

Intranets and Extranets

Organizations that use Intranet/Extranet technologies are no longer exclusively focused on monetary gain, but also on intangible values - learning, employee productivity, and collaboration between departments.

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Introduction

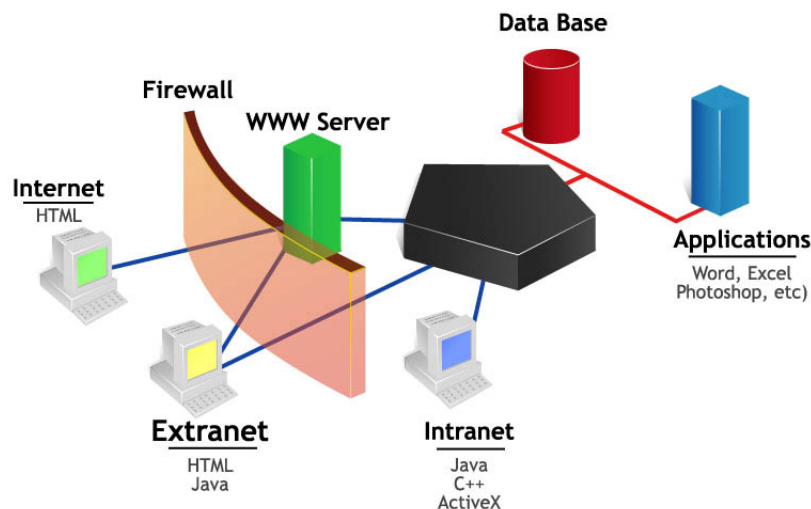
The Internet is the largest information network in the world. This system delivers a large amount of services to homes, offices, and factories, including text, video images, audio and music, fax, e-mail, phone calls and others.

The widespread public and private acceptance of the Internet and its underlying technologies paved the way for Intranets.

An Intranet is a network built within a corporation, using the Internet and World Wide Web standards and software. The Intranet is connected to the Internet and to networks called Extranets that provide an electronic connection to business partners. Intranets are designed to be open and secure internal networks with web browsing software that provides easy point-and-click access by end users on internal web sites.

The Intranet is a secure and internal implementation of the Internet. All Internet technologies, including the Internet Protocol (IP), the World Wide Web, and the browsers, are protected by corporate firewalls. A firewall is a collection of computers, software, routers and services that enable the connection of a network to other networks, while maintaining its security and integrity.

Intranets offer the most innovative, cost-effective way of freeing the corporate information from the inaccessibility of complex informational systems.



Intranets allow people to work in the manner that best fits their personality, style and work habits. Intranets offer users unprecedented freedom in obtaining information from the corporate data repository.

An Intranets provides the following benefits for corporate information access:

- It is easy to learn and use;
- It is consistent;
- It is sophisticated;
- It is cross platform;
- It is secure;
- It is standardized;
- It has a bright future;
- It is harvestable;
- It is not expensive;
- It is scalable.

Some interesting information was published in a recent study by Melcrum Publishing about companies from UK, North America and Europe (see figure 2 and 3).

The first five most important benefits brought by the Intranet to companies were considered to be:

- Better internal communication (90%);
- Improvement of processes (80%);
- Sharing best practices (72%);
- Improved efficiency (65%);
- Reduced paperwork (65%).

