned by a number of respondents.

Real-World Internet Use for Business Processes

INPUT interviewed a number of European and North American companies in depth to ascertain their use of the Internet for business processes. Reflecting the current norm of Internet use for sales and marketing applications, most companies contacted were not using the Internet for internal communication. Two companies taking the Internet beyond the default Web page are described in this section.

A
Company A

A leading systems software supplier has offices around the world, connected by a frame relay WAN. It sees two distinct areas of Internet usage: internal and external. Both require separate attention and both fulfill mostly different, although slightly overlapping, purposes.

The company has a well established Web presence that is used, like most companies, mostly for marketing purposes. This forms the basis of external Internet operations. Internal use of the Internet has a far greater impact on business processes.

The company's dispersed offices were connected originally through a simple dial-up modem link. At that time, connectivity was limited to E-mail, and the need for a solid intra-company network to take the company beyond simple discrete messaging soon became clear. The frame relay WAN first linked the major corporate sites around the world, and is growing to encompass the smaller offices.

A big issue for the company is the connection of all the remote offices, some of which house only two staff, in the most appropriate way. Clearly, it is wasteful to connect a two-person office via an expensive, high-bandwidth leased line. Additionally, the countries in which the remote offices are small

are often the less technologically advanced countries, where leased-line costs are extremely high.

Although the company has enough network addressing capacity to connect its sites (it has been allocated a Class B network—a block of Internet addresses that uniquely and permanently identifies all connected nodes within the company's network), it faces a number of issues other than cost that must be resolved before it can truly be globally connected. For example:

- The local Internet Service Provider in one European country does not support connections using PPP, one of the two basic Internet protocols, and the alternative of a leased line is prohibitively expensive.

- The available bandwidth out of one Asia/Pacific country is not enough to support the country's growing Internet user population, causing performance and backlog problems for the company as a whole.

Issues of local Internet connectivity—lack of services provided by local ISPs and limited bandwidth available in and out of some countries—must be resolved or worked around, and the solution in many cases is outside the company's control. The cost savings made through use of public networks must be tempered in part by the lack of control and lack of reliability assurances associated with such networks.

A further issue is security. The implicit understanding is that E-mail shared between staff at one site is reasonably secure, but this is not true when E-mail leaves the confines of the site boundaries. The company is currently educating staff on security issues, a particularly important action as more remote sites gain connection to the outside world.

E-mail is the lowest common denominator of connectivity and is a critical component in almost any environment in which business processes are conducted over a network, either public or private. Its use is taken for granted in many organizations, and the change in usage policy when E-mail is sent outside company boundaries is not necessarily adopted immediately. The company interviewed has chosen to limit the type of mail sent over the Internet in preference to using encryption mechanisms. It says that encryption will have to become an automated process, transparent to the user, before it can be considered company-wide. Today, some sensitive information is sent by mail over the Internet, such as discussions of product development plans, where the interception of one message would not necessarily jeopardize the company. Less abstract but still highly confidential material, such as sales figures, is not sent through E-mail at all.

The introduction of an intra-company network infrastructure has enabled the company to expand its range of internal communications services

enormously. For example, staff in different countries can now share multimedia files, initiate file transfer sessions, and execute remote log-ins to read E-mail while located at a different site.

To extend the connectivity offered by E-mail, the company has implemented an internal Web framework for the sharing of files and documents across departments. The framework is a loose one; instead of being planned and implemented by the IS department with centralized control, it has grown organically, in the style of the 'real' Web. Individual departments (typically technically oriented groups such as Technical Publications, Technical Support, Pre-Sales Support and R&D) have set up their own Web servers to make their own information available to other parts of the company, without centralized coordination.

The lack of a centralized overseer would make the compilation of corporate-wide indices difficult. The company's solution has been the development of a search mechanism. In a break from the publishing paradigm, users are presented not with a content list of, or an index to, all sites' Web servers, but a simple search interface that turns a search expression into the relevant page itself.

The implementation of this internal Web is successful, to the extent that the company does not see a need, either now or in the future, to impose centralized management or control onto it. Indeed, such control "would stifle what made it successful," and it is left to peer communication and self-regulation to ensure the health of the network.

The spread of Internet technology and use has followed the classic model of bottom-up growth. Motivated and technically competent staff have driven much of the Internet take-up. The company is significantly more advanced than most, however, with senior management taking an active and positive interest in the Internet.

Like many organizations, the company considered Lotus Notes as well as the Web. The primary reason for selecting a Web solution was cost, although the development and system management resource requirements of Notes also conspired to make the Web a more attractive option.

Reflecting the organic, uncontrolled spread of the Web network are the *ad hoc* document creation methods that have arisen in different departments. Some technically literate staff create documents in native HTML; others use tools to convert between other formats and HTML automatically. There is still a division between the technically experienced and inexperienced staff communities, and this impacts the effectiveness of the company's information platform. Some staff time will be taken in overhead related to the parallel use of native HTML and conversion tools.

