INPUT

STRATEGIC MARKET PERSPECTIVE

Internet and Intranet Applications Development

U.S. Systems Integration and Professional Services Program

MARCH 1997

Internet and Intranet Applications Development

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Abstract

Internet technologies represent the most significant wave of new technology since the introduction of PCs in the early 1980s. Intranets represent the opportunity to adopt the technology to support an organization's internal business processes.

The consequent development requirements are creating a substantial new market for professional services firms and systems integrators.

IT professional services firms and systems integrators face major challenges in attempting to understand how Internet technology can best be used in corporate computing environments today and in the future.

This report describes primary research conducted by INPUT in order to assist IT services vendors to optimize the growing potential of this market. The survey comprised over 75 telephone interviews with leading North American companies across a number of industries.

The report examines users' Internet applications priorities, the activities for which users are likely to use outside vendors' services, and the probable evolution of Internet applications development

It reviews users' Intranet plans, their application development priorities and user likelihood to use a services vendor. It also discusses the role of extended Intranets or "extranets" and provides examples of extranet contracts

The report also reviews the available market size and characteristics. Appendices provide definitions of terms used in this report, the profile of survey respondents questionnaires used for the research survey.

This report identifies users' plans to use vendor-provided services for Internet- and Intranet-based activities in the emerging applications management market. Likely vendor opportunities include Intranet-enabled access to corporate data and administrative systems as well as Internet site development, interactive activities, and content management.

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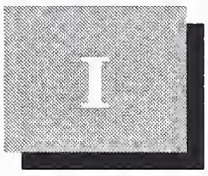


Introduction

A
Scope and Purpose

This study was produced a part of INPUT's research program on the professional services and systems integration markets.

The report examines the plans and priorities of U.S. companies regarding usage of the Internet and Intranets and the opportunities for vendors to provide Internet- and Intranet-related services.

The following major questions are addressed:

- What is the size of the current and future market for Internet and Intranet services? What is the growth rate?
- What types of Internet-related activities/applications are important to users?
- For what types of Internet-related activities/applications will users consider outside services vendors?
- What types of Intranet-related activities/applications are important to users?
- For what types of Intranet-related activities/applications will users employ vendors?
- What drives the decision to use a vendor?
- What are key opportunities for vendors?

B
Methodology

This report is based on telephone interviews conducted with representative user organizations and vendors knowledgeable about applications development activities within their organizations and the issues brought about by the emergence of Internet- and Intranet-based activities.

A total of 50 user interviews and 25 vendor interviews were conducted. Many industries and a representative range of company sizes are represented.

Exhibit I-1 identifies key descriptive characteristics of the user sample.

Exhibit I-1

Profile of User Respondents by Industry

Industry	Percent of Sample	Large Companies (Revenues ≥ $500M)	Small Companies (Revenues < $500M)
Communications	10	2	3
Financial	10	4	1
Discrete Manufacturing	20	7	3
Process Manufacturing	18	6	3
Retail	10	3	2
Services	8	0	4
Utilities	10	3	2
Other	14	4	3
Total	100%	29	21

n = 50 *Source: INPUT*

Vendors actively positioning for and currently providing applications management were also interviewed.

Some of these vendors are already providing Internet- and Intranet-based applications management services to clients.

Twenty-five structured vendor interviews were conducted, along with a number of unstructured interviews with vendors.

Exhibit I-2 profiles the information service categories of the vendors participating in the structured interviews.

Exhibit I-2

Vendor Respondents' Profile

Vendor Type	Percent of Total Respondents
Outsourcer	40
Consultant	20
Professional Services	20
Applications Developer	20
Total	100%

n =25 *Source: INPUT*

C
Report Organization

The remaining chapters of this report are structured in the following way:

Chapter II—Executive Overview—presents a summary of the research analysis and the conclusions that can be drawn from it

Chapter III—Implementing Internet Applications—examines user Internet applications priorities, the activities for which users are likely to use outside vendors' services, and the probable evolution of Internet applications development

Chapter IV—Implementing Intranet Applications—reviews user Intranet plans, their application development priorities and user likelihood to use a services vendor. It also discusses the role of extended Intranets or "extranets" and provides examples of extranet contracts

Chapter V—Market Opportunity for Internet/Intranet Development — reviews market size and characteristics as well as providing a review of the conclusions and recommendations that can be derived from the survey data

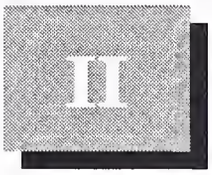
Appendix A provides definitions of terms used in this report and indicates the SIC codes of each of the vertical markets.

Appendix B includes a copy of the user and vendor questionnaires used for telephone interviews.

D
Related INPUT Reports

Other reports from INPUT that could be of interest in relation to this report include:

- *Applications Migration to the Web*
- *Use of Internet Appliances in the Corporation (U.S.)*
- *Use of Internet Appliances in the Corporation (Europe)*
- *Impact of the Internet on Outsourcing and Processing Services*
- *Using the Internet for Business Operations*
- *Internet Application Case Studies*
- *Worldwide Internet Market Forecast Report, 1995-2000*
- *The Future of World Wide Web Servers and Browsers*
- *Lotus Notes' Survival in the Intranet-Enabled Corporation*
- *Internet Sales and Marketing Directions*
- *Opportunities in Applications Management Outsourcing*



Executive Overview

A
Meeting User Needs for Internet/Intranet Development

The Internet represents the most significant wave of new technology since the introduction of PCs in the early 1980s.

The realization that the Internet can be adopted to support an organization's internal business processes brings to the fore the reliability and security issues of the "open Internet" that are key drivers of the *Intranet* opportunity.

Some large organizations are already deploying Intranets designed to underpin key elements of their business. Certainly the majority of organizations are at least planning how Intranets can most effectively be used.

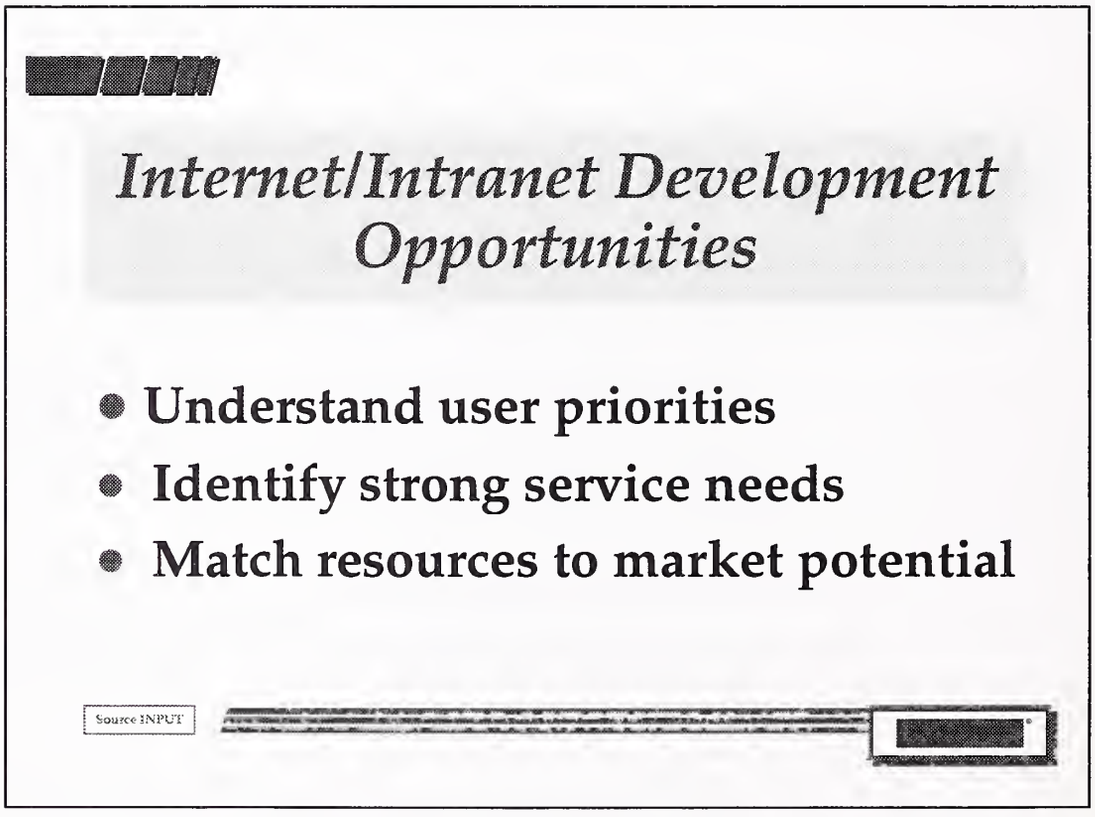
The opportunity to meet both Intranet and Internet systems development requirements is creating a substantial new market for professional services firms and systems integrators. Currently running at about $5 billion annually, the Professional Services and Systems Integration opportunity in the US is expected to achieve annual sales of over $35 billion by the year 2001.

However, IT professional services firms and systems integrators face major challenges in attempting to understand how Internet technology can best be used in corporate computing environments now and in the future.

Primary research recently compiled by INPUT is presented here to assist IT services vendors to optimize the growing potential of this market, covering the following issues (see Exhibit II-1):

- Gaining an understanding of the priority that users are placing on different applications of Internet technology, both internally as Intranets and externally
- Identifying those areas where users are most likely to seek or be receptive to the utilization of external sources of development assistance
- Matching resources to demand through an assessment of market size and the pace at which it is likely to expand

Exhibit II-1

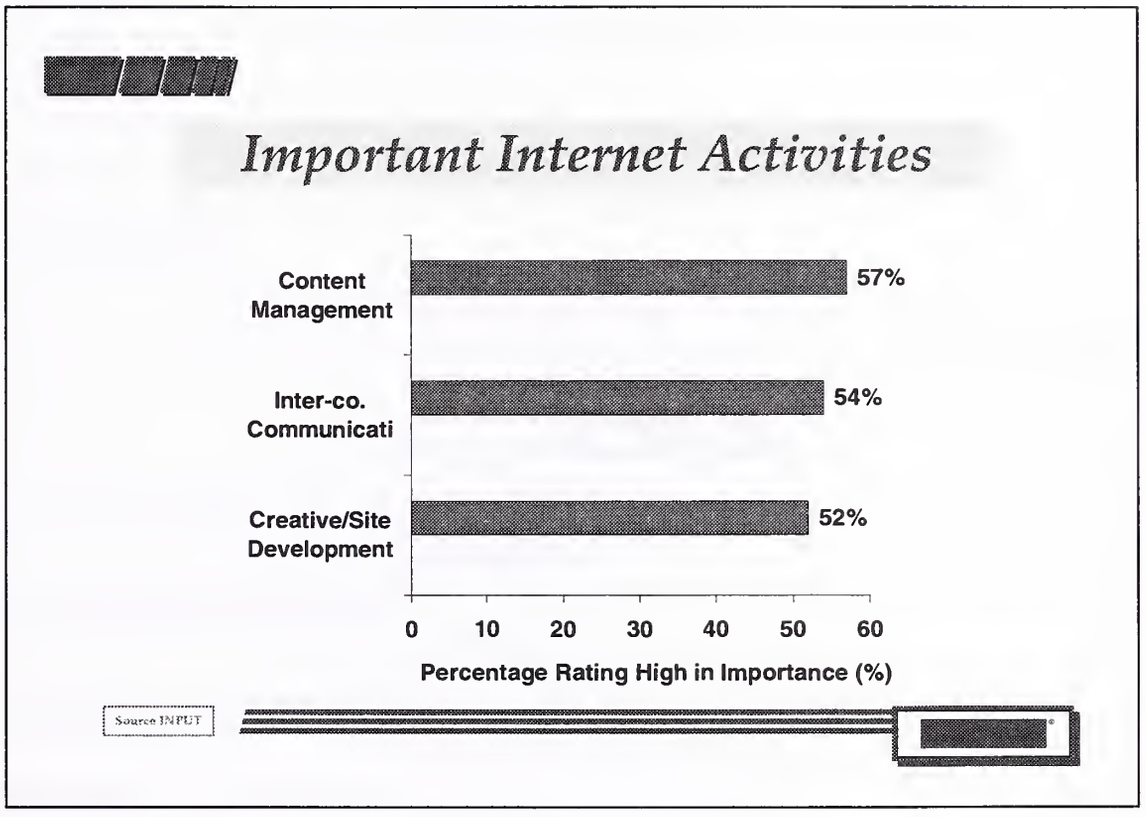


Source: INPUT

B
Understanding User Priorities

The most important Internet activities for users are indicated in Exhibit II-2.

