

# **ROLE, IMPLEMENTATION, AND IMPACT OF INTRANETS IN LIBRARIES & INFORMATION SYSTEMS**

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*This article deals with Intranet based library and information services. Describe how Intranet is influenced to librarians, role, impact of intranet, planning, security, implementation, structure, installation and managing of the Intranet and Intranet based library services.*

## **INTRODUCTION**

Many libraries have gone to develop closed and private internal versions of the Internet called Intranets. These Intranets provide information services within organizations – across a global community in the case of major organizations. 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?

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. The objective here is to assist those librarians who find themselves in the position of not only managing the organization of information and its retrieval, but also in the planning, developing and implementing Intranets in library environments so that information retrieval is effective and efficient. A brief examination of Intranet philosophy and structure will provide a foundation for further discussion on Intranet installation, infrastructure, publishing, and security. There will also be an emphasis on the technical aspects of Intranet architecture and management. It has become apparent to many librarians that Intranets are an

essential tool, not only for its internal users, but also as a means for justifying the profession's existence within any library, especially corporate.

### **HOW WILL INTRANETS INFLUENCE LIBRARIES?**

Libraries are organizations that conduct business like any other institution. There are administrative functions, acquisitions and purchasing transactions, human resource management issues, public service issues, and the training of staff. Those who implement them only limit the list of possibilities. An Intranet is a medium for delivering information to all employees within the organization. Internal web sites allow managers the ability to communicate in an effective and timely manner with their employees. With this easy dissemination of information there is a better expression of future goals, strategies, and vision to the staff.

### **WHY WOULD LIBRARIES BE INTERESTED IN IMPLEMENTING AN INTRANET?**

The idea of an Intranet is a "technology that permits your organization to define itself as a whole entity, a group, a family, where everyone knows their role, and everyone is working on the improvement and health of the organization". The focus on the organizational definition is useful to libraries. If there is a collective will that needs to be communicated to all employees the strategic objectives become easier to achieve. Information and knowledge management become easier job within an organization.

The corporate Intranet provides a tremendous opportunity for librarians to deliver comprehensive information services. It is now practical to extend enterprise-wide desktop access to the library collections as well as to corporate knowledge as recorded in business-critical documents such as policies and procedures, competitive intelligence, research reports, and quality documentation.

The size of an organization also has much to do with the implementation of an Intranet. Many large corporate libraries and academic libraries use an Intranet to facilitate better information services. The sheer size of some corporations span borders and have populations in excess of 75,000 employees. Dissemination of information in this kind of environment is truly enormous for the corporate librarian. Achieving the goal of access to all users in these examples demands a strong reasoning for implementation.

Many corporations, because of their global nature, require a global approach information management. Organizations also demand local content development. The means to spreading that local endeavor requires some communication medium and the Intranet is one such tool.

A number of organizations use the Internet to integrate document management and full-text retrieval technology with traditional services and principles of library management to improve productivity and reduce costs. Just as corporations use the Intranet to facilitate better communication and functionality libraries also use Intranets to reduce overlapping of processes and increase efficiency in their objectives.

New incident reports are retrieved into an editing form that allows us to change the item's status to "open", assign it to a particular technician, document the resolution of the problem and fill out statistical information about how long the problem was "open" and how much time was spent working on it. When the incident report is completed, its status is changed to "closed" and it remains in the database.

Any recurring problems would then be logged and a technician would submit a technical note that would explain the problem and its solution; an Intranet FAQ for systems problems. In this case the Helpdesk Web site not only provided "knowledge base" and "incident report" databases, it also included a directory of library staff, emergency contact information for technical support, information about the role of technology in the library's strategic plan and information about ongoing technology related projects. Thus, the role of an Intranet within an organization, whether it be private or public, is to not only manage the library more efficiently, but also to better facilitate the functions of the library.

Libraries are in the business of providing information in all its various formats. Intranets facilitate this function of location and retrieval by making it available electronically and if unavailable electronically, then speeding up the process of *Inter Library Loan* or *Document Delivery*. However, the ease in which an Intranet is created and the power it enables organizations to easily and inexpensively share information there is a price, and that price is the problem of organizing the information so that its intended audience can benefit. "The challenge

of the Intranet for librarians is the opportunity to continue to do what we've always done – take a leadership role in the management of information in the new age".