Information resources distributed over the internal Web include:

- Engineering project plans
- Departmental staff breakdowns
- Scheduling information
- New technology demonstrations
- Benchmark results
- Technical support databases
- White papers

Most documents are available through alternative channels, but some are receiving their first company airing with the introduction of the Web. The technical support database, for example, "should have been available previously," but time and resource constraints and priority schedules hindered its development by the IS department. With the advent of local publishing, the department has been able to open up access to it over the Web.

The broadening of communication channels within the company has sped up many of its business processes and made information available that was previously inaccessible. Internet use for external communication with partners and distributors is less advanced. The company recognizes the need to improve external communications, but appreciates the need also to differentiate between internal and external interaction.

Connectivity with external partners is currently limited to E-mail, but plans are under way to create areas of the company's Web page specifically for channel partners. This, too, will reduce time and overhead spent in conducting internal business processes. The company's presence on the Web allows users and channel partners to download bug fixes and product updates, but will not provide the ability to deliver the company's main product—at several tens of megabytes, the product is simply too large. The consideration of channel sales partners also inhibits the company from selling directly over the Internet.

The company sees a need to maintain a European presence, separate from the corporate Web site based in the U.S. It intends this firstly to be an exact mirror of the main site (though the Internet is largely a geographically non-specific environment, connectivity issues and a perceived "closeness to the customer" still play a part) and, secondly, to be a site of value-added

European information. To accomplish this, the European operations of the company will have to staff and resource, or outsource, the site itself to achieve successful implementation and maintenance.

The company's use of the Internet and its internal Web has streamlined and sped internal communications and has made available previously inaccessible information. This use has had a positive effect on the company's business processes, but there are significant gaps. Accounting and human resources departments, for example, have been relatively unaffected by the Internet. They use internal E-mail, but currently no other form of electronic communications.

B
Company B

A large services company uses the Web's HTTP protocol as an internal information distribution infrastructure. Although a full connection to the outside world exists, the company is gaining most benefit in terms of cost reduction and workflow acceleration from its internal use.

The implementation of the system went through three iterations of evaluation. First, a prototype developed wholly in-house and using home-grown technology was developed. The user interface created for the system was optimized for the company's specific needs and environment, and the prototype was received well by senior management. During this development phase, the authors were able to experience the problems of implementation and maintenance first hand, to the extent that, despite the encouraging signals from management, their final view was that the effort and resource allocation involved was too much to justify the benefits of such an in-house custom solution.

Second, the company considered Lotus Notes as its internal information platform. Notes is a strong contender for such an environment and is the platform of choice for a large number of information providers, be they external or internal providers. The company interviewed claimed that Notes was cumbersome at the time of evaluation even though it offered all the features required.

Finally, the company settled on an internal Web framework, distributing and sharing documents over HTTP. The primary reason was cost—it estimated it could achieve 80% of what it needed at minimal cost with a Web as opposed to a Notes solution. Other factors were the flexibility of the HTTP protocol, its open architecture, ease of development, and the seamless way in which different materials can be incorporated into coherent Web documents.

Applications for which the infrastructure has been used include:

- Document sharing
- A company-wide job posting system
- A corporate agreement database
- Telephone directories
- A visitors' register
- Meeting room scheduling
- Software upgrades

The principle of distributing documents and files via an internal Web is a simple one, and its implementation is not difficult. A common problem facing organizations that aim to publish information on the Web, though, is that of the staff time taken in the learning and practice of, and subsequent document design using HTML. It is reasonable and natural to expect a certain level of document design from staff—in the preparation of internal memos or the formatting of monthly reports, for example—but it is not normally the case to expect a much higher degree of design, whether that be HTML or DTP. Such extracurricular work is rarely a worthwhile use of an employee's time and should be avoided in most cases.

The company solved this problem by developing, in-house, a tool to allow users easily to convert documents from native format into HTML, without the need for manual intervention or time-consuming layout and design. The tool is sophisticated enough to retain any embedded graphics in a document, but cannot insert hypertext links into a page by itself; for this, a user must still be involved. While the Web is a hypertext environment, it is possible to create documents with no links if required.

In addition to the potential problem of time taken in document design is the parallel issue of time taken by staff browsing and experimenting with the system, both the internal system and the connection to the Internet. The company claims this problem has not surfaced during its eight months of operation, and that staff adhere to the corporation's "strong work ethic."

The system is affecting many of the company's internal business processes fundamentally. For example, software installation was previously carried out in traditional per-user fashion. Where complex client components of a client/server system had to be installed, this could entail technology staff flying to multiple sites around the world to install the clients physically.

Also, software upgrades had to be carried out by the users themselves. Now, with the necessary server-side intelligence in place, users only have to launch a simple client program that will transfer and install the required software components as needed.

A big issue for the company is lack of available bandwidth, which applies to both the inter- and intra-site networks. Because of this problem, the company is unable to transmit audio or video over its infrastructure, and instead distributes any multimedia applications on CD ROM. An upgrade from a 56Kbps company backbone to a T1 connection providing 1.55Mbps transfer rates will solve this problem in the short term, enabling the company to look at VRML and Java, although the company feels that more vendors must enter the market before the cost of true multimedia-capable networking technology comes down to a realistic level.