Exhibit II-2



Source: INPUT

Content management is one of the highest priorities for users as they come to realize the full extent of the on-going support commitments, ranging from update services through to continuous 24x7 support.

At the moment Internet users are not yet generally applying the technology to full function interactive services, although these are expected to emerge soon to form a second wave of demand for services.

Currently concerns about security and network reliability are impeding the development of the more advanced uses of the Internet.

However, it is in response to these concerns that users have in the meantime focused their attention on leveraging Internet technology internally as Intranets.

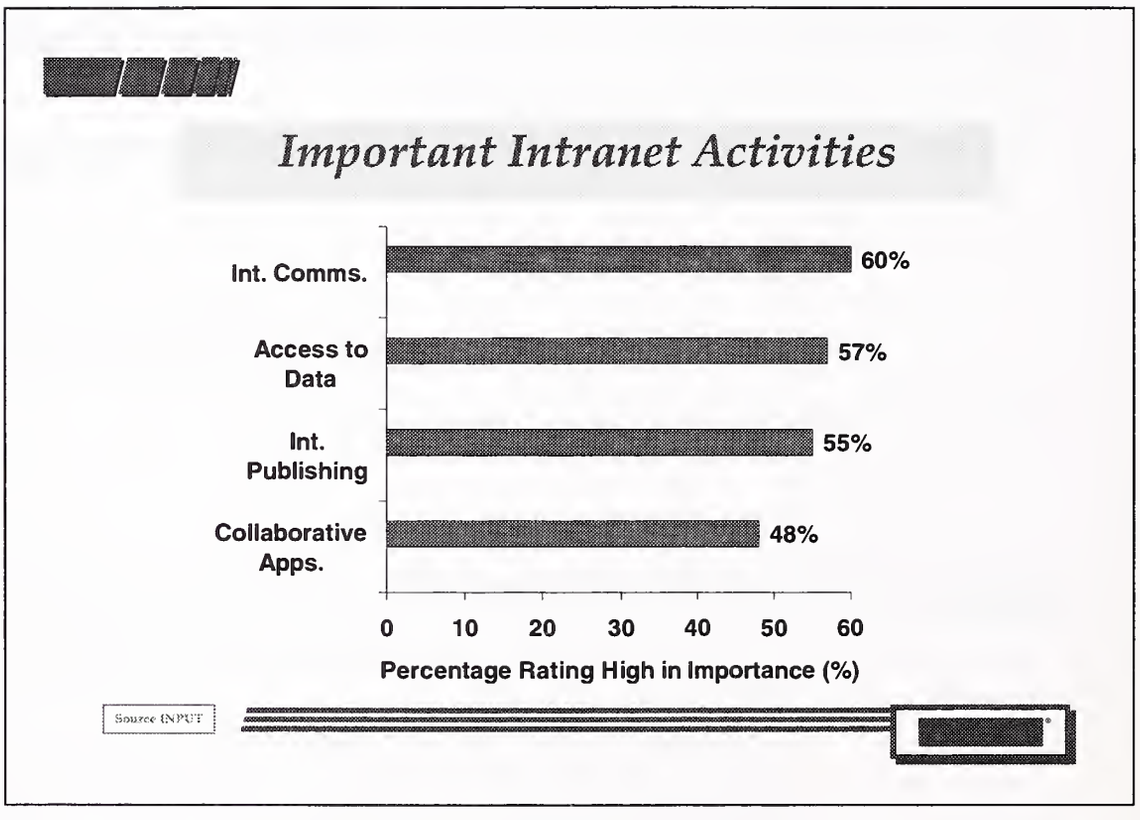
Three quarters of the users surveyed in this research project reported that they were actively planning to implement an Intranet.

User priorities for Intranet development are shown in Exhibit II-3.

Users see the advantages of intra-company communications as:

- Extended corporate reach
- Improved speed of access and response
- Relatively low cost
- Better productivity

Exhibit II-3



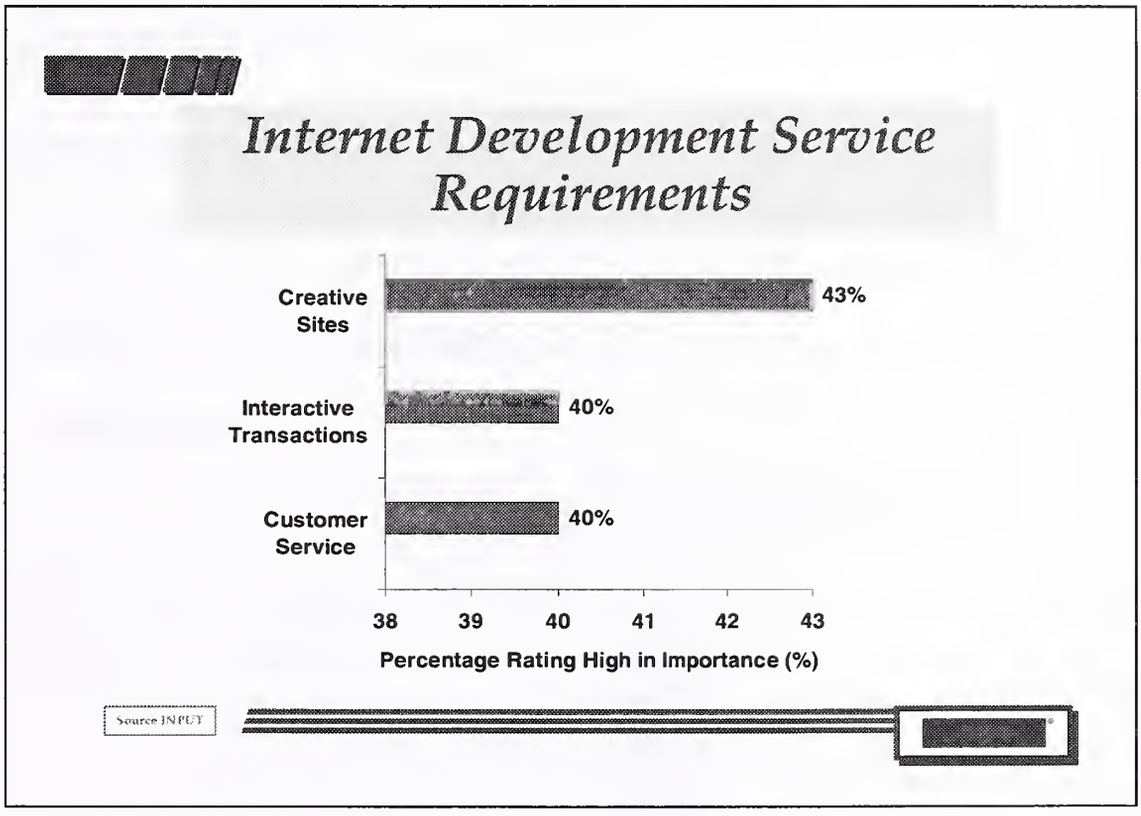
Source: INPUT

C
Identifying Strong Service Need Areas

Users adopt a selective approach in utilizing services vendors for Internet related activities.

Creative site development is the area most likely to be subcontracted to a services vendor as is shown in Exhibit II-4.

Exhibit II-4



Source: INPUT

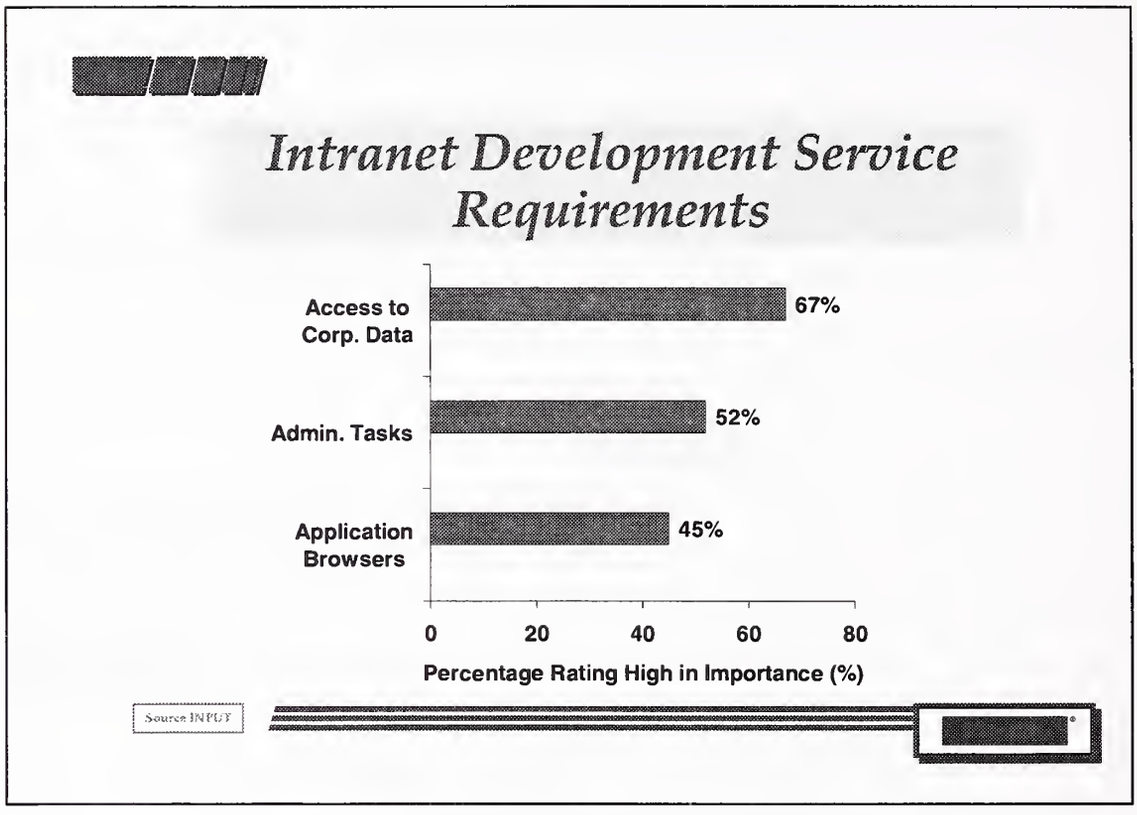
The functions users choose to subcontract will not necessarily correspond to the functions which users rate of highest priority.