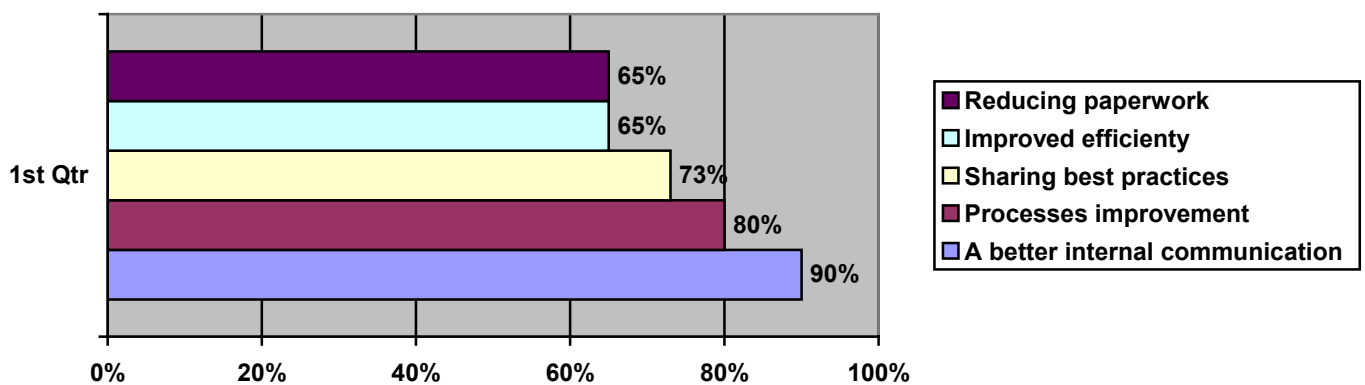


Figure 2 - The first 5 benefits of Intranet

The main problems that the Intranet addresses are:

- Content management (74%);
- Lack of resources (52%);
- Overloaded content (46%);
- Security (45%);
- Control insufficiency (43%);
- Navigation (browsing) (43%);
- Internal politics (42%).

An Extranet uses the Internet/Intranet technology to serve an extended enterprise, including customers, suppliers, partners, and other businesses that share a common goal.

An important feature of Extranets is that they are typically behind firewalls, therefore inaccessible to the general public. Security is the main concern of their infrastructure.

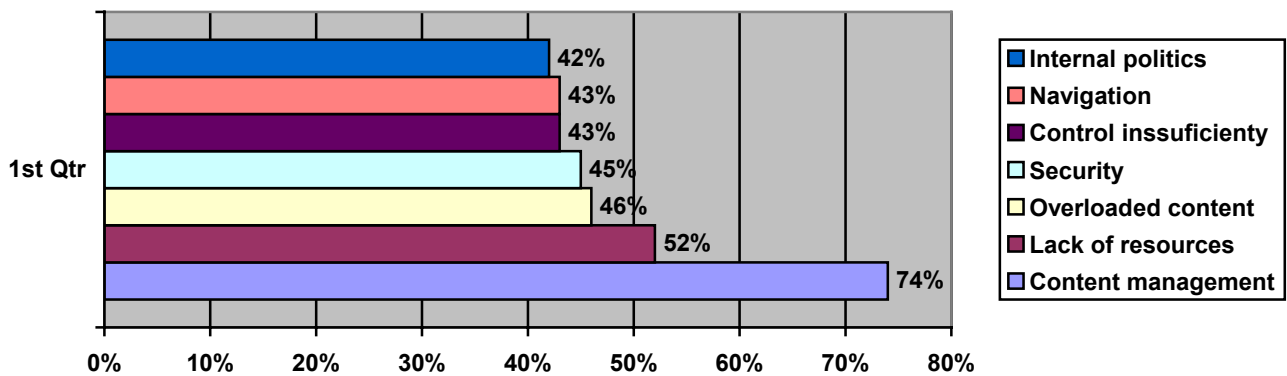


Figure 3 - The main seven problems that the Intranet addresses

Applications of Intranet

Intranets are important to the business world. Business information is becoming a driving force for corporate daily operations, decision-making and strategic planning.

Thus the requirements for efficient communication, collaboration across space and time, and effective knowledge management lead the development of Intranets.