A downside of the project, according to the company, is not a technological issue but simply that use of the internal Web and external Internet connection has raised employees' expectations considerably. When the need arises to find specific information, staff now turn to the Internet before any other source and complain if they don't find the information quickly.

A second problem relates to the ease with which information can be updated and distributed: users expect documents to be updated more frequently than they were when published only on paper, and the company is having to move to a shorter document update cycle.

A third problem faces nearly all users of the Internet: that of verifying the accuracy and timeliness of the information available. The company's answer is to build and maintain a database of often-used sites whose content is known and is trusted to be of reasonable quality; essentially, a company-wide bookmark list.

This project has been a success. The cost savings inherent in this use of an internal Web architecture are clear: the company saved the cost of the whole project, including research, design and development, simply by distributing its Company Policy document electronically to all staff. With this level of saving, the company can be assured of driving internal communication overhead down significantly in a very short space of time.

Exhibit V-1

Internal Information Infrastructure Alternatives

Platform	Advantages	Disadvantages
In-house custom solution	Optimization for company use	Development and maintenance resource costs
Lotus Notes	Feature-rich platform Business process automation capabilities	Cost Programming overhead
World Wide Web	Low cost Ease of use Familiarity Seamless multimedia integration	Lack of traditional networking and security features

Source: INPUT

VI

Conclusions and Recommendations

A Conclusions

1. Commercial Internet Use Still Focuses on Sales and Marketing

By far the greatest amount of activity taking place on the Internet by commercial organizations is related directly to sales and marketing.

A very large number of companies are already active on the Internet, and specifically the Web, but the vast majority of these company sites fall into one of the following categories:

- *"Me too" page*—a hastily prepared Web page that typically offers no added value and promotes little customer interaction. These are the ill-thought-out results of a senior management imperative to "Be on the Net"

- *Well-designed advertisement*—a stylish piece of design that is intended to extend the public face of a company from television, magazines and billboards onto the Internet. Interaction is limited to registering one's details (for marketing use), requesting further information, and possibly ordering from a limited set of products on a trial basis. Purchase orders typically are processed manually. At the end of 1995, this category of Internet presence was the norm.

- *Serious sales engine*—the next evolutionary stage from the well-designed advertisement. The forward-looking company with a serious sales engine Web site will have put in place an automated order system that can cope with a high volume of on-line purchases. In some cases, this type of presence has been developed by a start-up company, or a small division of a larger company set up specifically to trade over the Internet. These companies hope to emulate the successes of the new Internet-centric organizations such as Netscape and Yahoo, and are shaping the on-line marketplace of the future.

Use of the Internet for business processes is less advanced than that for sales and marketing. Concerted effort is taking place, however, to incorporate the Internet into some companies' business practices, such as the companies' Internet operations described in Chapter V.

2. Internal Webs Are the Model for Business Processes

The outstanding example of use of the Internet for business processes is the implementation of World Wide Web technology as a platform for sharing information internally within an organization.

Setting up an internal Web is not particularly difficult. If a company already has a well-established Internet connection to the outside world and has developed its own Web page, the process is greatly simplified.

The Web has become the *de facto* standard for disseminating information to potential customers on the public Internet. The ease with which information can be published and accessed has caused the Web to be used in the same way for internal company use.

Web servers can be inexpensive to buy and maintain. Depending on the volume of traffic they will be expected to deliver, they can run on a low-end Windows NT or UNIX machine and be attached to a department's LAN. They can deliver any information, including multimedia, to any company department that is either connected to the public Internet or can connect directly to the Web server.

3. Internet Use Is Widespread Among Large Companies

Internet activity is well under way in most large organizations in technologically developed countries. Average annual revenues generated by companies interviewed for this report were $6 billion, and 60% of those companies have established an active Internet presence. Only a very small proportion were still at the data-gathering stage.

North America still accounts for the largest share of the Internet market, but other regions, particularly Europe, are growing extremely rapidly in their

commercial Internet use; the U.S. soon will no longer represent the majority of Internet users.

The Internet is particularly attractive for large companies that need not only to give on-line access to their staff, but also need to connect geographically remote offices. Large North American companies that have connected their remote operations via the Internet have had a significant influence on Internet implementation in many parts of the world outside the U.S.

4. Internet Experience Changes Perceptions

Attitudes change measurably with experience. Organizations that have yet to explore the Internet in depth for their own activities do not place much importance on the potential benefits the Internet can bring. They may even fear the Internet and so seek to harness it through management control tools. The more experience companies gain in using the Internet, the less importance they place on control.

Company plans for the Internet, too, become more focused as more experience is gained.

5. Users Look to the Internet to Do What It Does Best

The Internet is first and foremost about digital communication of digital information. Although it is an uncontrolled environment and no guarantee of reliability can be given to the transaction of individual messages, businesses are looking to the Internet to speed their information flow—that is the most important benefit they say that the Internet can bring to them.

Likewise, as users gain experience, they learn that the Internet is not a panacea for all ills. It is not, for example, the perfect environment in which to implement management control procedures.