For example, users indicated that they were least likely to turn to an outside vendor for help with inter-company communications even though this activity was rated first in importance by users.

This is an example of the tendency to insource critical activities which might be more efficiently addressed through utilizing an external source of know-how and experience.

Exhibit II-5 indicates that the strongest service need in relation to Intranets would appear to be supporting access to corporate data.

Exhibit II-5



Source: INPUT

Other Intranet activities that are also highly likely to be sub-contracted by users are, the migration of existing applications, the facilitation of internal communications and collaborative applications.

The key factors that are likely to drive demand for vendor assistance in the support of Intranet development are:

- Lack of skills and experience in-house
- Non-mission critical nature of projects causing shortages of internally available resources
- Uncontrolled, unmanaged development of Intranets at the department level

Existing applications that are likely to be moved to Intranet platforms are:

- Sales automation including expense reporting and travel
- Order processing as part of EDI and Supply Chain Management

- Internal Help desks
- Accounting applications

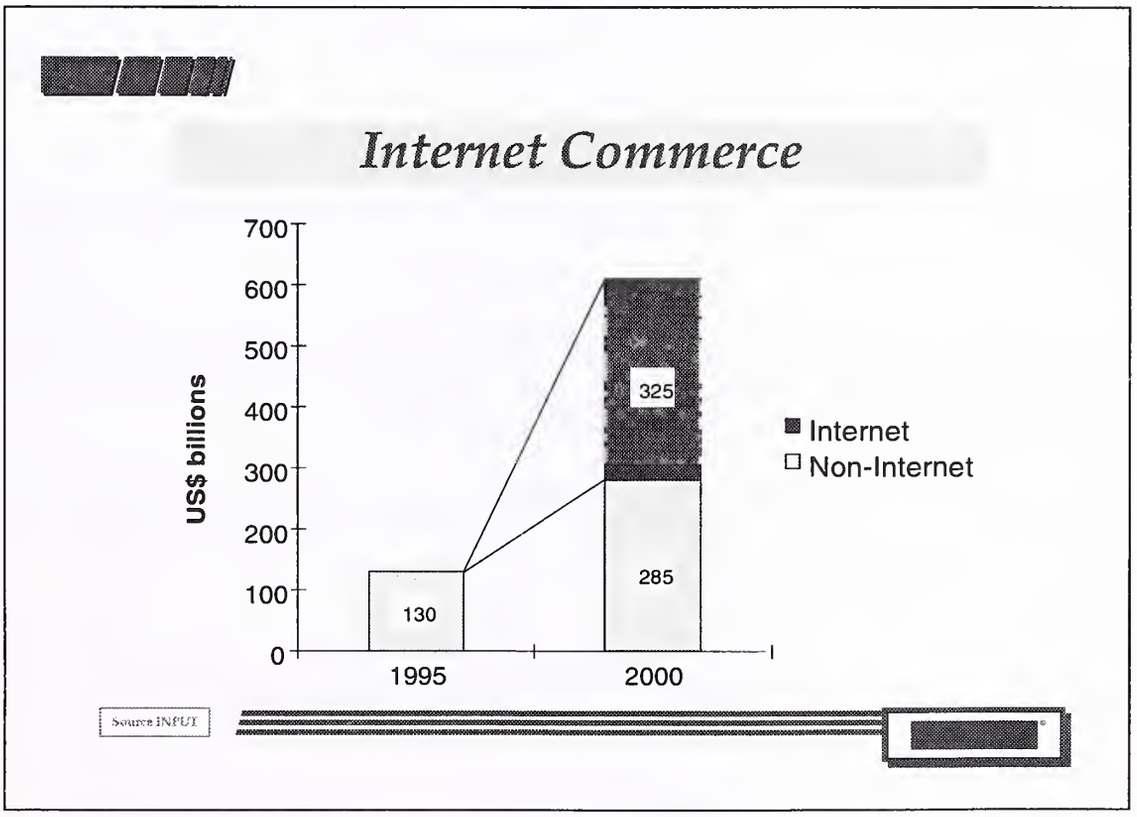
Greater dependence on internal networks for, particularly for firms that operate globally, will be a major driving force for development opportunities of r professional services firms.

For example Ford Motor depends on Hewlett-Packard to mange its Intranet activity to ensure support for 70,000 users across over two dozen countries.

D
Matching Resources to Market Potential

The market assessment and forecast for the US Internet and Intranet applications development services business is provided in Exhibit II-6.

Exhibit II-6



Source: INPUT

Growth in this market is being generated by a number of key factors, including:

- Technology development
- Globalization
- Increasing competition from new types of competitors from different industries
- The closer alignment of IT with business goals

There is strong interest from users in applying Internet-based technology as a competitive and operations-enabling tool, for example as a tool to improve customer service and communicate with business partners.

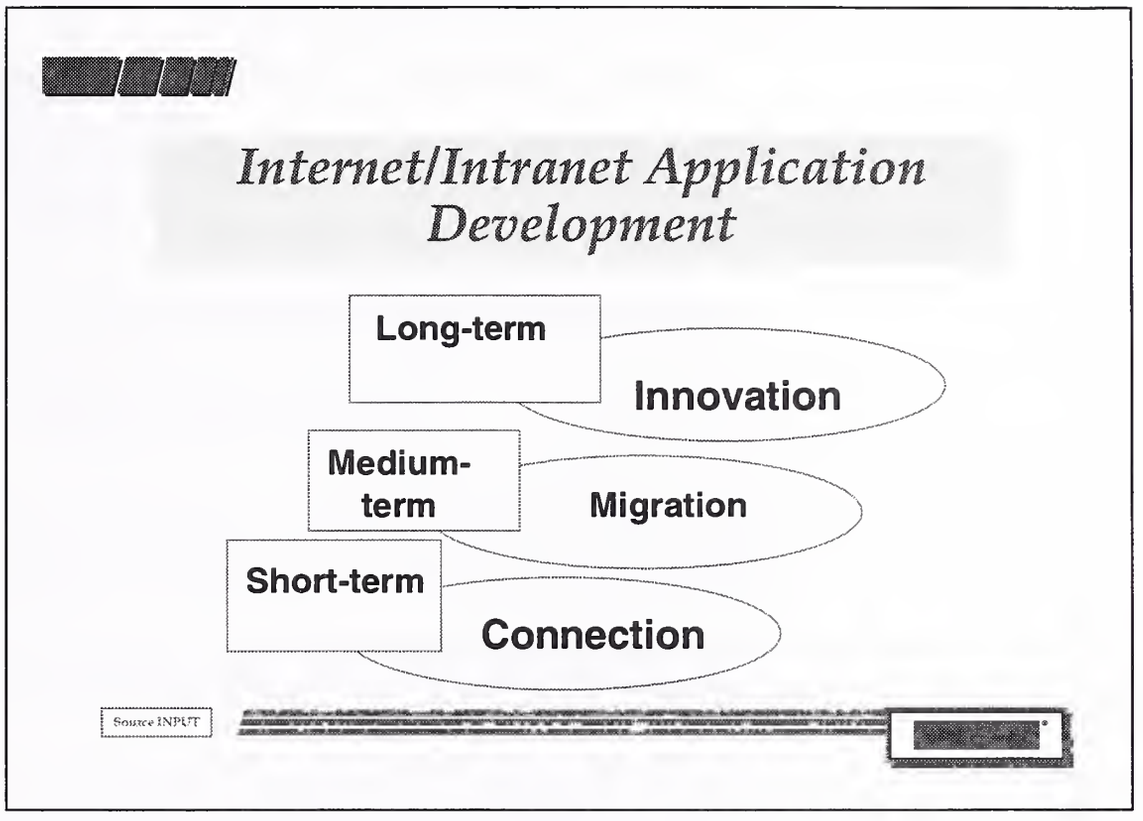
However, a key challenge will be to acquire sufficient staff with the appropriate skill sets in order to be able to keep up with the predicted growth in demand.

Interesting developments that are creating demand in this emerging market include:

- Virtual corporation evolution: the need for communications and collaboration with mobile and remote workers, and business partners
- The proliferation of basic Internet- and Intranet-based applications, often initiated within departments, is creating a need for better planning and control, IT support, backup, security, monitoring, and the prevention of chaos
- Business pressures requiring speed and agility in changing markets, to reduce costs, improve profitability and create greater competitive edge

An overview of the development priorities for Internet and Intranet related initiatives is provided in Exhibit II-7.

Exhibit II-7



Source: INPUT

Users to prioritize their activities by business impact and to focus on their areas of experience and expertise.

Even though emerging opportunities in Internet- and Intranet-related services appear to be extensive, vendors should use a calculated approach, taking time to develop a cohesive strategy and plan for targeted offerings.

The critical elements for early entry into this market appear to be:

- Skills and experience to support creative site development
- Interactive Internet-based transactions
- Content management
- The enabling of access to corporate data and to administrative systems via an Intranet
- The integration of existing internal applications with Intranets and browser front ends

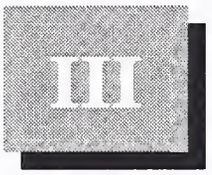
Vendors should choose target areas to emphasize and within which to build skills.

Vendors should consider establishing alliances with the following:

- Software vendors that are adapting their products to the Web
- Hardware vendors that need to offer a portfolio of Internet services and software
- Implementation and development vendors that have the skills to implement Internet-based solutions
- Outsourcers that can manage implementation and related processing services

Vendors should consider offering an extended Intranet ("Extranet") for members of a vertical industry or organization to position themselves advantageously for the emerging electronic commerce opportunities.

Vendors should also include training and business assessment/consulting in their offerings.



Implementing Internet Applications

Vendors report that the implementation of Internet technology is becoming an important instigator of demand for IT services.

The Internet is clearly on users' agendas and plans and they have begun to discuss seriously their Internet-related needs with vendors.