Intranets represent a new platform for remaking some of the core functions of libraries; including acquisitions and processing, cataloguing, inventory control, public relations communication, and public service. If an Intranet was fully exploited within a library a transformation would take place in the organizational structure of the library itself; the library's hierarchy would tend to be flatter; a constant dynamic structure would be evident; and the recognition of the library's intellect and knowledge base amongst its employees would be seen. An issue of special interest to those who work in the corporate environment is the inclusion of the librarian in the design, delivery, and management of the Intranet.

## **INTRANET**

An Intranet is the internal network that uses the internet standards of HTML, HTTP and TCP/IP communications protocol along with a geographical web browser to support various applications and provide departmental, interdepartmental, and countrywide communication solutions. Intranet is a network of networks which lets the use of the technology of the Internet within an organization while the Internet connects the users all over the world, the Intranet is specifically meant for a particular organization wherein the information related to the organization is made available in an interactive manner for the exclusive use of their staff. For this purpose one centralized server is placed and all the clients can access the server, can have any information they need and can utilize the facilities available in the Intranet.

An Intranet can do a lot for any organization. In fact, the potentials for an Intranet is limited only by the imaginations of the people in the organization who build, grow, and use it. From a broad perspective, though, everything an Intranet can do can be explained under two simple categories: The Intranet allows employees to use information technology they are using in their daily lives, and it provides all the benefits of any new technology.

- An Intranet can bring into an organization the same kinds of communication and information systems that employees use daily outside of their jobs. That is, the Intranet can accommodate the expectations people increasingly have about how they get and use information.
- An Intranet can do what any technology can do to solve problems, improve processes, and open the door to new possibilities that the technology enables.

## **LIBRARY INTRANET**

Library Intranet is a combination of two technologies: The first is an area network — one that is confined to a library or libraries versus the whole world. The second is the ease of use found in the Internet and predominately in the World Wide Web. A few years ago, the Library Internet, which had been in existence for decades, came to the forefront of many minds. Suddenly, the number of library users on it exponentially doubled every few month. Coupled with this came the invention of graphical browsers — front ends that allowed a library user to avoid the command line and easily find what they sought by following a graphical route. Links lead a user from one location, or set of information, to another in an easy to follow pattern.

## **INTRANET VS INTERNET**

Any definitions of *Intranet* begin with the necessity of Internet. The *Internet* is that network of networks, which connects people and computers worldwide. Most users' contact points for the Internet are E-mail and World Wide Web. While the difference between the two can be confusing, it is essential that we understand the difference to plan a successful Intranet. One must be clear on the purpose and function of each and also know when the two can safely overlap. Creating an Intranet and creating an Internet presence for any require different focuses. Because the whole world can access company's Internet site, it must be seen as a marketing tool, a way to let the people know the companies' products and services. An Intranet, on the other hand, is linked to the company's internal ideas and goals. The Internet site presents the company's external face to the world while the Intranet contains the core of its being. Creating the Internet site has more to do with look and feel; data and the flow of internal information are the dominant forces on an Intranet site.

Really the differences between an Intranet and the Internet are question of semantics and of scale. Both use the same techniques and tools, the same networking protocols, and the same server products. Internet content is by definition available worldwide. Mostly companies are not let allowed their data for outside consumption; indeed, some data, such as sales figures, client and legal correspondence, should be protected very carefully. From the scale point of view, the Internet is global while an Intranet is contained within a small group, department or organization. At the extreme is an Intranet that is global, but still retains the private nature of a smaller Intranet.

The Internet and the web are famous, and rightly so, for being a chaotic jumble of useful irrelevant information; the meteoric rise in popularity of web sites devoted to indexes and to search engines is a measure of the need for an organized approach. An Intranet harnesses the usefulness of the Internet and the web in a controlled, secure environment.

### **INTRANETS BASED LIBRARY & INFORMATION SERVICE**

There are many services a library Intranet provides to its patrons. One of the simplest is electronic tables of contents (e-TOCs) alerting services for the journals that are received in either print or electronic format. E-TOCs can be sent by email 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 PDF.

Another easy web site addition is in the form of inter library 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.

WebOPAC (Web-based online public access catalogs), particularly sophisticated systems which offer serial, cataloging, circulation, and acquisition modules not only assist patrons in locating library materials, but they also aid the library staff in tracking these materials. Serial claiming reports, pouting slips, circulation and patron statistics are just a few of the benefits that these systems offer. When shared by multiple libraries, these systems provide shared cataloging and acquisitions by providing a means of "copy catalog" resources already owned by another branch.