Also, inexperienced users expect the Internet to assist them in improving the quality of their goods and services. Advanced users realize that this is an internal business matter, and so do not expect the Internet magically to solve this problem for them.

6. Different Industries Will Gain in Different Ways

The clear industry winners from the emergence and development of the Internet, according to their own perceptions, are:

- Services
- Utilities

- Education

Again according to their own perceptions, industries that stand to gain less are:

- Retail
- Transportation

7. Staffing Resource Patterns Have Not Been Established

A large number of companies interviewed could not give precise figures for current or future staffing requirements concerning their internal and external Internet development and maintenance requirements. Many could only say that there is "a need" for staff resources.

The general expectations of staffing changes are:

- In-house staffing requirements will increase slightly.
- Use of consultants will remain uncertain, increasing in some cases and decreasing in others.
- Use of outsourcing services will increase slightly.

The overall pattern is for skills to be brought in-house, but only at a modest pace.

8. Bandwidth and Security Are the Major Concerns

Of the issues that must be resolved to enable successful use of the Internet, security and bandwidth are the two most important.

Bandwidth must be greatly enhanced to overcome current Internet congestion. Enhanced bandwidth will be the key enabler for such critical business technologies as video conferencing.

Security issues are of particular importance outside the U.S., due to the U.S. government's restriction of the exportation of encryption technology.

9. Internet Clients Must Match Existing Clients in Ease of Use

For internal company use, front ends to Internet services must be as easy to use for nontechnical staff as are existing network clients. Ease of use is one of the major issues that must be resolved before the Internet can be accepted as part of the common business model.

B
Recommendations for Business Internet Users

1. Gain Experience Now and Reap the Rewards

The perceptions of inexperienced Internet users do not match reality as closely as dothose of experienced users. In the worst case, wrong and costly decisions can be made on the basis of misperceived concerns or the persuasions of Internet hype.

Hands-on experience is one of the best tools a company can acquire to combat misinformation. With the cost of Internet access in most countries being low, this experience can be gained inexpensively. It will stand the inexperienced company in good stead.

2. Avoid Letting the Implementation Phase Cloud the Issues

One of the themes of corporate Internet development is that the company in the process of developing its Internet presence often gets so involved in the mechanics of implementation that it loses sight of the big picture.

This is a dangerous stage. If an inexperienced company can make mistakes based on ill-conceived impressions, so can a company engrossed in technicalities make mistakes based on internal and short-term goals.

It is critically important to keep the goals in sight at all stages of Internet growth. Substantial savings can be made by designing a presence thoroughly and by agreeing on what is expected of the Internet before becoming very closely involved in technical issues.

3. The Internet Is Congested: Take Steps to Maximize Performance

Current upgrades to Internet infrastructure are not keeping up with the growth in numbers of Internet users. As a result, the Internet is becoming more congested every day and, in certain cases, users are having to turn away from some applications.

Until privately funded organizations can put in the ATM infrastructure needed to keep up with current growth and to enable next-generation applications such as real-time video over the Internet, companies should:

- Select their ISP with care
- Take sufficient leased-line bandwidth and cost in future bandwidth upgrades

- Optimize internal networks

C
Recommendations for Internet Service and Product Vendors

1. Address the Growth of Internal Webs

The use of a WWW framework for internal company information sharing is increasing, yet current Web server technology does not fulfill all the requirements.

Web servers must run on top of traditional network operating systems (NOSs), but this incurs double cost for users. There is a large market for a Web server solution that does not require the presence of such an operating system, but the hurdles to be overcome are considerable. A Web server capable of standing alone must provide equivalent NOS functionality or third-party add-on opportunities for a large number of features, including:

- File sharing and locking
- File, directory, and group access rights
- Network backup
- Network printing
- Network log-in procedures

2. Internet Training

As we have seen, Internet experience is one of the best tools a company can acquire. But though the costs of acquiring an Internet connection are generally fairly low, issues of staffing and value, and other concerns, remain.

There is a clear opportunity for training organizations to assist businesses to overcome these inevitable hurdles.

3. Staffing Uncertainty Opens the Door for Consultants and Outsourcing Organizations

Companies are unclear about the requirements for staffing resources to develop and maintain their Internet projects.

Although some organizations anticipate a decrease in external services spending, a greater number do not have a clear plan for overall budgets, either for services or equipment. From the figures given, INPUT can identify

an increase in spending by an average of 200% among companies already active on the Internet.

Resourcing patterns have not yet been established in this new commercial environment, and so there is a market for external service providers for:

- Hardware and software installation and maintenance
- Web page design and implementation
- Integration of internal company information into a Web framework
- Security systems
- Business process reengineering

4. Increase Bandwidth to Increase Internet Penetration

Bandwidth is one of the two biggest concerns among commercial Internet users. The issue is of such importance that it has a strong effect on take-up of the Internet.

By ensuring maximum bandwidth within their areas of responsibility and offering the highest speed connections to customers, ISPs can increase their penetration into the business market.