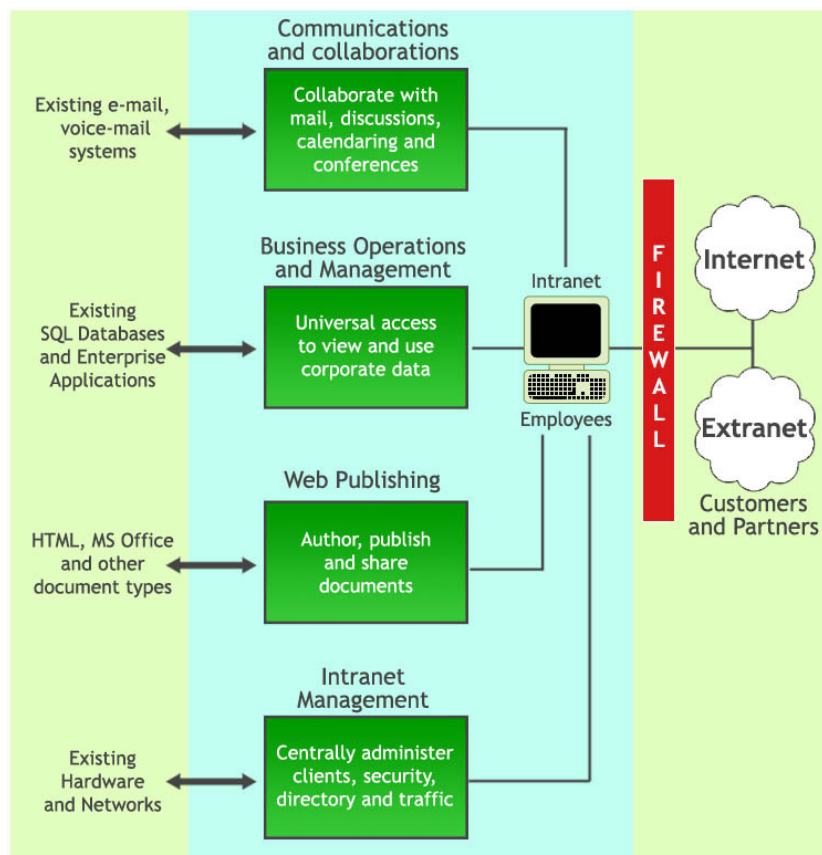


Figure 4 - Applications of Intranets

Communications

Intranets can significantly improve the communication flow within an organization. Communications are important in decentralized organizations and their geographically-distributed branches. Also, competitive pressures force organizations to lower overhead costs, and also reduce layers of middle management. This trend makes efficient communications

a crucial component of winning-business competitions. Integration in a decentralized organization depends on open standards and interoperable communications. Using an Intranet browser and PCs to send and receive E-mail, voicemail, paging and faxes can create an integrated communications network.

Collaboration

To manage complexity at the workplace effectively, corporations must bring experts with specialized knowledge together to collaborate in creating solutions that are beyond individual contributions. A team can be defined as a collaborative workgroup whose members are committed to the collaboration, and work with each other in a cooperative way. Therefore, collaboration is the key to make a group of people a team, and also to make that team successful.

Intranet groupware such as discussion groups, chat rooms, and audio- and video-conferencing can be used to improve team and project collaboration. Also, an Intranet-based group-decision support system can facilitate the corporate group decision-making process with the least overhead cost.

Knowledge Management

Collaboration is a process of sharing knowledge and understanding, therefore of sharing creation. New knowledge can be generated through corporate communications and collaborations. Therefore the goal of knowledge management is to convey this knowledge from one domain to another, as well as from one user to another.

Knowledge management attempts to make knowledge a recyclable, accessible, and expanding resource. A powerful communications tool can facilitate the generation of knowledge, and afterward improve productivity. Intranets assist the generation of knowledge, and also its management inside the companies and organizations.

Common Functional Applications

A corporate home page is the center of the Intranet access. The home page consists of sections such as the message of the day, the company's newsletter, financial updates, Intranet links to various departments, and Extranet links to customers, suppliers, other company locations, and Internet web sites. Every employee is able to get access to this home page for reading and/or downloading corporate data, important documents and news. For example, the marketing department may have the product information, the competitive analysis, and

the current project information published on its page. The finance department may have its quarterly report or annual report, and stockholders meeting schedules listed. The sales department may list its current sales records and customer information. The production department may list its production schedule, quality management program description and productivity analysis. The human resources department may publish corporate employee manuals, travel policies, benefits programs, training programs and other regulations, forms and documentation.

Intranet Tools

The selection of the most adequate and efficient tools for the Intranet should be evaluated according to the current corporate needs and to the company's short-term and long-term goals.

