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Intranet

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4.1 INTRODUCTION

Libraries of all types began utilizing new application systems to automate resource sharing. Union Catalogs and Inter-Library Loan modules were developed by library software vendors to allow cooperating institutions to combine their catalogs and allow patrons of one library to request and borrow materials from linked institutions.

Today, library collections are used by people on campus as well as by individuals who are not even located on the library's physical facilities. Thus, individuals associated with a given institution and accessing resources from afar need new electronic interface tools.

As the 1980s ended, libraries and computing centers were tackling communications, relational databases, and information distribution challenges.

The presence of the Internet has unquestionably and permanently altered the library environment. It has dramatically altered how libraries interact with one another, how people who manage and use these institutions conduct their business, and how information of all types is managed. The Internet's dominance in electronic communication has arrived in full force and its influence on the operation of libraries has presented the field with an important question: what is next?

The wiring of academic campuses for networking was a prerequisite for accessing local intranet and external Internet database resources. Intranets provided campus connectivity using TCP/IP communication standards. This permitted interconnectivity of computing resources: servers, PC desktops, and terminals. The 1990s saw greater use of campus communication infrastructures and commercial communication systems to create and store information and then to deliver it from libraries to end-users (Randale and Sechrest).

Intranets are internal versions of the Internet. They are a form of private, secure electronic networks that function almost exactly as their larger antecedent. Intranets can
use the Internet to connect remote libraries within an organization, but they can also be strictly internal and run completely on a Local Area Network (LAN).

A major library technology trend is the desire to integrate all library resources and services behind a single Internet presence with personalization features, allowing patrons a customized view into the library. This would allow, for example (Randale and Sechrest):

- A single point of authentication to validate access permissions and enable links to available resources.
- The ability for patrons to design a customized view of their favorite information sources.
- The ability to save searches or hits and develop custom views of resources.
- The ability to automatically re-perform stored searches on a timer and place the results in a private work area for further use.
- The ability to alert the user to new books or articles of interest based on the user’s specific interests.
- The ability to view account information, renew books, check requests, etc.

_These technologies fostered the growth of library consortia and the extension of offerings beyond the organizational boundaries of individual libraries._

### 4.2 INTRANET

Intranet can be better understood if we understand first the computer network. A network is simply an interconnection of one or more computers for the purpose of sharing information and resources (printers, storage devices, and application). Figure 4.1 shows a simple peer-to-peer computer network (a peer-to-peer network is a collection of computers that share information equally, where no one machine is the center of the network). Another type of networks is the Client/Server network (Figure. 4.2), which is a collection of computers (servers) that hold sharable resources and computers (clients) that access these resources from the server.
Some of the benefits of networks are as follow (Jesselton Communications, 1997):

1. **Resource Sharing**

   Networks enable information and resources to be shared within an entire organization. In term of information storage, network server can assume the role of a central storage center where everyone's work is available to anyone else who needs it. Besides, networks enable expensive or unique hardware, such as color printers, fax modem and disk arrays, to be used by numerous people instead of being isolated to one individual.

2. **Central Data Storage and Centralized Backups**

   Networks allow data to be stored centrally on a server or remotely on clients. The central storage of all-important data provides for reliable backups.

3. **Improved Information Control**

   Networks improve the reliability of the control and security of Internal Information. Better information control simply means knowing where your information is, that is the most current and correct version, that is available only to authorized users and restricted from others, and will be there when needed.
4. Application Management

Networks improve the capability to manage the software and applications used by the organization. Being able to regulate the version and types of applications on a network will ensure compatibility for everyone on the system.

5. Network-wide Solution and GroupWare

Networks enable client/server applications to perform functions that was not possible on stand-alone systems, such as group scheduling, centralized help desk and office-wide project management. Many other GroupWare applications allow numerous people use the same program and edit the same data file simultaneously. These applications can improve the speed and accuracy of projects in which more than one person is involved.