A
User Internet Applications Priorities

The most important Internet activities for users are:

- Content management (content updates, analysis of customer feedback, security)
- Intercompany communications
- Creative site development
- Use of the Internet as a customer service center

Users are beginning to realize that once an attractive and easy-to-use Web site has been developed, its content must be managed through continuous support services which include:

- Content storage
- Content updates

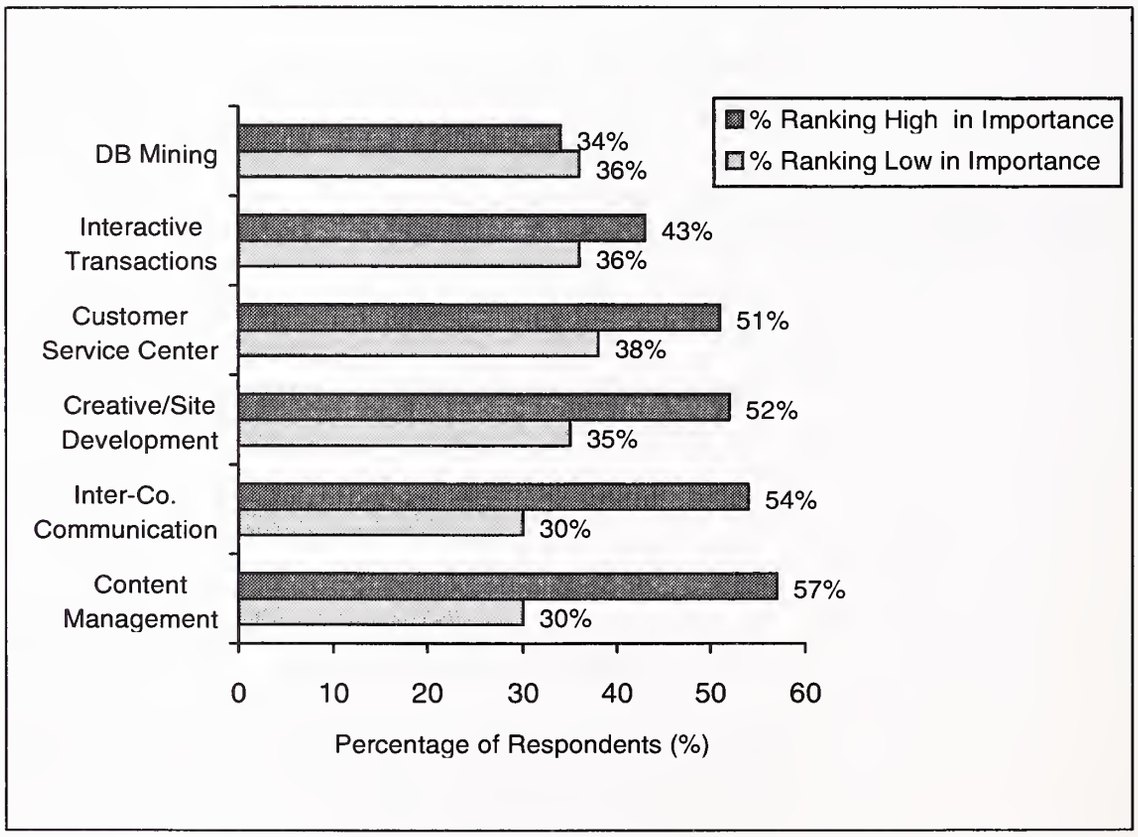
- Security
- Analysis of customer feedback
- Continuous 24x7 support

Of lesser importance to users at the present time are using the Internet for interactive activities (e.g., orders, fulfillment, technical support) and database mining of customer information for market targeting purposes.

These lower priority applications have important business potential and are likely to form a second wave of demand among users, once users are convinced that Internet technology is reliably robust and secure. See Exhibit III-1.

Exhibit III-1

User Assessment of Internet Applications



Source: INPUT

An example of a customer service center application would be the enabling of direct customer look-up of account or order status, eliminating the need for a middleman.

There is strong emerging interest in inter-company communications via the Internet, including business transactions with customers and business partners.

However, concerns about security and network reliability will impede the transition to this mode of communication.

Such transactions now appear likely to be implemented first on extended Intranets ("extranets") or virtual private networks (VPNs), until the Internet proves to be more secure and robust.

User concerns about security and reliability combined with the attractiveness of extranets and VPNs represent opportunities for vendors.

Interactive transactions will gain in importance as users become convinced of the reliability of the Internet.

In the interim, virtual private networks (VPNs) and extended Intranets may be developed for reliable use.

B
Using External Vendors for Internet-based Activities

Users are likely to use vendors for a number of Internet-related activities. However, they will employ a selective approach—they will seek vendor assistance with certain activities, but not with others.

The areas they choose to subcontract will not necessarily correspond to the areas of highest priority.

User organizations are most likely to use a vendor for creative site development.

Forty percent of users surveyed stated that they were highly likely to turn to vendors for assistance with interactive transactions and customer service.

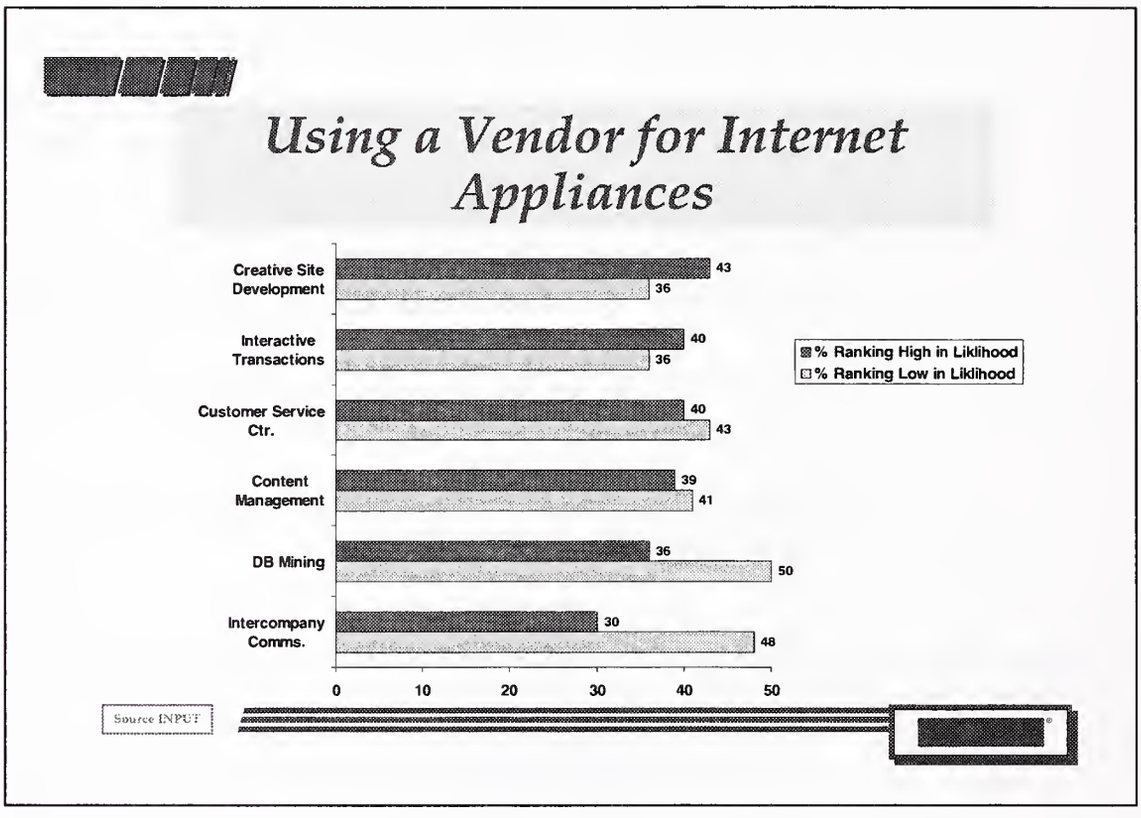
Other areas in which users are likely to seek vendor assistance include:

- Content management
- Database mining for customer information

Many are highly likely, as well, to use a vendor for content management and for interactive activities, i.e., activities that enable the interaction of two or more parties. This need is being driven by a lack of adequate skills and in-house experience to support these activities.

For content management, users would expect a vendor to perform content refreshment and updates and to manage and analyze customer feedback. See Exhibit III-2.

Exhibit III-2



Source: INPUT

Users indicated that they were least likely to turn to an outside vendor for help with intercompany communications, even though this activity rated first in importance to users.

Users are more likely to rely on internal resources to carry out this function. An example of the tendency to insource activities that are considered critical to an organization when in fact seeking outside help may obtain a more dynamic response to a new technology need within the firm.

Half of the users surveyed stated that they were unlikely to turn to a vendor for database mining assistance despite the fact that vendors, such as IBM, are positioning themselves to provide Internet-enabled database mining.

This would appear to be because users still do not view database mining as a sufficiently important activity.

Raising users' awareness of the importance of database mining will require more education by vendors about the business advantages of database mining.

Currently, users are more comfortable doing many of the activities described here themselves and have staff available in-house with the appropriate skills.

Indeed, some users are already performing these activities over the Internet.

Nevertheless, vendors may be able to work to convert user interest in these activities into sales opportunities.

C
Internet Applications Development Evolution

1. Current and Future Sources of Internet Applications Development

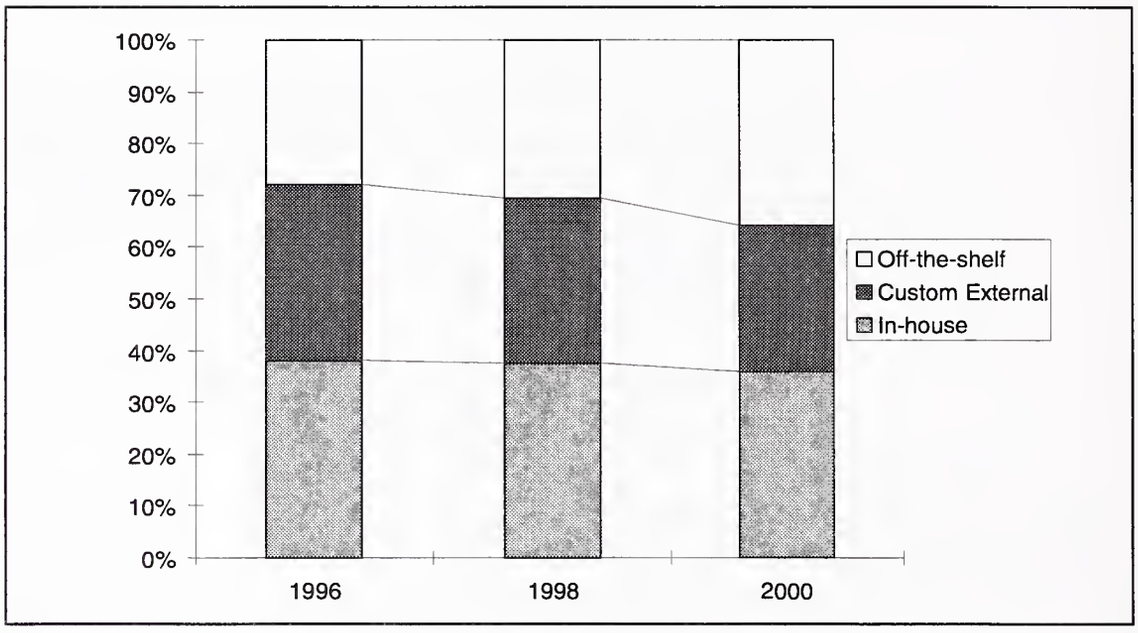
INPUT surveyed 120 Fortune 1000 companies as to the likely source of current and future Internet applications.

As shown in Exhibit III-3 there are three primary sources for Internet applications, in-house development, externally developed custom solutions and off-the -shelf packages.

Respondents indicate an evolution towards off-the-shelf applications between now and the year 2000.

Exhibit III-3

Internet Application Sources



Source: INPUT

In the future it is likely that services vendors will be customizing or modifying applications that are off-the-shelf or have been developed by the user in-house, rather than developing custom applications from the ground up.

SAP, for example, is already adapting its products for the Internet thereby enabling the implementation of enterprise-wide applications using Internet technology.