Guengerich identified a 12-step program of building the corporate Intranet that can apply to any company intending to build an Intranet (see figure 5).

Five factors need to be evaluated during the tools' selection process: performance, time-to-market, extensibility, portability and scalability.

Performance is the top priority for most organizations. Performance is the product's ability to provide the required response within an acceptable time frame. There is a corporate need to deliver products to customers within a particular time frame. Any tools that can assist the launch of corporate products on the Intranet are a good choice.

Tools that are based on a flexible, modular architecture interface with other types of technology, thus providing extensibility. Extensibility is the ability to adapt and persist over time.

Portability is the tools' ability to operate on any platform. This is a basic characteristic of the Intranet.

Scalability is the ability of tools to accommodate a great number of requests in an increasingly distributed environment. Other factors such as cost and vendor preference are also evaluated.

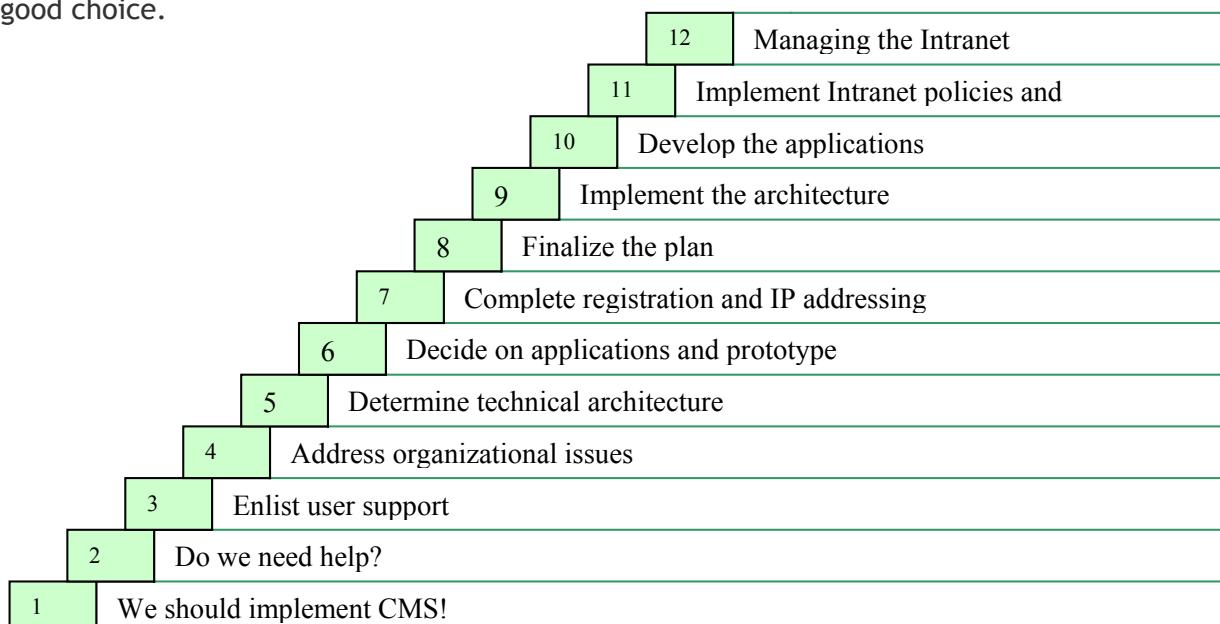


Figure 5 - 12 steps of building a corporate Intranet

The Elements of the Web-based System

A Web-based system consists of the following ten layers: presentation, client browser, network communications services, Web server, server application interface, application, service interface, service, operating system services, and hardware.

The presentation layer appears as the application from the user's perspective. The client's browser is the container for the presentation, through which the user manipulates the components. Mozilla Firefox and Microsoft Internet Explorer are examples of browsers. The network communications services layer contains all of the hardware, software, and underlying services that enable the browser to communicate with the Web server.

A Web server is a server that supports HTTP for the exchange of information with a client.