Unlike many other aspects of technology, there seems to be little discrepancy in the literature as to what an intranet actually is. Basically, the notion evolved from the realization that the tools developed recently for navigating the World Wide Web lent themselves just as easily to deployment on closed local area networks (LANs) or wide area networks (WANs). It's not that software tools for distribution of information on a LAN or WAN have not existed before, but the web server/browser paradigm is somewhat unique. For instance, electronic publishing is fairly easy using the HTML language and one of the many HTML editors commercially available, distributed multimedia documents are truly cross-platform enabled, and the tools for navigating the Intranet are the same that we are becoming familiar with for personal use at home. Corporations needing a mechanism to distribute and organize information for employees have found that the web server/browser combination is a powerful tool for communication "in house", whether the LAN was connected to the Internet or not. Combine that with the ability to selectively enable communication to and from the Internet as a whole and the tool becomes even more powerful.
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An intranet can be an excellent method for sharing organizational information and creating internal communication channels. An intranet is an ideal way to communicate in a secure environment.

An intranet provides a way to communicate with a common technology. While an intranet allows all kinds of Internet connections, from telnet to FTP to Gopher, it is the Web that is most commonly used on an intranet. The Web and its browsers offer a common interface that is comfortable and well known to most of an intranet's intended users.

Intranets allow organizations to make effective use of their digital organizational information resources, offering interoperability, ease of use, security, and cost-effectiveness (Netscape Communications, 1996).

The simplest form of an Intranet is the inclusion of a web server/browser capability within an existing closed LAN or WAN. Web server software now exists for nearly all hardware/software platforms. Distribution is one of the aspects of an Intranet's usefulness (Randale and Sechrest).

Intranet is:

- A collection of resources to which only internal users have access.
- A private network inside an organization, similar to the Internet, but which is for internal use only, and is not accessible to the public.
- Users of the an Intranet can exchange electronic mail (email), send files (ftp), browse web (WWW) pages, and connect to any other computer. Just like the normal internet, however, only people within an organization can use the intranet.
- Intranets are often separated from the Internet by using a firewall.
- Organizations use Intranets to manage projects, provide employee information, distribute data and information, internal communication.

Intranets help to overcome some of the limitations of existing local and wide area networks LAN's and WAN's). An Intranet is designed to be an enterprise-wide
information system. Any person with a web or Internet browser and access to the network can take part in information management on an Intranet. Intranets are platform neutral and may be operated with legacy systems, existing databases and by departments that use different operating systems. Many application vendors are pouring resources into Web-based products. Thus, Intranet technology can be used to launch most specific application software. Because Intranet technology uses familiar graphical user interfaces with off-the-shelf browser software used by most persons today, the technology is user friendly, and requires little or no training. It is point and click technology.

Intranet Technology Enables Incompatible Information Systems to Work Together. Intranets provide two new ways to bring information to users (Benton):

- a better network to connect users to various computer systems: and
- an improved way to search for and retrieve documents.

Advantages of an Intranet

- Data can be stored centrally
- Allows easier maintenance of data
- Web-based interface for access
  - common technology for communication
- Ability to access from anywhere in the world

4.3 DEFINITION

Definitions of intranets vary, but they seem to converge on several factors.

Zorn describes Intranets as:

An internal corporate networks set up to take advantage of popular Internet communication protocols such as Transmission Control Protocol/Internet Protocol (TCP/IP) and HyperText Transport Protocol (HTTP), and other Internet tools such as web browsers, web servers, and HyperText Markup Language (HTML)(Zorn, 1997).
Griffith describes the Intranet as:

*a network that uses Web software to create an "internal Internet" for an organization, regardless of the organization's size or geographic diversity. The technology can make use of an organization's existing network infrastructure (cabling, workstations, etc.) making it in many instances an extremely low-cost information solution (Griffith, 1996).*

Another definition of similar note is Harrison's description;

*An intranet (is something) which provides a similar range of communication and information services to that on the Internet. An intranet uses the same sort of software tools but operates within a secure and controlled environment (Harrison, 1997).*

The definition below expands on the internal aspect of Intranets and blurs the boundary of their functionality.

*An Intranet uses Internet protocols--TCP/IP-- and Internet tools on an organization's Local Area Network or Wide Area Network (LAN or WAN). The structure uses Web-style pages of information. Users within the organization can post information and can access posted information. Although usually intended for internal use, sometimes the enterprise allows the outside world access to part or all of the Intranet (Flohr, 1997).*

An intranet is composed of a (May, 1996):

*Collection of computers and networks within an organization (it may span the globe), connecting the organization's members and/or employees to a range of computer services, resources, and information. A set of network conventions and common tools are employed to give the appearance of a single large network, even though the computers that are linked together use many different hardware and software platforms.*
Definition as the Cortland library is using intranet technology is:

- A private space on the web that gives library staff the ability to organize information, readily access that information, and enable efficient collaboration.
- Web site that is hosted on a local network and made accessible only to a specific group of users on that local network.
- Works just like normal web pages with HTML, text, graphics and hyperlinks

The optimistic view of an intranet portrays it as a means for leveraging business intelligence and managing digital organizational information resources. A well-designed system can present a single front end allowing access to a range of digital information resources including mission and goal statements, projects, reports, memos, schedules, and budgets. An intranet can be used to "organize each individual's desktop with minimal cost, time and effort to be more productive, more cost efficient, more timely, and more competitive" (Hinrichs, 1997).

It can support collaborative work and can extend the ability to produce and publish information throughout the organization. Intranets can provide information in a way that is "immediate, cost-effective, easy to use, rich in format, versatile, and, secure" (Netscape Communications, 1996).

Intranets are intriguing additions to organizational communication infrastructures because they provide "compelling economics," meaning that there are low per-user implementation and maintenance costs, interoperability, or "access from heterogeneous desktops," and secure access to the information resources in the organization (Open Market, Inc., 1997)

While the above definitions make reference to intranets as corporate networks, it is Griffith (1996) who suggests that an intranet can be perceived as an organization's "virtual library", a notion to which no other authors within the scope of this literature review make reference (Fox, 1997).
Perhaps, Nanfito offers the most concise definition:

Intranets are internal internets utilizing TCP/IP technology and the browsing software of the World Wide Web to bundle information management and corporate communications within one, easily accessible interface... of the web browser (Nanfito, 1996).

4.4 CHARACTERISTICS OF INTRANET

An Intranet is multipurpose, richly networked and integrates text, graphics, sound and video (Bernard, 1996). Intranet supports both structured and unstructured data and accessible using web browser. Since web browser presents data independent of any specific computing platform, intranet enables information exchanges between diverse computing environments within the organization and across functional boundaries.

An intranet shares most of the characteristics of the Internet, but in at least one way, it's fundamentally different. It is mini-Internet designed to be used within the confines of a company, university or organization. What distinguishes an intranet from the freely accessible Internet is that intranets are private. An Intranet is a TCP/IP-based local area network (LAN) that uses a web browser to access various services. Everyone can share files and access online databases.

Intranets offer several facilities that aid knowledge sharing:

- Easy-to-access and use. The use of World Wide Web (WWW) browsers give a low cost and easy-to-use interface to information and applications
- Universal access to information. Information can be kept on any 'server' on the network, and can be accessed from anywhere within the Intranet.
- Person-to-person interaction. Intranets simplify interaction between people in different locations, through electronic mail, and computer conferencing
- Informal networks. Publishing information and making contact is quick and informal on an Intranet.
• Scalable networks. As organizations restructure, it is easy to add or remove servers to the overall network.
• Access to external information and knowledge. Intranets usually have gateways to the external Internet, which give access to a rapidly growing global information resource.

An important point to note is that an Intranet is not just a formalized electronic library at one extreme, nor totally informal publishing on the other. It can convey information in many forms, not just Web pages but documents, tables, spreadsheets and images. It can host applications and databases. Above all, it provides connectivity that allows knowledge workers to collaborate, wherever they are located (Skyrme).

Generations of intranet development have been identified as: publishing information, development of applications and the introduction of group working. Goles and Hirschheim (1997) suggest four "waves" of intranet development:

- Information publishing applications (what most organizations are currently implementing)
- Informal collaboration applications
- Transaction-oriented applications
- Formal collaboration applications

The advantages of the intranet technology:

- Universal viewing with just a browser
- Universal file format with HTML
- Easy to navigate
- Easy access to documents
- Easy editing of Web document
- Information is more searchable and indexable
- Easy gateway to Internet

The benefits of an intranet for users:
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- Instantaneous information sharing
- Improved data access and analysis
- Reducing user downtime (because people do not have to wait for co-workers to "get back to them" with job related information)
- Improved collaboration and communication
- Simplification of paper-based bureaucratic procedures (for a book request, for example).

A well-designed Intranet should make it possible for an organization to gain better access to its primary resource: the knowledge and experience of the individuals who work within it. A well-designed Intranet should be an enabling technology. A well-designed and properly implemented Intranet is a creative and empowering tool for the entire organization that permits any individual to bring the entire resources of the organization to bear on any specific task they undertake and to bring their own resources and expertise to bear upon the general purposes of the organization with greater effect (Net Access Communication Systems). As such, Intranet can unify various computer-based systems in the organization into one rich system with the web browser as a universal interface.