Many libraries also offer some type of subject guides to electronic information for their patrons in the form of lists of related materials. Another way to promote better Internet usage is to provide pathfinders of electronic resources for subjects, which would normally have a printed pathfinder.

Many libraries accept and reply to queries by email providing answers in 2-3 business days to remote and local users who have filled out the online form. But some libraries provide something of a live chat style interface to correspond directly with patrons through third party products such as ICQ and AOL instant messenger. "Ask a librarian" or instant messaging services provide answers to patrons in real time during regular business hours. This service is particularly useful for remote users and distance education students, but also allows other users to get an answer without having to come into the library. Depending on the size of the institution, it may be necessary to use several librarians to field all the questions, but most importantly, the service is easily implemented using existing technology.

Likewise, technological developments are quickly changing the way libraries catalog information. The addition of the MARC 856 field allows libraries to add multiple URLs (Universal Resource Locators) to catalog records providing access to electronic resources directly from the WebPAC. The current practice of forcing the patron to first search out a title on an OPAC and next check several lists to see if the library holds the material electronically is becoming archaic. Even if libraries don't use the 856 fields, they are likely to require some manner of keeping track of electronic serial holdings, particularly if the number of electronic subscriptions is in the tens of thousands.

The most promising solution for libraries is the database-driven Web site. The potential lies in the database fields, which can be manipulated by libraries to provide the types of information that patrons often use in their searches, not to mention the fields needed by the library staff. FileMaker Pro and MS Access 2000 both support Web database publishing, but true dynamic content is created through server-side processing. The logic of a good database design combined

with an application server's linking of its various components for displaying the information make the database-driven site more accurate and timely, not to mention far easier to manage.

## **INTERNET AND MY EXPERIENCES**

Intranet based services are providing by various organizations like IMT Ghaziabad, ICRA, NIFT and NCAER, New Delhi. All above organizations have very rich collection of print and non-print reading materials well connect with Intranet and Internet technology and using LibSys Library automation software.

### **Institute of Management Technology (IMT), Ghaziabad**

- CD-ROM database search
- Online borrower status
- Online reservation and request
- Online search various databases
- OPAC facility in campus,

### **ICRA, New Delhi**

- Online Access of full text rating reports
- CD-ROM database search
- Current Awareness Services : New Arrivals
- Online request, reservation and borrower status
- Online access of various national and international electronic databases
- Web OPAC/ OPAC facility

### **National Institute of Fashion Technology (NIFT), New Delhi**

- CD-ROM database search
- Digitalization of fashion resources like costume, handicrafts ...etc.
- Online borrower status
- Online reservation and request
- Online search electronic databases
- OPAC facility in NIFT Campus

### **National Council of Applied Economic Research (NCAER), New Delhi**

- CASE (Current Awareness Services in Economics): A monthly update on Business, Economics, Policy News and Articles appeared in leading News Papers
- CD-ROM database search, Online access of subject databases
- Current Awareness Services: New arrivals of books, reports, and working papers.
- Current Content Services: A weekly article update of Indian economic literature.
- OPAC facilities, Online request, reservation and borrower status