The application layer contains the business processing services, which automatically apply context to the raw data. The service interface layer abstracts an underlying data repository, transaction system, or other service from the actual application. The service layer incorporates the underlying services, e.g., DBMS (Database Management System), e-mail, etc., that provide the process and data manifest in the Web presentation layer. These services represent both the new and the inherited system components.

The operating system services layer incorporates the file, print, and program execution services, and extends across all of the computers throughout the system. The hardware layer incorporates all of the various client and server components. It also extends to all of the computers in the system. Figure 6 illustrates the components of an Intranet's Information Technology Architecture (cf. O'Brian).

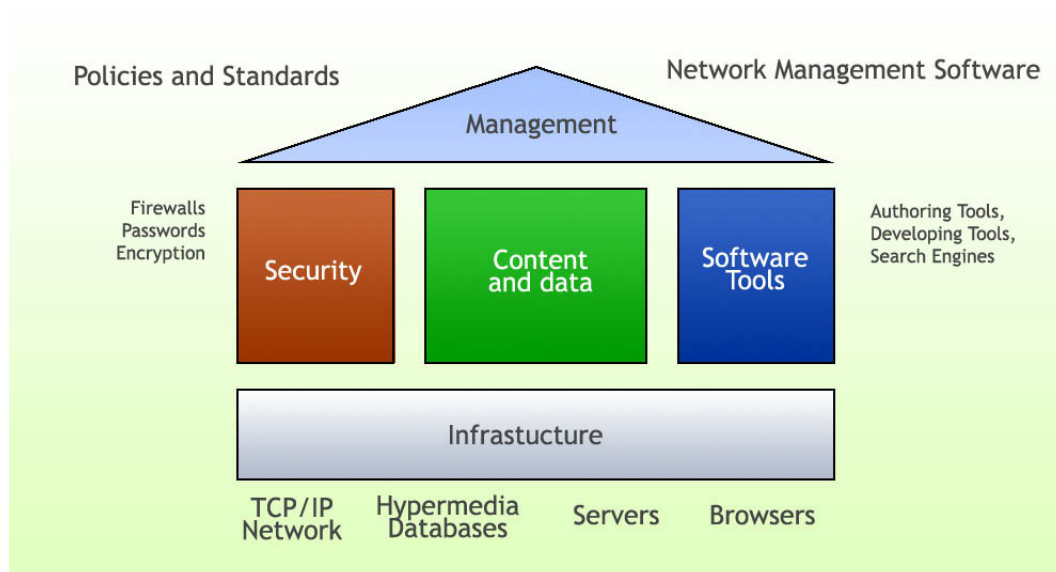


Figure 6 - Components of an Intranet's Information Technology Architecture

Some large Intranet projects involve multiple Web servers, database products and product upgrades to make development plans more complicated. The complexity of the Intranet impacts the process of tool selection.

The application tool models explain how the various tools relate to one another in a Web solution involving a database. They can be classified into five categories: single-tool solution, application programming interfaces (API), database connectivity tools, object tool and Web framework.

Choosing a Browser

The browsers are the most important components of an Intranet toolkit. They are generally responsible for easing the use and the scalability of the current information services. These are the general criteria for choosing a browser:

- Performance;
- Multimedia support - native sound or video, plug-ins;
- Language support - HTML and Java;

- Usability - user interface metaphor, online tools, and help facilities;
- Vendor support.

The user should evaluate the browser candidates and the personal needs for Intranet applications to set up the priorities of browsers. Mozilla Firefox (MF) and Internet Explorer (IE) are the two most popular Internet browsers.