Backbone providers can do the most to increase overall Internet performance. With the spread of high-speed infrastructure (in the shape of ATM), Internet carriers can increase their revenues generated by future backbone tolls. By creating a new high-speed Internet, they open the doors to the volume business market that will ensure funding for future upgrades.

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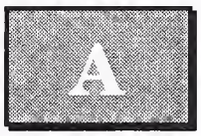

Glossary

This appendix provides definitions of terminology associated with the Internet that is not in INPUT's *Definition of Terms*.

56KB Line	A digital phone-line connection capable of carrying 56,000 bits-per-second. At this speed, a Megabyte will take about 3 minutes to transfer. This is 4 times as fast as a 14,400bps modem.
ADN	Advanced Digital Network - Usually refers to a 56K/bps leased-line.
Archie	A software tool for finding files stored on anonymous FTP sites. You need to know the exact file name or a sub-string of it.
ARPANet	Advanced Research Projects Administration Network- The precursor to the Internet. Developed in the late 60's and early 70's by the US Department of Defense as an experiment in wide-area networking that would survive a nuclear war.
Audit	The collection of information about security events on a network. Auditing is used for logging events, identifying network attacks, and ensuring that network security is working effectively.
Authentication	Verification of the claimed identity of a computer or computer network user.

Backbone	A high-speed line or series of connections that forms a major pathway within a network. The term is relative as a backbone in a small network will likely be much smaller than many non-backbone lines in a large network.
Bandwidth	How much "stuff" you can send through a connection. Usually measured in bits-per-second. A full page of english text is about 16,000 bits. A fast modem can move about 15,000 bits in one second. Full-motion full-screen video would require roughly 10,000,000 bits-per-second, depending on compression.
Bastion Host	Another term for firewall host.
BBS	Bulletin Board System - A computerized meeting and announcement system that allows people to carry on discussions, upload and download files, and make announcements without the people being connected to the computer at the same time.
Bit	Binary digIT - A single digit number in base-2; in other words, either a 1 or a zero. The smallest unit of computerized data. Bandwidth is usually measured in bits-per-second.
Browser	A client program (software) that is used to look at (or browse) various kinds of Internet resources.
Byte	A set of Bits that represent a single character. Usually there are 8 or 10 bits in a Byte, depending on how the measurement is being made.
Client	A software program that is used to contact and obtain data from a Server software program on another computer, often across a great distance. Each Client program is designed to work with one or more specific kinds of Server programs, and each Server requires a specific kind of Client.
Cyberspace	The term "cyberspace" is currently used to describe the whole range of information resources available through computer networks.
Domain Name	The unique name that identifies an Internet site. Domain Names always have 2 or more parts,

	separated by dots. The part on the left is the most specific, and the part on the right is the most general. A given machine may have more than one Domain Name but a given Domain Name points to only one machine.
DNS	Domain Name Service - A means by which numeric IP addresses are converted into character-based names and vice versa.
E-mail	Electronic Mail - Messages, usually text, sent from one person to another via computer. E-mail can also be sent automatically to a large number of addresses via a mailing list.
Encryption	A method of protecting data so that if it is accessed, it cannot be understood without the use of a secret encryption key.
Ethernet	A very common method of networking computers in a LAN. Ethernet will handle about 10,000,000 bits-per-second and can be used with almost any kind of computer.
FAQ	Frequently Asked Questions - FAQs are documents that list and answer the most common questions on a particular subject. There are hundreds of FAQs on subjects as diverse as Pet Grooming and Cryptography. FAQs are usually written by people who have tired of answering the same question over and over.
FDDI	Fiber Distributed Data Interface - A standard for transmitting data on optical fiber cables at a rate of approximately 100,000,000 bits-per-second.
FTP	File Transfer Protocol - A very common method of moving files between two Internet sites. FTP is a special way to login to another Internet site for the purposes of retrieving and/or sending files.
Finger	An Internet software tool for locating people on other Internet sites. Finger is also sometimes used to give access to non-personal information, but the most common use is to see if a person has an account at a particular Internet site. Many sites do not allow incoming Finger requests.

Gateway	The technical meaning is a hardware or software configuration that translates between two dissimilar protocols, for example CompuServe has a gateway that translates between its internal, proprietary e-mail format and Internet e-mail format.
Gopher	A widely successful method of making menus of material available over the Internet. Gopher is a Client and Server style program, which requires that the user have a Gopher Client program. Although Gopher spread rapidly across the globe in only a couple of years, it is being largely supplanted by Hypertext, also known as WWW (World Wide Web).
Host	Any computer on a network that is a repository for services available to other computers on the network. It is quite common to have one host machine provide several services, such as WWW and USENET.
HTML	HyperText Markup Language - The coding language used create Hypertext documents for use on the World Wide Web.
HTTP	HyperText Transport Protocol - The protocol for moving hypertext files across the Internet. Requires a HTTP client program on one end, and an HTTP server program on the other end. HTTP is the most important protocol used in the World Wide Web (WWW) today.
Hypertext	Generally, any text that contains "links" to other documents - words or phrases in the document that can be chosen by a reader and which cause another document to be retrieved and displayed.
IP Address	A unique number consisting of 4 parts separated by dots. Every machine that is on the Internet has a unique IP address - if a machine does not have an IP address, it is not really on the Internet. Most machines also have one or more Domain Names that are easier for people to remember.
IRC	Internet Relay Chat - Basically a huge multi-user live chat facility. There are a number major IRC