2. Internet Applications Development Focus

Users believe that the focus on innovative applications for the Internet will increase, while connectivity will become less important as it becomes more of a commodity, see Exhibit III-4.

INPUT defines these three types of applications as follows:

- Connection—Linking back-office systems and existing applications to the Web
- Migration—Porting or re-writing existing applications in Java or ActiveX to the Internet platform
- Innovation—Developing entirely new Internet or Intranet applications

Areas of innovation might include:

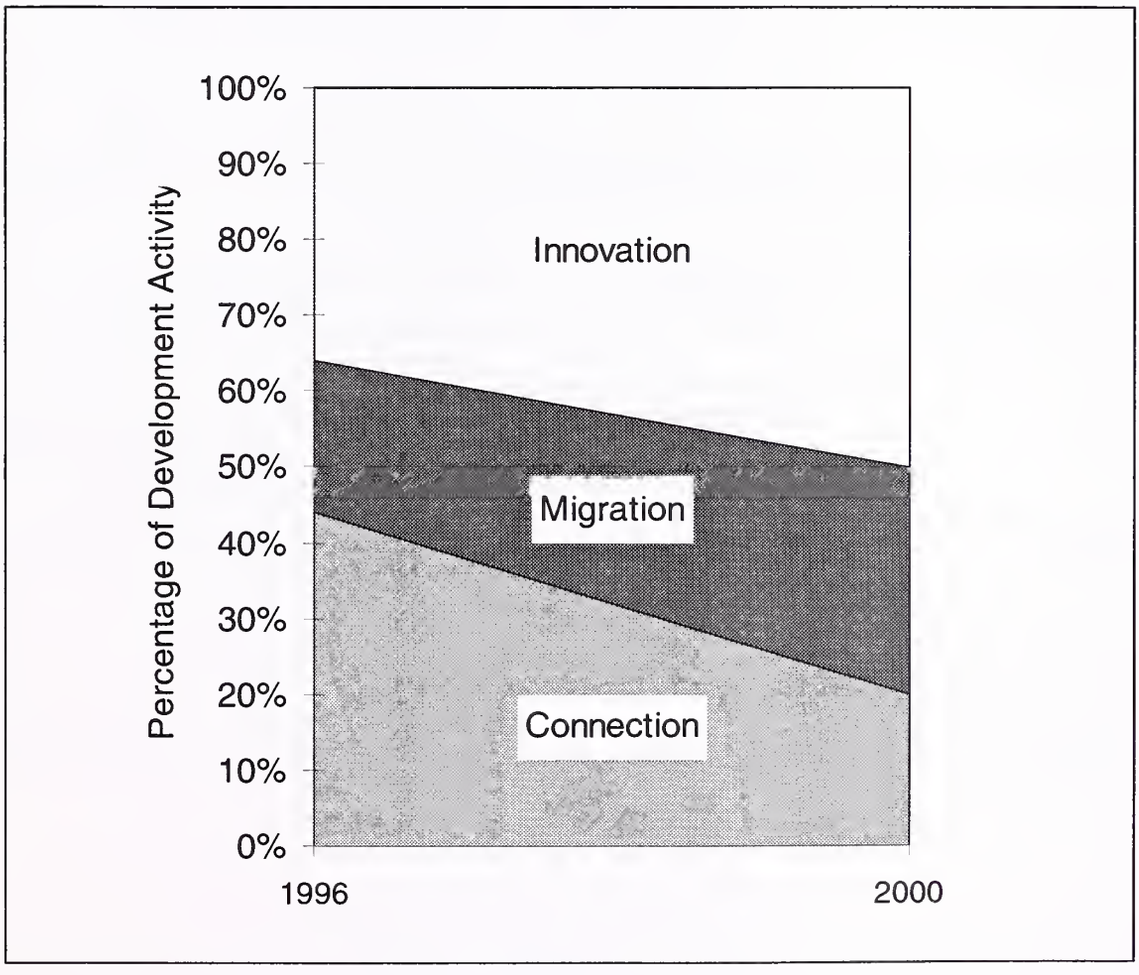
- Customization of a Web site based on visitor profiles, which are developed based on initial visits and stored for subsequent visits (one-to-one marketing)
- Real-time monitoring of valuable information to customers, such as production/order status and time-sensitive financial data
- Electronic commerce applications

There will be a small increase in the focus on the migration of applications.

Vendors should emphasize the acquisition of emerging innovative applications and skills.

Exhibit III-4

Internet Applications Activity Focus, 1996 - 2000



Source: INPUT

In the short term, the focus will remain on connectivity. However, innovation will increasingly become a key differentiator for professional services vendors and systems integrators.

D
Internet Contract Examples

Many recent contract awards for Internet related work have involved site development and management, although some electronic commerce applications are also being contracted out. For a sample of recent Internet services contracts, see Exhibit III-5.

Exhibit III-5

Internet Contracts

Vendor	Client	Objective	Industry
Anderson Consulting and BBN	Airlines	Passenger Revenue Accounting System - airline transactions	Transport
Applied Graphics Technology	N.Y. Daily News	Web site development	D.Mfg.
AT&T	First Albany	Notes-based access to research information; server maintenance support	Financial
AT&T/Compuserve	Great Plains Software	Database storage, troubleshooting, email, support	Services
BBN Planet	L.L. Bean	Online shopping catalogue	Retail
Digital Facades	Epson	Hosting, server maintenance, connectivity, graphic designs	D.Mfg.
EDS	DDB Needham	Design, develop, implement and host site of Pepsi Cola, a DDb customer; includes animation, audio, 3-D graphics	Services
EDS	Softbank Expo & Conf. Co.	Web-based registration sytem for trade show participants	Services
Hewlett-Packard	Mail Marketing	Web server management, electronic commerce	Retail
Policy Management Systems	Reliance National	Enable insurance agents to underwrite, rate, quote and process policy applications over the Internet	Insurance

EDS' DDB Needham contract is with the customer's interactive communications group.

EDS designed, developed, implemented and now hosts Pepsi-Cola's Internet site. The web site resides on the EDS WebRanch, part of the Plano, Texas data center. The site features animation, audio and three-dimensional graphics created in virtual reality mark-up language.

Andersen Consulting and BBN have a joint venture to provide a secure infrastructure for end-to-end business processes.

This "business utility" targets the travel and tourism, health care and utilities markets but is not limited to those markets.

The joint venture manages Andersen Consulting's Passenger Revenue Accounting (PRA) Solutions enterprise, which handles an average of 20 million transactions a day for many major airlines.

The joint venture enables electronic commerce via the Internet by leveraging Andersen Consulting's strength in business process management and BBN's experience in data communications.

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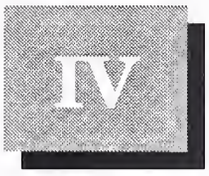


Implementing Intranet Applications

User interest shifted in 1996 from the Internet in general to focus on its potential for purely internal use because:

- Intranets can offer reliable and secure present-day business advantages with relative ease of transition
- Intranets can be leveraged as an important business tool enabling better communications, collaboration, and productivity

Intranet usage is being driven from the department level, with human resources, marketing, and communications departments leading the way.

This bottom-up development trend parallels the adoption of client/server technologies in the 1980s.

Once again, central IS often is only being brought in after implementation, to manage the chaos, notably to ensure the seamless and secure integration of existing internal networks with Web sites.

A
Intranet Plans

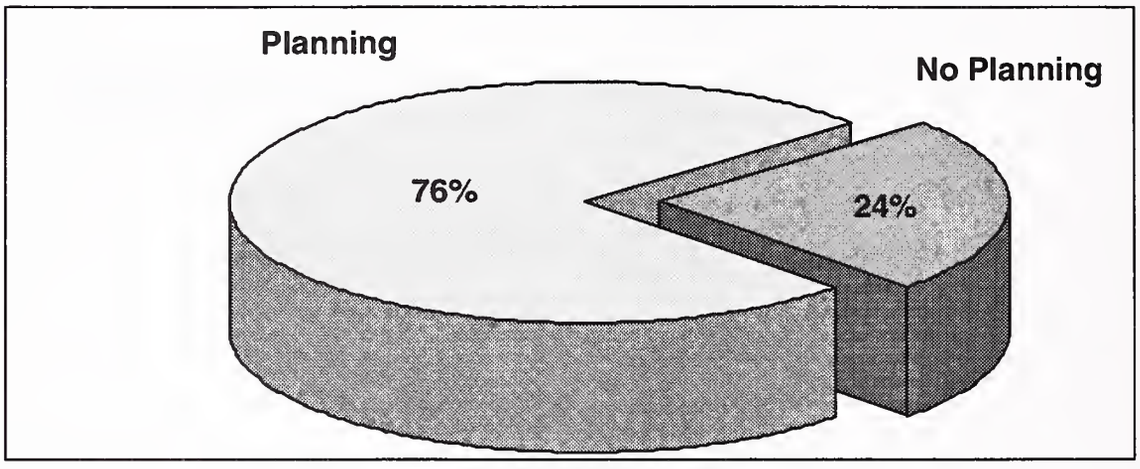
Intranets have caught users' attention and proliferated, often initiated at the department level.

Eventually, it is likely that enterprise-wide applications will be integrated into corporate Intranets to leverage Internet technology advantages. This change is studied in depth in INPUT's report, *Revolutionary Migration of Applications to the Internet*.

Users were surveyed with regard to their plans for Intranet-based applications, Exhibit IV-1 shows that the vast majority of respondents were active in this respect.

Exhibit IV-1

Intranet Application Plans



Source: INPUT

At the very least this level of planning activity points to an opportunity for consulting services, with a strong likelihood for follow-on professional services and project assignments.

Currently, some of the departments showing greatest interest in establishing Intranets are marketing, communications, and human resources.

This would appear to be because Intranet applications can fulfill these departments' needs relatively easily.

Users view the following as the highest priority activities for an Intranet:

- Internal communications
- Access to corporate data
- Publication of internal information
- Collaborative activities

Users perceive the benefits of moving these activities to an Intranet to include: ease of use, extended reach and reduced costs. Users cannot, however, quantify these advantages at this point.

The attitude of users in respect of using vendors to support Intranet development is shown in Exhibit IV-2.

A very high percentage of users indicate a willingness to use vendors for innovative Intranet applications.

This is a clear indication that users will look to vendors for leadership in Intranet development.