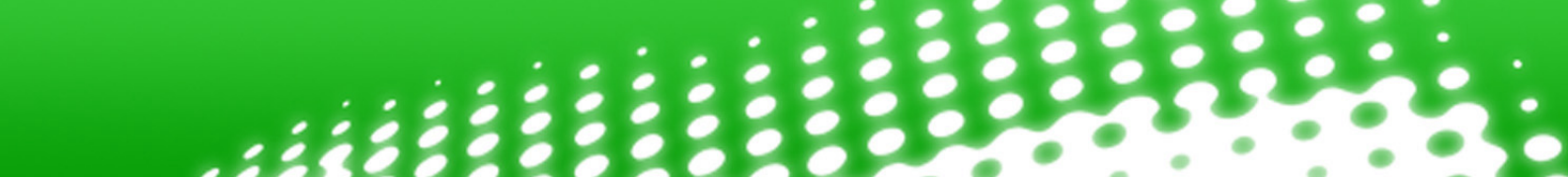
Programming Languages

Programming languages form the bridge that links all of the Intranet technologies and platforms. Programming languages can be used to design software or tools to support various Intranet applications. There are some commonly used programming languages: C#, PHP, Java, scripting languages, JavaScript, VBScript (Visual Basic Scripting Addition).

Developed by Sun Microsystems, Java is an object-oriented, multipurpose, multi-platform development language that can be compiled or interpreted. Its primary

use is to create applets that can be included in Web applications. Applets are fully portable applications that are hardware independent, open operating system tools used in a heterogeneous Intranet environment.

Common Gateway Interface (CGI) scripting is the programming software used to move data. The selection of a scripting language depends on the Intranet design and architecture. Commonly used scripting languages include C, C++, JavaScript, Microsoft VBScript and PERL.



JavaScript is a scripting language used to bind HTML, applets and other Intranet components to each other. It can be used to change images, play different sounds, and elicit responses from a multitude of events.

VBScript is a subset of Microsoft's Visual Basic programming language. It is similar to JavaScript as it creates active online content on Web sites.

PERL is a LINUX/UNIX based language used for scanning information and extracting data. It is a good solution for the LINUX/UNIX based Intranet environment.

The Rise of Extranets

The development of Intranet/Extranet took place in three stages:

The first generation of Intranet applications include:

- Publishing corporate documents,
- Directory service,
- Simple groupware applications,
- Software distribution.

The first generation of Intranet applications have several benefits:

- The ability to unlock information that is not currently available,
- Reduced effort for sharing information,
- Less time and energy spent trying to find and read information,
- Reduced load of the network and server infrastructure,
- Saving printing and distribution costs.

The second-generation Intranets look downward, toward the lower levels of the organization. They take another step and extend down to department- and workgroup-level information sharing inside the organization. The second generation of Intranet development has produced applications that:

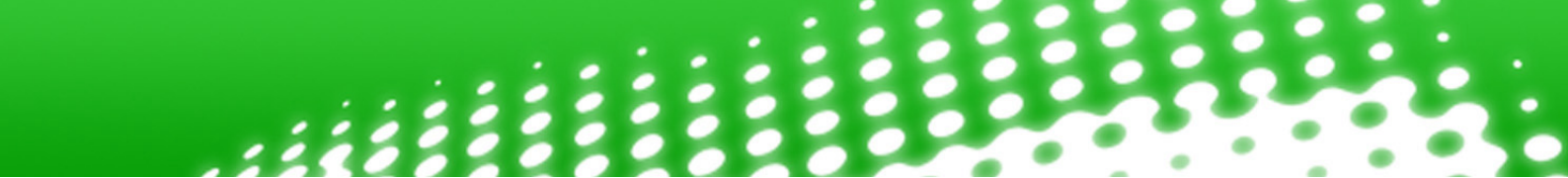
- Share information among members of project teams,
- Share information within departments,
- Share information with other departments.

Instead of looking downward toward lower levels of the organization, *the third generation of Intranet development* looks outward, toward supporting partnerships with suppliers and customers. The Extranet uses many of the techniques of earlier Intranet development, but with the improvements that allow for access to outsiders. Unlike a website, which is open to almost anyone, an Extranet maintains controlled access for visitors.

In addition, an Intranet encourages personal and departmental Web page authoring. However, an Extranet requires some control over the information that is made available, even to authorized outsiders.

An Extranet lends itself to many of the same kinds of applications, similar to an Intranet. The main difference is that the communication is external, as well as internal. Extranets can run a variety of applications, both packaged and custom made. These applications include:

- Order processing,
- Joint projects,
- Communication,
- Customer service and support,
- Electronic mail,
- Full access.