	servers around the world which are linked to each other. Anyone can create a "channel" and anything that anyone types in a given channel is seen by all others in the channel. Private channels can (and are) created for multi-person "conference calls".
ISDN	Integrated Services Digital Network - Basically a way to move more data over existing regular phone lines. ISDN is only slowly becoming available in the USA but where it is available, it can provide speeds of 64,000 bits-per-second over a regular phone line at almost the same cost as a normal phone call.
Internet	The vast collection of inter-connected networks that all use the TCP/IP protocols and that evolved from the ARPANET of the late 60's and early '70s.
ISP	Internet Service Provider - A commercial company that offers individuals access to the Internet.
Kilobyte	A thousand bytes.
LAN	Local Area Network - A computer network limited to the immediate area, usually the same building or floor of the building.
Leased-line	Refers to a phone line that is rented for exclusive 24-hour, 7-days-a-week use from your location to another location. The highest speed data connections require a leased line.
Listserv	The most common kind of maillist , Listservs originated on BITNET but they are now common on the Internet.
Login	The account name used to gain access to a computer system.
Megabyte	A million bytes. A thousand kilobytes.
Maillist	An automated system that allows people to send e-mail to one address, whereupon their message is copied and sent to all of the other subscribers to the maillist. In this way, people who have many

	different kinds of e-mail access can participate in discussions together.
Mosaic	The first WWW browser that was available for the Macintosh, Windows and UNIX all with the same interface . "Mosaic" really started the popularity of the Web. The source-code to Mosaic has been licensed by several companies and there are now several other pieces of software as good or better than Mosaic, most notably "Netscape".
Newsgroups	The name for discussion groups on Usenet .
Node	Any single computer connected to a network .
Packet Switching	The method used to move data around on the Internet. In packet switching, the data coming out of a machine is broken up into chunks, each chunk has the address of where it came from and where it is going. This enables chunks of data from many different sources to co-mingle on the same lines, and be sorted and directed to different destinations by special machines along the way. This way many people can use the same lines at the same time.
Password	A code used to gain access to a locked system. Good passwords contain letters and non-letters and are not simple combinations.
PPP	Point to Point Protocol - Most well known as a protocol that allows a computer to use a regular telephone line and a modem to make a TCP/IP connection and thus be on the Internet. PPP is gradually replacing SLIP for this purpose.
Proxy Server (Proxy)	A proxy server is an application that controls traffic between a protected network and the Internet.
RFC	Request For Comments - The name of the result and the process for creating a standard on the Internet. New standards are proposed and published on line, as a "Request For Comments". The Internet Engineering Task Force is a consensus-building body that facilitates discussion, and eventually a new standard is established.

Router	A software package or special-purpose computer that handles the connection between 2 or more networks. Routers spend all their time looking at the destination addresses on the packets passing through them and deciding which route to send them on.
Server (see Client)	A computer, or a software package, that provides a specific kind of service to client software running on other computers. A single server machine could have several different server software packages running on it, thus providing many different services to clients on the network .
SLIP	Serial Line Internet Protocol - A standard for using a regular telephone line (a "serial line") and a modem to connect a computer as a real Internet site. SLIP is gradually being replaced by PPP .
T-1	A leased-line connection capable of carrying data at 1,544,000 bits -per-second. At maximum theoretical capacity, a T-1 line could move a megabyte in less than 10 seconds. That is still not fast enough for full-screen, full-motion video, for which you need at least 10,000,000 bits-per-second. T-1 is the fastest speed commonly used to connect networks to the Internet .
T-3	A leased-line connection capable of carrying data at 45,000,000 bits-per-second. This is more than enough to do full-screen, full-motion video.
TCP/IP	Transmission Control Protocol/Internet Protocol - This is a collection of communication protocols that define the Internet and allow different PCs to speak to one another over a common network.
Telnet	The command and program used to login from one Internet site to another. The telnet command/program gets you to the "login:" prompt of another host.
Terminal	A device that allows you to send commands to a computer somewhere else. At a minimum, this usually means a keyboard and a display screen and some simple circuitry. Usually you will use terminal software in a personal computer - the

	software emulates a physical terminal and allows you to type commands to a computer somewhere else.
Terminal Server	A special purpose computer that has places to plug in many modems on one side, and a connection to a LAN or host machine on the other side. Thus the terminal server does the work of answering the calls and passes the connections on to the appropriate node. Most terminal servers can provide PPP or SLIP services if connected to the Internet.
Trojan Horse	A program that performs a desired task, but also includes unexpected functions, usually pleasant, such as random deletion.
URL	Uniform Resource Locator - The standard way to give the address of any resource on the Internet that is part of the World Wide Web (WWW). A URL looks like this: http://www.input.com
Usenet	A world-wide system of discussion groups, with comments passed among hundreds of thousands of machines. Only about half of all Usenet machines are on the Internet. Usenet is completely decentralized, with over 10,000 discussion areas, called newsgroups.
Veronica	Very Easy Rodent Oriented Net-wide Index to Computerized Archives - Developed at the University of Nevada, Veronica is a constantly updated database of the names of almost every menu item on thousands of gopher servers. The Veronica database can be searched from most major gopher menus.
Virus	A segment of code which replicates by attaching copies of itself to existing executables.
WAIS	Wide Area Information Service - A commercial software package that allows the indexing of huge quantities of information, and then making those indexes searchable on the Internet according to keywords.