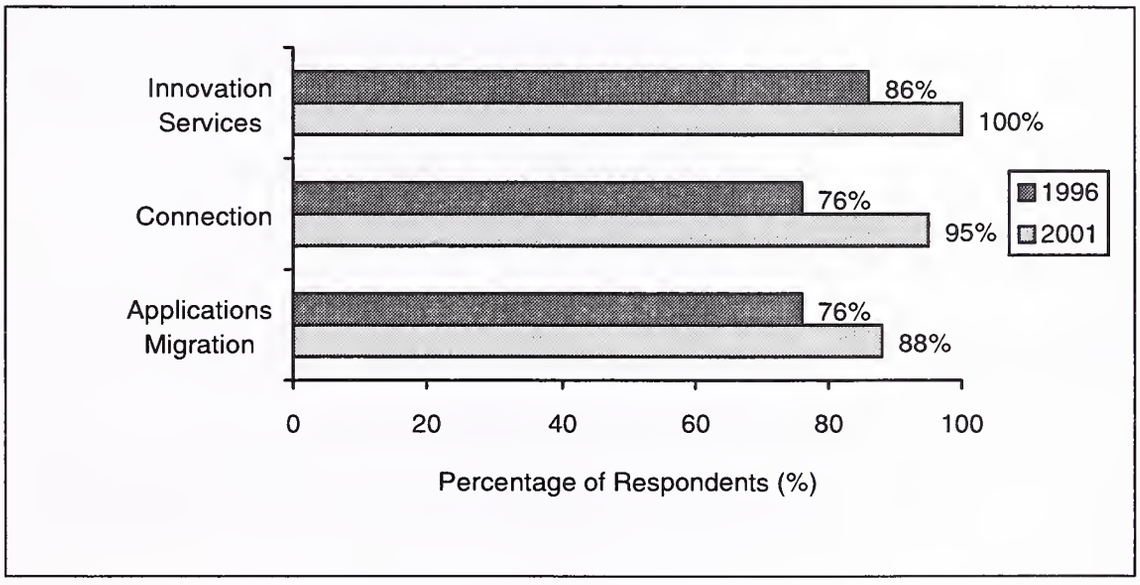
Innovative applications include transactions with a more customized or multimedia aspect than is currently available with most client/server software applications.

These transaction applications will be truly interactive among multiple parties, with nearly real-time information access.

About three-quarters of users currently say they would seek a service solution for Intranet connection and migration.

Exhibit IV-2

Planned Use of Vendors for Intranet Services



Source: INPUT

B
User Intranet Development Priorities

1. Importance of Intranet Activities

Intra-company communications is the most important Intranet related activity for users, see Exhibit IV-3.

Users see the advantages of intra-company communications as:

- Extended corporate reach
- Improved speed of access and response
- Relatively low cost
- Better productivity

Other important activities for users are:

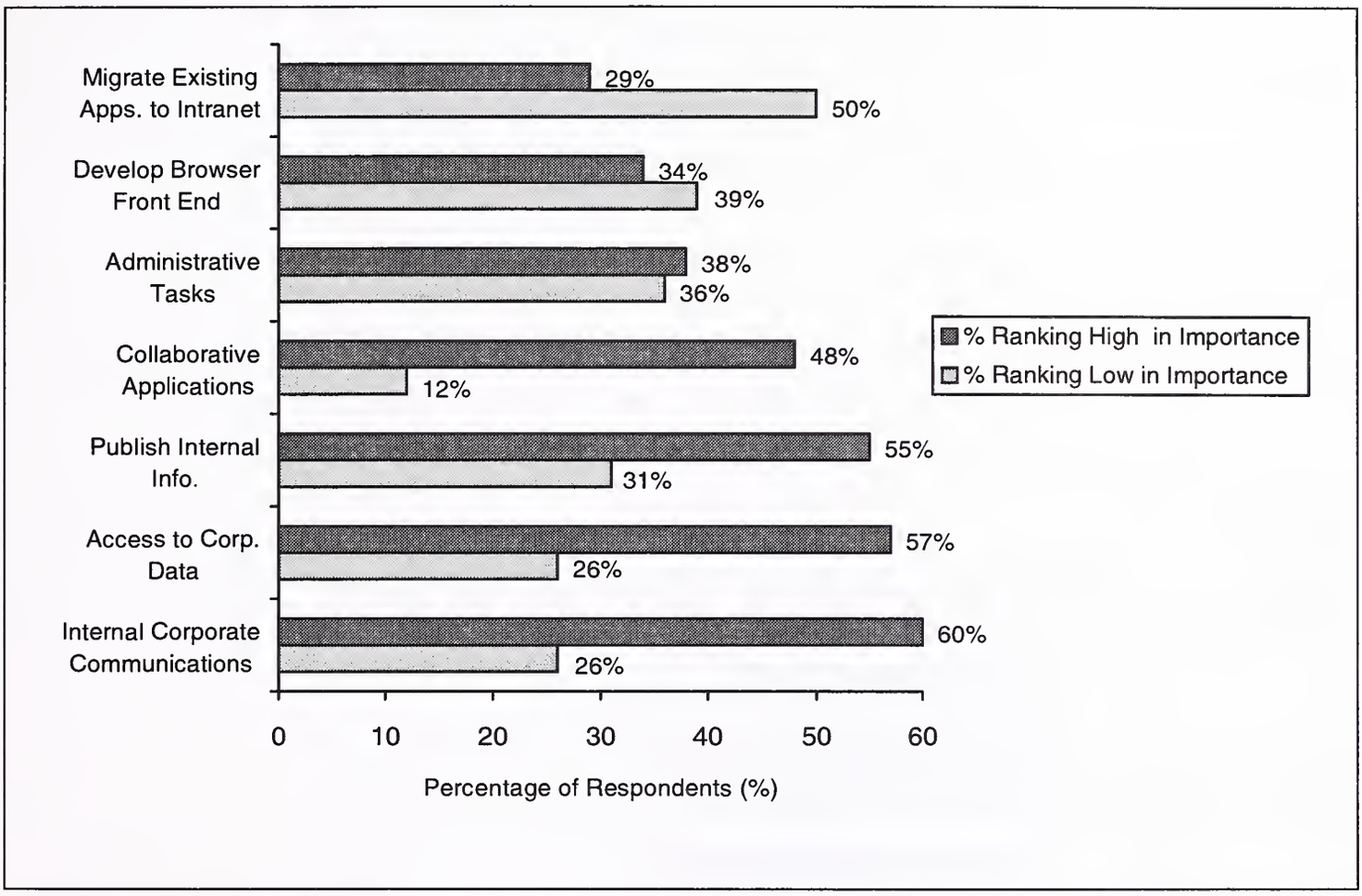
- Access to corporate data
- Publication of internal corporate information
- Collaborative applications.

It is significant that very few respondents, approximately one in ten, believe that Intranet- enabled collaboration is low in importance.

Vendors should prepare to assist in this area, as there is widespread consensus that collaboration via an Intranet is of medium or high importance in achieving business goals in the future.

Exhibit IV-3

Importance of Intranet Activities



Source: INPUT

An example of an application that could fall under either of the top two categories would be remote access by a sales or customer service representative to customer credit information and order status.

The areas of communications and access to corporate data are important to users because they enable better and faster decisions and improved workflow within an organization.

Timing may be influencing the allocation of lower priorities by users to other functions.

For example, migration of existing applications to Intranets is likely to become a higher priority to users once other Intranet-enabled applications become more commonplace.

Browser applications, too, will become a higher priority once applications are nearly in place.

2. Vendor Use for Intranet-related Activities

Users are most likely to employ vendor expertise to assist with Intranet-based access to corporate data.

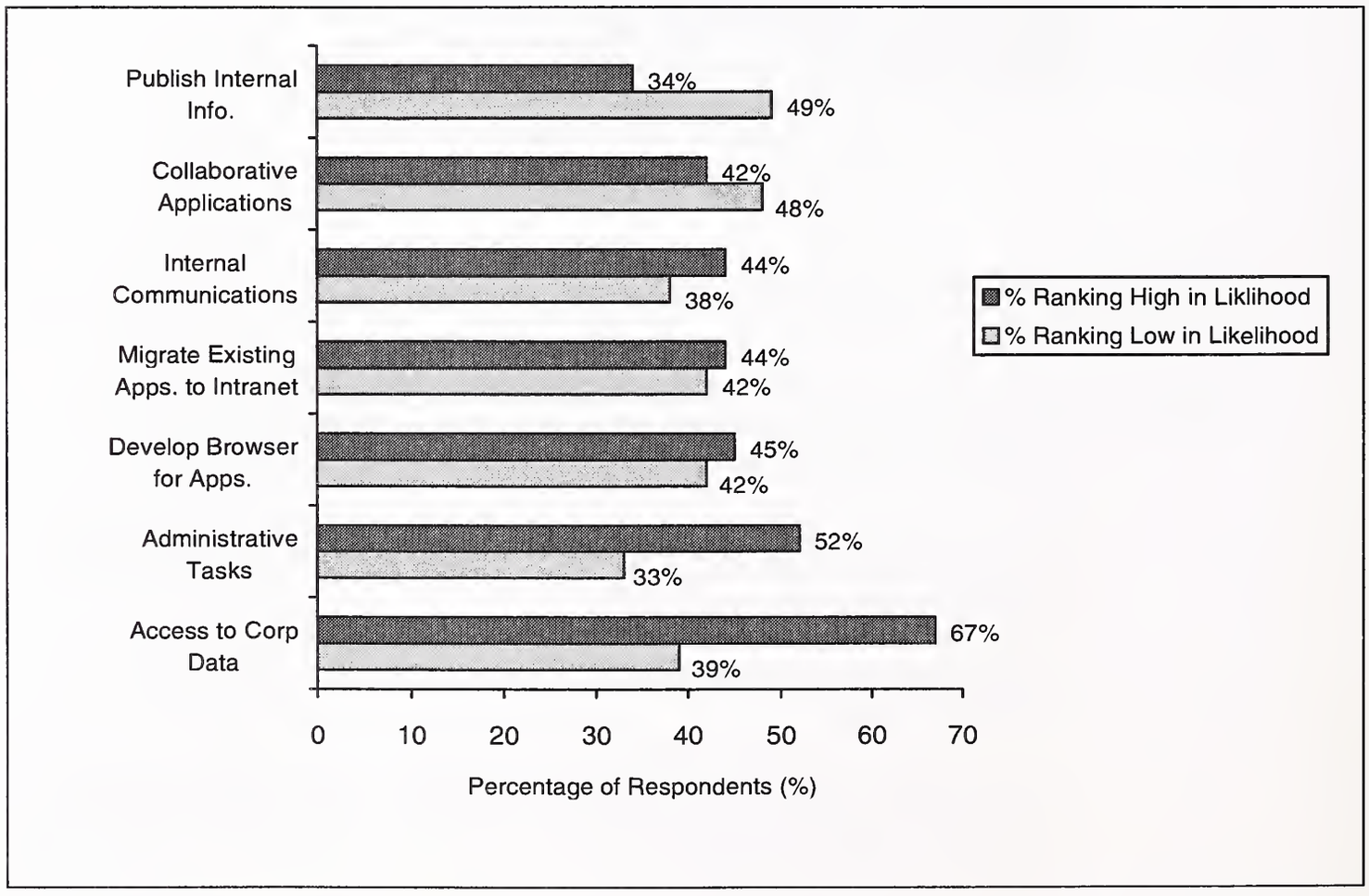
Many companies are also likely to seek outside help with Intranet browser development and the migration of existing internal applications to the Intranet.

Only access to corporate data was rated by users as a high-priority activity.

Exhibit IV-4 indicates the opinions of users regarding the likelihood of using external vendor services for Intranet related activities.

Exhibit IV-4

Likelihood of Using Vendors for Intranet-related Activities



Source: INPUT

Factors that will drive demand for vendor assistance will be:

- Lack of skills and experience in-house
- Non-mission-critical nature of projects and the need to focus on core competencies
- Uncontrolled, unmanaged proliferation of Intranet usage at the department level

Users are not inclined to turn over to a vendor a high-priority application in which they have experience, for example the publication of internal information.

Two-thirds of users are likely to use a vendor to help them access corporate data via the Intranet. Once data access is facilitated, interest in database mining is likely to grow.