4.5 INTRANET TECHNOLOGY

Intranet as technology enabler brings the resources to the users in a specific domain of interest.

Technology Behind a Library Intranet (Coombs, 2004):

- Way to authenticate users
  - Server Permissions based Authentication
  - Database-based Authentication
  - Firewall
  - IP-based Authentication
  - Some combination of the above
- Database(s) (Access, SQL Server, MySQL)
To deploy an intranet, we need:

- A Web server connected directly or indirectly to your computer network. Your intranet/extranet will reside on this server.
- A high-speed, company-wide computer network so all employees can access the intranet.
- Applications developed with HTML (Hypertext Markup Language), the software authoring language of the World Wide Web.
- Remote access so off-site employees can access the intranet and suppliers and partners can access the extranet.
- Security functions so only authorized users can access the intranet/extranet

A typical intranet network will look like the following (fig. 4.3)(Jesselton Communications, 1997):
4.6 INTRANET FOR LIBRARIES

Intranets (locally based networks with Internet functionality) also present exciting opportunities for librarians as a place to apply skills of gathering, selecting and organizing content. Library intranet sites have the potential to change corporate cultures by providing open access to information and encouraging self-sufficiency in research (Fichter 1999). Intranet sites also provide an excellent opportunity to establish the library's presence on every desktop in the institution.

The merging of Internet and intranet technologies provides today's special librarian with a unique opportunity to explore new dimensions in information management and education. An intranet can be used whenever there are sensitive documents that should be made available to a specific group of librarians, employees, or patrons and is an ideal way to communicate in a secure environment (Notess, 1999).
There are many services a library intranet site can provide to its patrons. One of the simplest is an electronic table of contents (e-TOCs) alerting services for journals that are received in either print or electronic format. E-TOCs can be sent by e-mail to patrons who have signed up for a particular title from the library's holdings. The main benefit of the electronic TOC is the ability to access the article through the use of a hyperlink to the full text either in HTML or portable document format (PDF) format. Another easy Web site addition is in the form of interlibrary loan and document delivery request forms. Not only are the forms easy to produce but they also provide patrons with the specific fields required by library staff to fill the request.

Intranet can act as content space to facilitate information access and retrieval, a communication space to negotiate collective interpretations and shared meanings and a collaboration space to support collaborative work action among libraries.

4.7 INTRANET FOR LIBRARY CONSORTIA

There are many benefits offered through the adoption and use of intranet for library consortia. One of the more significant is the ability of intranets to facilitate centralized acquisition, decentralized processing and decentralized utilization of knowledge resources independent of computing and network environment in which the participating library operate. Despite these benefits, certain challenges commonly arise in the introduction of intranet technology for library consortia. These include primarily the implementation issues, which calls for greater understanding and coordination and cooperation of both library professionals and information technologists.

4.8 COST EFFECTIVENESS OF INTRANET

The Intranet can save money in many different ways. Here are the main areas where we can see cost savings:
• Easier online publishing enterprise-wide means less need for printing, copying, mailroom and delivery costs.

• Single-source web site serves the entire enterprise, which means less need to distribute copies of documents, data, or media. Everyone accesses the same copy. As soon as it is updated, everyone has the latest version.

• The web browser can become a “universal window” on all information; a “universal client” for all applications. Instead of having a separate software package for each type of information, you can now access everything through a single software packages. This cuts down on software purchasing costs, installation, maintenance and training.

• There are many intangible areas where cost saving may be achieved. Using an Intranet makes it much easier for people to find information they need fast. Phone tag and “floppy disk retrieval” is reduced significantly.

Following are some of the reasons that explain how can an Intranet be a cost-effective solution (Jesselton Communications, 1997).

- Similarity between Internet and Intranet- Because of the similarity of the two technologies, it brings a lot of convenience to the users. For examples, users familiar with the Internet will find the tools and software used on Intranet quite familiar.

- Plenty of shareware and freeware available – Standard networks limit the number and type of application and service available to its users. Intranet can gain from any advancement, development, or improvement made by any products that operate over the TCP/IP protocol. There are plenty of third-party software companies that are building all kinds of web-based applications which are free to download or can be acquire with minimum cost.