### **PLANNING AND IMPLEMENTATION OF INTRANETS**

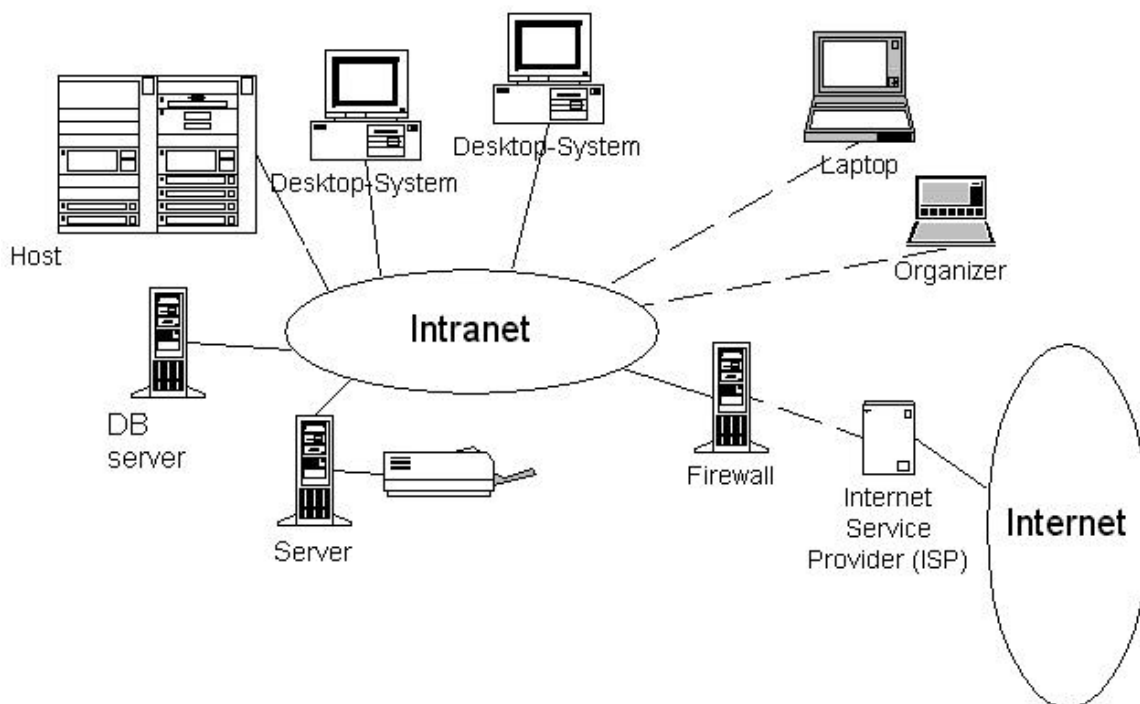
**Structure:** A network is made up of several parts. Standards determine the specifications by which networks physically and logically operate. Architectures determine the fashion in which computers communicate with each other and can be either "peer to peer", or "client/server". Networks can have a certain topology, again physical or logical. Physical topology describes how the computers connect to each other physically. Included as part of the physical topology is the would be the cables, connectors, Network Interface Cards, and other connecting devices. Logical topology describes how packets pass between network computers, or how information passes from node A to node B.

Networks also have a variety of access methods or logical topologies, but the most common is carrier-sensing multiple access with collision detection (CSMA/CD) which was one standard established by the Institute for Electrical and Electronics Engineers (IEEE). The standard is known as Ethernet and it has a variety of speeds and cable types that determine the classifications.

Networks also need connecting devices to allow the cables to connect between the nodes and other networks. These devices can be repeaters, bridges, routers, gateways, hubs, Ethernet switches, and Asynchronous Transfer Mode (ATM) switches and all have issues of security performance related with them.

Operating systems are also an important part to the structure of a network. There are the network operating systems (NOS), which run on the server computer, and there are the computer operating systems (OS), which run on the client computers and the server computers. Many NOS are dependent on the kind of computer OS in order to work (example: Novell NetWare must be loaded onto a machine with a PC OS.)

The final characteristic of the network environment and the term, which encompasses most of the network's investment, is hardware. Hardware is the computers that make up the network and include all the items, which provide the means to communication; Client and Server. Client is a machine that has the ability to provide input to the network and is able to do computing on its own. Client often refers to personal computers (PCs). Server is a centralized depository for a specific function and often the server is named after the function that it performs. All servers have one common characteristic: they all perform a centralized service for the network that they occupy. Together these two aspects of the network make up what is referred to as client/server architecture and it is often in these sorts of network environments that Intranets are found. Intranets are simply the use of network technology infrastructure to perform the private communication needs of an organization. Intranets simply incorporate the architecture and standards of the network to facilitate their existence. A basic intranet is shown in the figure:



**Security:** For an Intranet whether it will be connected to Internet or not there is a need to establish policies and procedures that will protect against the intrusions and internal disturbances. Internal security problems are the most common. The common threats to Intranet are external threats, internal threats, threats to hardware, threats to software, threats to information and threats from virus etc. To overcome these threats the need is to define security goals such as:

- Look at exactly what to protect – network hardware, software, confidential data, and network operations.
- Look at whom to protect it from – current users, previous employees, and outsiders trying to break into the system.
- Look at what is needed to protect it from – fire, smoke, floods, extremes of temperature and humidity, power outages, earthquakes, and theft.
- Implement measures that will protect assets in a way that organization can afford.