Half of users surveyed will look to vendors to assist them in implementing and managing administrative tasks on their Intranets, even though such tasks were not rated high in importance.

The fact that user likelihood to use a vendor does not correlate to users' highest priority Intranet activities could be an indication that users intend to use in-house resources first for the activities they deem most important.

Intranet-enabled administrative tasks include many of those now carried out at the desktop corporate-wide. Among administrative tasks that might be carried out via an Intranet are:

- Supply ordering
- Telephone directory and organization charts
- Job postings
- Publication of company policies and benefits information
- Employee surveys
- Registration for classes

Although some of these applications may seem trivial, Intranet access will save corporate spending on paper and clerical staffing.

Intranet applications will also make life easier for employees through the acceleration of the speed of existing processes as well as opening up the possibility of process improvement.

Nearly half of companies surveyed are likely to use an outside vendor to assist in browser front end development for key applications, such as accounting, inventory management, and MRP.

One third of respondents will use an external service provider for the migration of existing applications to their Intranets.

Among existing applications that are likely to be moved to Intranets are:

- Sales automation
- Expense reporting
- Travel arrangements
- EDI, order processing
- Benefits choices
- Help desk
- Accounting
- Supply chain management (extended Intranet)

Greater dependence on internal networks for business applications, particularly on a global basis, will drive the need for vendor assistance with applications and network management.

Ford Motor depends on Hewlett-Packard to manage its Intranet activity to ensure reliability for the company's 70,000 users in more than two dozen countries.

Hewlett-Packard's three-year, $6 million contract primarily involves network operations.

If vendor experience and skill levels are not sufficiently extensive in a target area, an alliance or acquisition strategy can fill the gap.

C
"Extranets" or Extended Intranets

1. Extended Intranets—Definition and Opportunity

Extended Intranets, sometimes referred to as "extranets," are intended to be secure and robust Intranets that are linked via the Internet to large clients and other partners, such as suppliers and distributors.

Virtual private networks (VPNs) make use of Internet technologies, but traffic runs on an outsourced private network, eliminating the traffic, bandwidth, and security problems of the public Internet.

Users were not surveyed on these new areas of extended Intranets ("Extranets") or virtual private networks (VPNs), although they will offer important business potentially the future.

For example, large vendors, particularly IBM, but also EDS and Andersen Consulting, are beginning to position themselves as extranet providers.

These firms view extranets as a way to enter the potentially lucrative business of managing network-based transactions (electronic commerce) and to do business with a multitude of companies in a vertical segment.

In addition they represent a means to overcome major barriers in the user community, for example such concerns as Internet reliability and security.

IBM has recently announced extranets for the insurance, utility, and oil industries.

Many of the vertical players in these industries are large companies with extensive service requirements.

The extranet, therefore, can represent a point of entry to significant potential services contracts with multiple important clients.

Users also find extranets attractive because they provide improved links to business partners.

The outlook for extranets over the short term is very good because they offer advantages not yet available on the public Internet.

For vendors, extranets have huge potential, partly because they represent the initial mechanism for Net-based electronic commerce.

Eventually, when the Internet becomes more reliable, secure and robust, there may be less need for extranets and traffic could shift back to the public Internet, unless vendors can continue to provide advantages that retain these attractive revenue streams.

2. Extended Intranet Contracts—1996

In late 1996, there was an initial flurry of extranet positioning, led by IBM:

- IBM and Siemens Power Systems Control are providing an Internet-based system for the purchase and sale of electrical capacity by utilities, such as Pacific Gas and Electric. It is a flat fee service with an additional per-transaction charge.
- IBM's Insure-Commerce enables insurers to do business over the Internet; for example, customers can file auto-glass claims and receive payments via EDI applications.
- EDS's PowerAg network is an Internet-based platform enabling agricultural chemical companies to access data and carry out EDI and EFT transactions with other companies in the network.

Exhibit IV-5 provides a list of recently awarded "extranet" contracts.

Exhibit IV-5

Recent "Extranet" Contracts

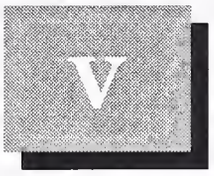
Vendor	Client	Objective	Industry
IBM/ISSC	Brazilian Banks	Intranet used by banks to provide remote banking svcs for customers	Finance
EDS (Energy)	Agric. Chem. Co's	Secure extended Intranet for access to industry info.	Proc. Mfg
IBM/Siemens	PG&E, Utilities	Secure Internet-based system for purchase and sale of electric capacity	Utilities
IBM	17 Insurance Co's	Enable insurance companies to do business with each other and with customers over Internet:; EDI system streamlines autoglass insurance claims and payments	Insurance
IBM	Oil Co's	Database and collaboration service ("PetroConnect")	Proc. Mfg

Source: INPUT

The list of contracts provided in Exhibit IV-5 signals the emergence of the "extranet" opportunity.

The important point is that many of the clients are large companies with extensive potential service requirements and are likely to be heavily involved in future net-based transactions.

This indicates that the "Extranet" represents a potentially lucrative opportunity for service providers.



Market Opportunity for Internet/Intranet Development

A
Market Size and Characteristics

Users are beginning to view Internet technology as a supporting tool for the business applications they need to achieve such business goals as stronger growth, agility, innovation, and collaboration.

INPUT defines an Intranet as a secure internal network built on public Internet standards. Its usage is limited to employees and, in the case of an extended Intranet (or "extranet"), to specific clients and business partners who have been given access.

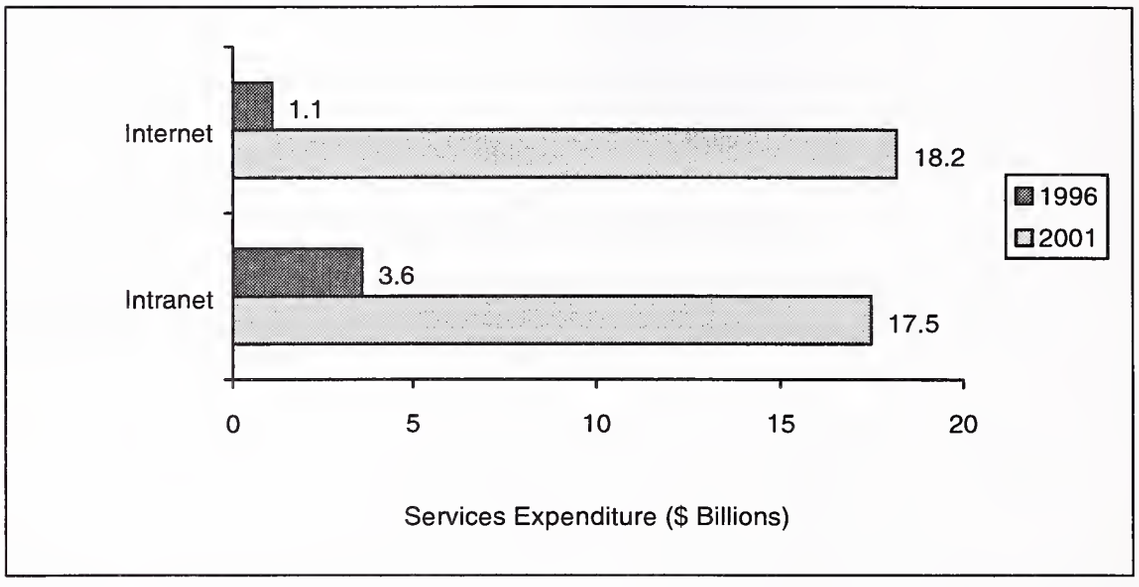
The challenge will be to find Internet- and Internet-based applications that maximize business impact.

1. Market Forecast

The U. S. market for Internet and Intranet Professional Services and Systems Integration services is forecast to grow at a CAGR of 50% from 1996-2001–from $4.7 billion in 1996 to $35.7 billion in 2001, see Exhibit V-1.

Exhibit V-1

Professional Services and Systems Integration Services - US



Source: INPUT

A key challenge will be the development of workers with the appropriate skill sets to keep up with growth in demand.

Another challenge will be to develop innovative applications that truly leverage this new resource to benefit businesses.

2. Key Market Drivers

There is strong interest in using Internet-based technology as a competitive and operations-enabling tool.

The following key drivers are creating demand in this emerging market:

- Virtual corporation evolution: the need for communication and collaboration with mobile workers, employees in remote (including global) locations, and business partners (clients, suppliers, distributors, etc.)
- Use of networks and applications for reengineered critical business processes
- Demand for interoperability between business applications

- The proliferation of basic Internet- and Intranet-based applications, often initiated within departments, is creating a need for better planning and control, IT support, backup, security, monitoring, and general chaos prevention.

- Business pressures are requiring speed, agility in changing markets, reduced costs, improved profitability, better customer service, and a greater competitive edge.

There is also an increasing awareness that the Internet can be a tool to improve customer service and communications with business partners.

B
Conclusions and Recommendations

1. Conclusions

Users are most likely to use vendors for creative/site development for their Internet activities.

Users are also likely to seek assistance with interactive applications and content management. See Exhibit V-2.

Exhibit V-2

Conclusions-Internet

Users will seek vendor assistance for Internet:
• Site development
• Management of interactive applications
• Content management

Source: INPUT

For Intranets, users are most likely to use vendors for access to corporate data.

Users are also likely to use services vendors for the management of administrative tasks, the development of browser front ends, and the migration of existing applications. See Exhibit V-3 for a summary of these key points.

Exhibit V-3

Conclusions-Intranets

Users are most likely to use vendors for:

- Data access
- Management of administrative tasks
- Browser front ends
- Application migration

Source: INPUT

A large percentage of users surveyed plan to sub-contract Intranet-related innovation, connection, and migration services within the next four to five years. See Exhibit V-4.

Exhibit V-4

Conclusions-Timing of Intranet Market Demand

Outlook	Greatest User Demand
Short-term	Connection
Medium-term	Migration
Long-term	Innovation

Source: INPUT

2. Recommendations

a. Users

Survey data supports the need for users to prioritize their activities by business impact and to focus on their areas of experience and expertise.

User plans should emphasize strategic priorities and the acquisition of required skill sets.

The required skill base can be built up through hiring, alliances/acquisitions, and/or retraining.

Users should consider communicating and executing transactions with key clients and partners via an extended Intranet or virtual private network (VPN) to accelerate the benefits of electronic commerce.

As always, it is best to start with easy activities and work up to more difficult projects.

A summary of key recommendations is provided in Exhibit V-5.

Exhibit V-5

Recommendations for Users

- Prioritize
- Focus
- Develop a plan
- Interact via extranet or VPN
- Build up skills

Source: INPUT

b. Vendors

Even though emerging opportunities in Internet- and Intranet-related services appear to be extensive, vendors should use a calculated approach, taking time to develop a cohesive strategy and plan for targeted offerings.

The critical elements for early entry into this market appear to be:

- Skills and experience to support creative site development
- Interactive Internet-based transactions
- Content management
- The enabling of access to corporate data and to administrative systems via an Intranet
- The integration of existing internal applications with Intranets and browser front ends

Vendors should choose target areas to emphasize and within which to build skills.