WAN	Wide Area Network - Any Internet or network that covers an area larger than a single building or campus.
World Wide Web	The whole constellation of resources that can be accessed using Gopher, FTP, HTTP, Telnet, Usenet, WAIS and some other tools. WWW is the universe of hypertext servers which are the servers that allow text, graphics, sound files, etc. to be combined together.

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B

Report Questionnaire

INPUT is an international research and consulting firm. We are conducting a study of how leading companies are planning to use the Internet and similar on-line vehicles to produce, sell, deliver, or support products and/or services

We would like your company to participate in our study. The information you share with INPUT will be treated as anonymous and confidential. Neither your name nor your company's name will be associated with any specific data.

In return for you participation we will provide you with an executive summary of the results at no charge.

Current and Expected Status with Internet

1. Which of the following phrases best characteristics the current status of your firm's involvement with the Internet and its equivalents for the purpose of producing, selling, delivering, or supporting products and/or services?

(In this context, the Internet is short for the Internet and similar public on-line services such as America On-line, CompuServe, Prodigy, Genie, etc. We'll use the term "Internet" to mean these various public network services.)

a. Active on Internet and/or its equivalents (Go to Question 2)

b. In the process of developing a presence (Go to Question 3)

c. Seriously considering a presence (Go to Question 4)

d. Gathering information (Go to Question 5)

e. Have not considered it (Go to Question 6)

f. Considered it and then rejected it (Go to Question 7)

Active on the Internet

2. I'd like to know more about your Internet activities.

a. Would you please describe your most significant project. (Get as much information as possible. Check to see if each of the following is covered. If not, ask for more specific information.)

- What products or services are currently being offered?
- Are you targeting business, consumers, or both?
- What aspects of the Internet is your company using for these commercial purposes?

_____ Electronic mail

_____ News groups

_____ File Transfer Protocol

_____ Databases

_____ Web page

_____ Other (Please describe)

b. What is your company's primary reason for doing this?

c. How successful has (each of the above efforts) been so far?

(Get their opinion first and then ask these specific questions.)

- On a 1-to-5 scale, with 1 being "far below expectations" and 5 being "far above expectations", how well has this Internet venture met expectations?

- Can you quantify this level of success as to:

_____ Number of accesses you've had

_____ Increases in number of qualified leads

_____ Increases in new customers

_____ Actual sales generated on the Internet. If so, how much revenue have you generated?

d. Would you please send us any ads or announcements your company has about these activities?

e. What is the electronic address (i.e., Universal Resource Locator, URL) of this information?

Go to Question 8

In the process of developing a presence

3. I'd like to know more about your planned Internet activities.

a. Would you please describe your current plans. (Get as much information as possible. Check to see if each of the following is covered. If not, ask for more specific information.)

- What products or services will be offered?

- Will you be targeting business, consumers, or both?

- What aspects of the Internet is your company using these commercial purposes?

  _____ Electronic mail

  _____ News groups

  _____ File Transfer Protocol

  _____ Databases

  _____ Web page

  _____ Other (Please describe)

b. Would you please send us any ads or announcements your company has about these activities

c. What is the address (i.e., Universal Resource Locator) of this service?

d. What is your company's primary reason for doing this?

4. Seriously considering a presence

a. Why are you considering it?

b. Where are you in the decision process?

c. What is the biggest issue to be resolved (or overcome)?

Go to Question 8

5. Gathering information

   a. Why are you considering it?

   b. What are the key issues to be resolved before you make a decision?

Go to Question 8

6. Have not considered it

   a. Why not?

   b. Under what conditions would you consider it?

Confirm address and terminate interview

7. Rejected it

   a. Why?

   b. Under what conditions would you reconsider some Internet involvement?

Confirm address and terminate interview.

8. What do you think your company will be doing on the Internet or its equivalents...

   a. In 2 years?

   b. In 5 years?

9. On a 1-to-5 scale, with 1 being "not important" and 5 being "very important", how important do you expect the Internet to be to your firm by the year 2000?

1	2	3	4	5
Not Important				Very Important

10. On a 1-to-5 scale, with 1 being "not important" and 5 being "very important", how important to your company is each of the following potential benefits of your current and future Internet activities?

Accelerate Business Process _____

Access All Markets _____

Bypass Intermediaries _____

Speed Information Flow _____

Ensure Complete Management Control _____

Obtain Scarce Knowledge _____

Improve Quality _____

Penetrate New Markets _____

Build Binding Relationships _____

11. What on-line activities do you think customers will expect from your company by 2000?

12. On a 1-to-5 scale, with 1 being "no impact" and 5 being "significant impact", please rate the impact the Internet could have on each of the following areas of your operations by the year 2000.