The evolution of many Intranets is the antithesis of strategic. Intranet servers have a way of popping up that is strikingly similar to the growth of the World Wide Web-uncontrolled, unplanned, and unrestricted.

Intranets are a business asset, and like any other of the organization's assets, they need to stand up to business scrutiny. Is the Intranet providing a return on the investment? What kind of return? How is it measured? Remember too that the organization is going to continue to have a technology budget, so it is not accurate to calculate an Intranet budget as though it is an either/or scenario.

**Installation:** The actual installation and implementation is a matter of executing the plan. We can build Intranet in testable section, making sure each one functions according to the expectations before continuing with the installation. For example, we may install one server and then create some pages and make sure they work together before adding other components. Network provider may dictate the order of installation, but it typically follows a sequence such as:

- Set up the server and client hardware.

- Make sure the combination works stand-alone.
- Install the network cards and cables and connect them.
- Install the system software on the server and test it
- Bring up the applications and test them all.

The order of implementation is practically the reverse of the order of planning and design. Implementation starts with the lowest level components of Intranet and then other layers on that foundation, testing each successive layer to make sure it works too, is very important. Hardware & Software installation: If the plan is good and the Intranet implementation team is reasonably sure about network layout then cables can be run at the same time when the workstations and servers are setting. Make sure that the cables need first for system testing is installed early enough. If the network design is unsure in any way – for example whether it will have adequate performance – run only enough cables to perform a test string more cables when the network design is sure.

Set up the servers following the instructions provided by the server and network software vendor. Connect all the peripherals identified in the server worksheet and make sure the minimum requirement for memory and disk storage are met. Clients should be set up the same way in most cases, test if clients are functioning as stand alone PCs.

Next the system software should be installed on the servers and clients configured as the documentation and worksheets suggest. The worksheets should greatly assist the Intranet implementation team in the areas that might otherwise require a lot of guesswork, such as allocating server storage to volumes or directories, making different network resources such as printers available to end users and setting up system security.

Cable the server and clients together and set the protocols then start testing the system the documentation probably suggests some simple tests to make sure the basics are functioning before start trying the applications. After checking all is functioning well we can start loading and testing the applications.

**Diagnosing Problems:** If all does not go well, consult the network documentation of error messages. Building and testing Intranet in small pieces should help to locate the point at which things stopped working, like most the system problem solving, half the battle is isolating the problem to a small part of the system, then fixing the faulty part or replacing it with a good part. A network has many parts, possibly strung out across a large area, and can be formidable to debug some techniques for isolating problems are as follows:

- Make sure every workstation and server works alone, outside of the network environment.
- Test network connection cards with loop back plugs, if they are available or hardware diagnostic software.
- Test cables for short circuits with an ohmmeter. There should be no direct connection between the network cable conductors. Short circuits may be induced by a kink or pinch in the wire.
- Test applications software on local disk drives and printers if possible.

Try to narrow down the number of system components whose working status is unknown. Do this by swapping in components known to work. Consider using this technique with server and clients PCs, network connection cards, cables and even application packages that use the same or similar server resources as the suspect application. It may be difficult to swap a cable strung through the wall or ceiling, so if suspect it is bad, try moving the workstation or server to another location with a known good connection on the network and see if it works there. If it does, suspicions about the cable should be heightened.

**Managing the Intranet:** Every network needs a manager who is responsible after the installation. If the network is fairly static in the application it runs and its configuration of workstations and servers, it may be enough to assign a non technical user who can handle daily backups of the servers, answer questions about the applications, and assign new user accounts as needed. A consultant can be called in when network management needs go beyond these simple ones.

If network environment is dynamic (new applications are frequently brought up, new clients and servers added, security requirements undergo change, and the like), it may need an experienced

person in-house or a consultant on call. Many management tasks can be handled by someone who is not a computer expert but who has received the proper training on the network.

## **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. Therefore, librarians should take up the leadership role of Intranet implementation and become involved in the planning and policy development of this important resource.

Sharing is an underlying theme to this medium of document and information delivery. The organization that accepts the Intranet as part of the organization's philosophy will achieve results from Intranet implementation. However, if the employee does not make use of the Intranet then its potential will have been wasted. 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. Librarians must take an active role in the promotion of the Intranet and assume a proactive approach because 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, it is simply a matter of harnessing it and making it a part of the library's makeup for better public service.

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