Vendors should consider establishing alliances with the following:

- Software vendors that are adapting their products to the Web
- Hardware vendors that need to offer a portfolio of Internet services and software
- Implementation and development vendors that have the skills to implement Internet-based solutions
- Outsourcers that can manage implementation and related processing services

Vendors can leverage existing vertical market expertise and applications experience, transferring these strengths to Web-based transaction management and targeting users in these vertical markets.

Vendors should consider offering an extended Intranet ("extranet") for members of a vertical industry or organization to position themselves advantageously for the emerging electronic commerce market and for additional services to these clients.

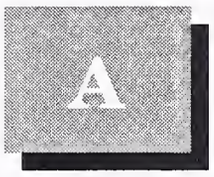
Vendors should also include training and business assessment/consulting in their offerings. Exhibit V-6 provides a summary of vendor recommendations.

Exhibit V-6

Recommendations for Vendors

- Develop a plan and target offerings
- Build skills in target areas
- Make alliances
- Leverage strengths and transfer them to Internet/Intranet areas
- Consider extranet offerings
- Offer training and consulting

Source: INPUT



Definition of Terms

A
Introduction

INPUT's *Definition of Terms* provides the framework for all of INPUT's market analyses and forecasts of the information services industry. It is used for all U.S. programs, in Europe, and for INPUT's worldwide forecasts.

One of the strengths of INPUT's market analysis services is the consistency of the underlying market sizing and forecast data. Each year, INPUT reviews its industry structure and makes changes if they are required. When changes are made, they are carefully documented and the new definitions and forecasts reconciled to the prior definitions and forecasts. INPUT clients have the benefit of being able to track market forecast data from year to year against a proven and consistent foundation of definitions.

B
Overall Definitions and Analytical Framework

1. Information Services

Information Services are computer/telecommunications-related products and services that are oriented toward the development or use of information systems. Information services typically involve one or more of the following:

- Packaged software products, including systems software or applications software (called Software Products)
- A combination of computer equipment, packaged software and associated support services that will meet an application systems need (called Turnkey Systems)

- People services that support users in developing and operating their own information systems (called Professional Services)

- A combination of products (software and equipment) and services in which the vendor assumes total responsibility for the development of a custom integrated solution, or part of a solution, to an information systems need (called Systems Integration)

- Services that provide operation and management of all or a significant part of a user's information systems or telecommunications functions under a long-term contract (called Outsourcing)

- Use of vendor-provided computer processing services to develop or run applications or provide services such as disaster recovery or data entry (called Processing Services)

- Network Services has two components:

  - Services that support the delivery of information in electronic form—typically network-oriented services such as value-added networks and electronic mail (called Network Applications)

  - Services that support the access and use of public and proprietary information such as on-line databases and news services (called Electronic Information Services)

- Services that support the operation and maintenance of computer and digital communication equipment (called Equipment Services)

In general, the market for information services does not involve providing equipment to users. The exception is when the equipment is part of an overall service offering such as a turnkey system, an outsourcing contract, or a systems integration project.

The information services market also excludes pure data transport services (i.e., data or voice communications circuits such as T-1 carriers). However, where information transport is associated with a network-based service (e.g., electronic data interchange services) or cannot feasibly be separated from other bundled services (e.g., some outsourcing contracts), the transport costs are included as part of the information services market.

The analytical framework of the information services industry consists of the following interacting factors: overall and industry-specific business environment (trends, events, and issues); technology environment; user information system requirements; size and structure of information

services markets; vendors and their products, services, and revenues; distribution channels; and competitive issues.

C
Industry Sector Definitions

INPUT structures the information services market into industry sectors such as process manufacturing, insurance, transportation, etc. The definitions of these sectors are based on the most recent revision of the Standard Industrial Classification (SIC) code system. The specific industries (and their SIC codes) included under these industry sectors are detailed in Exhibit A-1.

INPUT includes all product/service categories except systems software products and equipment services in industry market sectors.

Note: SIC code 88 is Personal Households. INPUT does not currently analyze or forecast information services in this market sector.

Exhibit A-1

Industry Sector Definitions

Industry Sector	SIC Code	Description
Discrete Manufacturing	23xx	Apparel and other finished products
	25xx	Furniture and fixtures
	27xx	Printing, publishing, and allied industries
	31xx	Leather and leather products
	34xx	Fabricated metal products, except machinery and transportation equipment
	35xx	Industrial and commercial machinery and computer equipment
	36xx	Electronic and other electrical equipment and components, except computer equipment
	37xx	Transportation equipment
	38xx	Instruments; photo/med/optical goods; watches/clocks
	39xx	Miscellaneous manufacturing industry
Process Manufacturing	10xx	Metal mining
	12xx	Coal mining
	13xx	Oil and gas extraction
	14xx	Mining/quarrying nonmetallic minerals
	20xx	Food and kindred products
	21xx	Tobacco products
	22xx	Textile mill products
	24xx	Lumber and wood products, except furniture
	26xx	Paper and allied products
	28xx	Chemicals and allied products
	29xx	Petroleum refining and related industries
	30xx	Rubber and miscellaneous plastic products
	32xx	Stone, clay, glass and concrete
	33xx	Primary metal industries
Transportation Services	40xx	Railroad transport
	41xx	Public transit/transport
	42xx	Motor freight transport/warehousing
	43xx	U.S. Postal Service
	44xx	Water transportation
	45xx	Air transportation (including airline reservation services in 4512)
	46xx	Pipelines, except natural gas
	47xx	Transportation services (including 472x, arrangement of passenger transportation)

(Cont.)

Exhibit A-1
(continued)

Industry Sector Definitions (Cont.)

Industry Sector	SIC Code	Description
Telecommunications	48xx	Communications
Utilities	49xx	Electric, gas and sanitary services
Retail Trade	52xx 53xx 54xx 55xx 56xx 57xx 58xx 59xx	Building materials General merchandise stores Food stores Automotive dealers, gas stations Apparel and accessory stores Home furniture, furnishings and accessory stores Eating and drinking places Miscellaneous retail
Wholesale Trade	50xx 51xx	Wholesale trade - durable goods Wholesale trade - nondurable goods
Banking and Finance	60xx 61xx 62xx 67xx	Depository institutions Nondepository credit institutions Security and commodity brokers, dealers, exchanges and services Holding and other investment offices
Insurance	63xx 64xx	Insurance carriers Insurance agents, brokers and services
Health Services	80xx	Health services
Education	82xx	Educational services

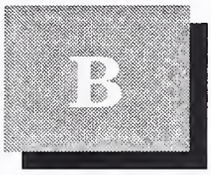
(Cont.)

Exhibit A-1 (continued)

Industry Sector Definitions (Cont.)

Industry Sector	SIC Code	Description
Business Services	65xx	Real estate
	70xx	Hotels, rooming houses, camps, and other lodging places
	72xx	Personal services
	73xx	Business services (except hotel reservation services in 7389)
	7389	Hotel reservation services
	75xx	Automotive repair, services and parking
	76xx	Miscellaneous repair services
	78xx	Motion pictures
	79xx	Amuserment and recreation services
	81xx	Legal services
	83xx	Social services
	84xx	Museums, art galleries, and botanical/zoological gardens
	86xx	Membership organizations
	87xx	Engineering, accounting, research, management, and related services
	89xx	Miscellaneous services
Federal Government	9xxx	
State and Local Government	9xxx	
Miscellaneous Industries	01xx	Agricultural production - crops
	02xx	Agricultural production - livestock/animals
	07xx	Agricultural services
	08xx	Forestry
	09xx	Fishing, hunting and trapping
	15xx	Building construction - general contractors, operative builders
	16xx	Heavy construction - contractors
	17xx	Construction - special trade contractors

Source: INPUT



Questionnaires

USER QUESTIONNAIRE

INTERNET AND INTRANET APPLICATIONS MANAGEMENT

1.a. Do you have/plan to have any Intranet-based applications? Y / N

Comment

_____

_____

_____

_____

1.b. If yes, for which types of applications would you consider using an external vendor (now and in the future [3 - 5 yrs.])?

Applications	Now	Future
Connection (Developing an Intranet browser front-end for an existing application)		
Migration (Moving existing application functionality to Intranet technology)		
Innovation (Developing new applications for an Intranet)		

Comment

2. Would you rate the importance of the following Internet activities to your company? Again on a scale of 1 - 5, how likely are you to use a third-party for these applications?

Application	Importance	Likelihood - Use Vendor
Creative services for Web site development		
Content management (updates, customer feedback)		
Interactive: orders, fulfillment, tech support for customers		
Database mining of customer information		
Inter-company communications		
Customer service center		
Other		

Comment

3. Would you rate the importance of the following Intranet activities to your company? Again on a scale of 1 - 5, how likely are you to use a third-party for these applications?

Application	Importance	Likelihood - Use Vendor
Develop browser front-end for existing applications		
Migration of existing applications		
Publishing of internal corporate information		
Collaborative applications to enhance productivity		
Administrative tasks (directory, benefits, travel, supplies, etc.)		
Access to corporate data		
Intra-company communications, including worldwide sites		
Other		

VENDOR QUESTIONNAIRE

INTERNET AND INTRANET APPLICATIONS MANAGEMENT

1. What is the size of your company in terms of annual revenue?

_____ Under $100M

_____ $200 - $500M

_____ $500M - $1B

_____ $1B

2. What type(s) of applications does your company manage? and for what industry?

Application	Industry

Comment

_____

_____

_____

_____

3. Does your experience in this market indicate that the trend toward Internet and Intranet usage is a driver of demand for applications management services? Y/N

Comment

_____

_____

_____

_____

4. What architectures are most likely to require applications management services? Please rate the likelihood of each as low, medium or high.

Architecture	Low	Medium	High
Centralized			
Distributed			
Desktop			
Intranet			
Internet			

Comment

_____

_____

_____

_____

5. In your view, what percent of applications will come from the following sources?

Source	1996	2000
Off-the-shelf		
Custom External		
In-House		

Comment

6. How do you rate the emphasis of applications development activity during 1996 - 2000 (1 = weak, 5 = strong)?

Focus	1996	2000
Connection		
Migration		
Innovation		

Comment

7.a. Do you have/plan to have any Intranet-based applications? Y / N

Comment

_____

_____

_____

_____

7.b. If yes, for which types of applications would you consider using an external vendor (now and in the future [3 - 5 yrs.])?

Applications	Now	Future
Connection (Developing an Intranet browser front-end for an existing application)		
Migration (Moving existing application functionality to Intranet technology)		
Innovation (Developing new applications for an Intranet)		

Comment

_____

_____

_____

_____

8. Would you rate the importance of the following Internet activities to your company? Again on a scale of 1 - 5, how likely are you to use a third-party for these applications?

Application	Importance	Likelihood - Use Vendor
Creative services for Web site development		
Content management (updates, customer feedback)		
Interactive: orders, fulfillment, tech support for customers		
Database mining of customer information		
Inter-company communications		
Customer service center		
Other		

Comment

9. Would you rate the importance of the following Intranet activities to your company? Again on a scale of 1 - 5, how likely are you to use a third-party for these applications?

Application	Importance	Likelihood - Use Vendor
Develop browser front-end for existing applications		
Migration of existing applications		
Publishing of internal corporate information		
Collaborative applications to enhance productivity		
Administrative tasks (directory, benefits, travel, supplies, etc.)		
Access to corporate data		
Intra-company communications, including worldwide sites		
Other		

Comment