Firm Infrastructure _____

Human Resources _____

Procurement _____

Technology _____

Inbound Logistics _____

Operations _____

Outbound Logistics _____

Sales and Marketing _____

Service _____

Note: If respondent has the same high number for more than one area, say "Of the (number of areas) you said would be significantly impacted (read the list of the highest numbers), in which single area to you expect the greatest overall impact?" (Place a check mark in the box on the discussion points page for the area rated highest in impact.)

13. In the (name of area rated highest) where you expect the greatest impact, what specifically, do you think will change? (See "Discussion Points" attached and use prompts to determine the exact influence expected.)

(If highest area in Sales/Marketing go to Question 13a, for all other areas go to Question 15)

Discussion points for question 13

ACTIVITY AREA	DEFINITION	EXAMPLES
Firm Infrastructure	General management, including planning, accounting, and legal	• Competitive intelligence
Human Resources	Recruiting, hiring, training, developing and compensating personnel	• "Virtual" employees • Electronic mail • On-line training
Procurement	Purchasing raw materials, supplies, and other consumable and non-consumable assets	• Finding suppliers. • Ordering Supplies
Technology	Know-how (e.g., R&D) and tools (e.g., computers) used by the company	• Product testing and feedback Learning of customer needs
Inbound Logistics	Receiving, storing and disseminating inputs to the products such as warehousing, inventory control, scheduling, returns to suppliers	• Clearing supply order transactions.
Operations	Transforming inputs into the final product form; packaging, assembly, testing, printing, etc.	• On-line development
Outbound Logistics	Collecting, storing, and physically distributing finished goods warehousing, materials handling, order processing, scheduling	• Order processing • Inventory management • Electronic distribution
Sales and Marketing	Inducing buyers and providing a means for purchase; advertising, quotes, channel selection, channel relations, pricing	• Retaining or obtaining customers • Expanding business with existing customers • Promotion or advertisement • Public relations • Price Quotations
Service	After-sale support such as installation, training, product enhancements, customer service	• Refunds and returns • "Bug" reports • Conferences and messages • Product knowledge databases

13a. Please rate the importance to you of each of the following possible sales and marketing benefits from the Internet on a 1-to-5 scale with 5 being "very important".

Benefit	Importance
Adding new sales channels	_____
Obtaining new customers	_____
Targeting individuals	_____
Delivering more information	_____
Delivering sales information less expensively	_____
Receiving feedback from customers	_____
Responding more quickly to customer concerns	_____
Promoting your product through a new medium	_____
Providing better sales information	_____
Enhancing relationships with customers	_____
Supporting customers less expensively	_____
Testing sales strategies	_____
Other (List and explore what other areas)	_____

Go to Question 14

14. If your expectations for the Internet are met, will it impact each of the following traditional sales and marketing activities positively, negatively, or not at all?

	Positively	Negatively	No Impact
Catalogs	_____	_____	_____
Direct Mail	_____	_____	_____
Outbound telemarketing	_____	_____	_____
Advertising (all media)	_____	_____	_____
Promotion	_____	_____	_____

Sales representatives _____ _____ _____

15. How likely, on a scale of 1-5 with 5 being most likely, do you believe each of the following statements are true for your company based on their Internet activity?

- Revenue will increase _____

(If 4 or 5) What percent increase do you hope to attribute to Internet activities by the year 2000?

- Revenue will be redistributed, with more revenue coming from the Internet and less coming from other channels

(If 4 or 5) What percent of your organization's sales volume do you expect to be generated through the Internet in:

1995 _____ 1997 _____ 2000 _____

- Costs will be reduced _____
- Profitability will increase _____

16. On a 1-to-5 scale, with 1 being "not critical" and 5 being "very critical", how critical to your Internet success is each of the following technical barriers? Please explain.

Line speeds _____

Image resolution _____

Ease or use _____

Payment systems _____

Security _____

Modes (World Wide Web, Gopher, etc.) _____

Development tools (Hyper Text Markup Language [HTML], editors, servers, forms, etc.) _____

Others (Please describe) _____

17. What are the key new and emerging technologies that will have the greatest impact on your success with the Internet?

18. For each category below, what staffing levels do you expect to need for you 1995 Internet initiatives? By what percentage will these change by 1997?

	1995	1997
In-house staff		
Consultants		
Outsourced services such as Web page setup.		

19. What is your approximate level of estimated spending for Internet in dollars (or 5 of revenue) for your organization in 1995 and 1997 for each of the following items?

	1995 ($ or % of Rev.)	1997 ($ or % of Rev.)
Research		
Development (including one-time setup)		
Ongoing Operating Costs		
Sales and Marketing		
Other (Please Specify		

Wrap-Up

Are there any comments or issues that you would like to discuss?

Thank you for your cooperation. I'd like to check your address to make sure you get our "Thank You" Executive Summary.