- Cheaper and easier to build Intranet application in-house – The cost and complexity of building intranet is usually significantly less than other in-house application development efforts. This partly stems from the broad availability of tools and technologies, but also derive from the simple interfaces and quick capabilities that HTML forms-based application can deliver.
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- Required only one interface application — Browser (Netscape Navigator, Internet Explorer or others) - Proprietary networks force users to learn multiple application, each with unique interfaces, proprietary protocols and often difficult-to-master programming techniques. However, Intranet applications often use the same or similar interfaces (a Browser), standardized protocols, and easy-to-master programming techniques.

- Scalability and Unlimited Simultaneous Users — The beauty of Intranet is that, with careful planning, it can start out small and grows as necessary. Size simply isn’t a limitation with Intranet. Besides, technically Intranet does not have any limitation on the number of concurrent users on networks.

- Cross Platform — Proprietary networks are often forced to confine their computing environment to a single computer platform, and sometimes they are limited to specific operating systems and related application. The Intranet’s use of the widely compatible, world protocol standard of TCP/IP enables numerous platforms (UNIX, Mac or PC), operating systems, and application to interact productively on a single network.

- Reduced Distribution Cost — Using Intranet to replace traditional components of internal communication — printed pages, pamphlets, booklets, flyers, and so on, can bring a great saving in stationary, printing and distribution cost.

- Immediately Delivery — Information published by using Intranet solutions literally becomes available instantaneously throughout the entire organization. Once a file is put into place, it can be accessed 24 hours a day, 356 days a year. If equipped with proper hardware and software, remote access via telephone line is also possible.

- Database connectivity — with an appropriate database connector, a developer can create web pages that can interact with a particular database (Oracle, Informix and etc.) by displaying query results, or even by allowing a user to add information to the database. This capability will allow the developer to put a new web interface to old legacy software and give old applications a new lease on life.

- Minimal Client-side training (Easy to learn and use) — By creating Intranet application with a look and feel similar to the web, most people will already have
previously cultivated the skills needed to get the information they need. Thus the
requirement of training is very minimal.

- Distributed Content Responsibility – With the right tools, people from all over the
organization can publish information for their respective interests.

- Increased Internal Communication and Stimulation of creative thinking – When
Intranet technology is used to the full extent of its capabilities, it can lead
employees into entirely new ways of approaching and processing information,
which in turn will bring new assets to the company. An Intranet can greatly
facilitate communication between employees in different departments, branches
and even in different part of the world.

- Cost Effectiveness – Intranet application are surprisingly inexpensive in initial
purchase, training and deployment. Usually they cost far less than most other
communication or workgroup systems and the end result is superb. Moreover, the
Intranet’s platform independence eliminates the need to distribute client software
or create different versions of the same application.

4.9 CONCLUSION

Intranets have many traits that are beneficial to libraries. Intranets save time once they are
implemented into a library environment. Intranets broadcast information to the
organization and provide answers to frequently asked questions. Libraries can reduce the
duplication of employee efforts by posting results of reference searches or programming
resources for all to see and subsequently, make them permanently available. It helps to
reduce clerical duplication and frees up time for the staff to assist the public with their
searches. Improved service is the goal. Cost has been shown to be manageable for most
situations and even large corporate libraries are able to justify their investment through
increased employee response to the Intranet access of the library. Training and
technology are issues that all librarians deal with and the Intranet is nothing new in that
respect.
Sharing is an underlying theme to this medium of document and information delivery. The increased potential for the sharing of information will change the corporate environment through a more open forum of information sharing. Communication between the library and its staff will improve and this can only benefit the work environment and the service that libraries provide.

Policies about the use of the Intranet and the management of it are important to the effectiveness of the investment. Standards are needed not only for the physical infrastructure of setting up and Intranet they are also needed for managing information on the Intranet, how it is organized, and when it is updated. Systems departments may be in charge of the installation and physical maintenance but it is the role of the librarian to manage the resource like any other information-gathering tool. Dissemination and information retrieval are issues that librarians are trained for. Intranets do not operate on their own. They are simply a tool to better service. Mismanagement of this, like any other resource at the librarian's disposal, is a matter of poor judgment. The potential is there and it is simply a matter of harnessing it and making it a part of the library's makeup for better public service.
4.10 REFERENCES