The key components of an Extranet include:

- Universal TCP/IP deployment,
- Web browser,
- Web server,
- Remote access server,
- Client dial-in software,
- Internet connection device,
- Leased-line connection, and
- Firewall security.

A full-service Extranet can be defined as a network that combines the Transmission Control and Internet protocols into the more familiar TCP/CCP (Communication Control Protocol). This network links an organization's employees, customers, suppliers, and other business partners. This is achieved in a way that makes all the parties involved more productive, the information becomes more accessible, and the navigation is also easier, through all the resources and applications the organization made available.

The Degree of Intranet Use within Organizations, Divided by Locations

According to a study made by GVI Center, almost a third (31,13) of users claim the presence of an Intranet within their organization, although 19,43% claimed that the question did not apply to them. European users have a higher rate of using the Intranet (39,46%) than their American peers (30,95%).

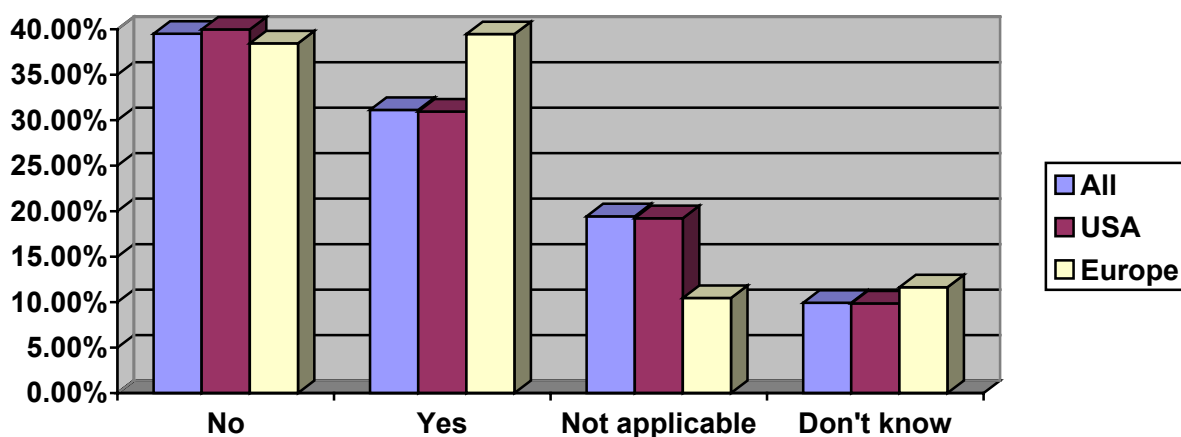


Figure 7 - Use of the Intranet within organizations

	All	USA	Europe
No	39,51%	39,97%	38,45%
Yes	31,13%	30,95%	39,46%
Not applicable	19,43%	19,22%	10,46%
Don't know	9,93%	9,86%	11,64%

Conclusions

As we look at how corporate Intranets have advanced in the last 10 years, we realize that this renaissance can embrace a tangible gain just as its counterpart, the Internet, has.

Organizations not only realize their monetary benefit, but they are paying more attention to their immaterial values as well, such as learning, employee productivity and teamwork.

While the Intranet design is on a much slower evolutionary track than the Internet design, the benefits mentioned above are pushing the industry toward improvement everyday. Whether they're incorporating an online collaboration tool, or building a dynamic component for customer data retrieval, Intranets are evolving to prove their worth.

While the cost of implementing an Intranet varies depending on the person developing the project, the industry agrees that on average Intranet deployment definitely has a higher return on investment and a shorter payback period than a comparable client-server application.

From a software perspective, the web browser is becoming the single window to access corporate informational items, and its incorporation into the current network infrastructure allows for inexpensive integration.

Corporations need to get to know their employees better, and convey that knowledge in order to provide a better and more informative Intranet experience. They should constantly and consistently build on what they have and also plan for a more productive future. Most importantly, they need to understand that while an Intranet can be a valuable asset in promoting different applications of corporate communications, it is the communicators themselves that need to be addressed. As they ensure that the suppliers of corporate content have the tools necessary to promote their information, in response their consumers will always return.

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