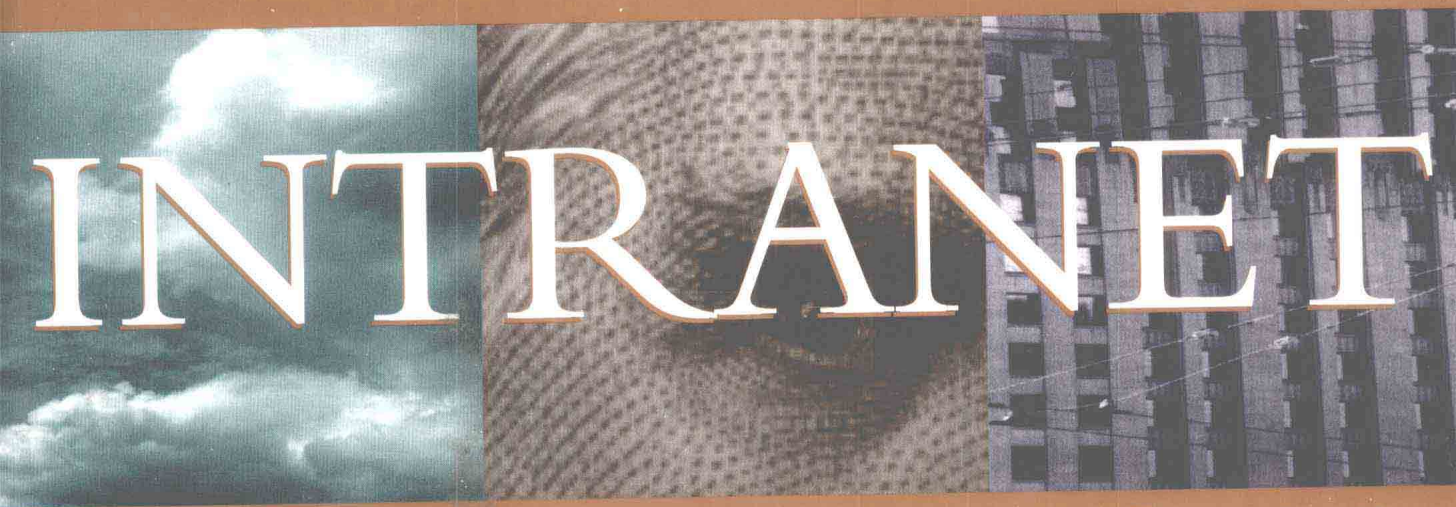
THE

CORPORATE INTRANET



Create and Manage an Internal Web for Your Organization

- Establish an In-House Web Network Using Your Current Equipment
- Use Web Technology to Improve Corporate Communication
- Foster Information Sharing Within an Organization
- Plan for the Coming Web Revolution Behind the Firewall

RYAN BERNARD

the corporate intranet

Create and Manage an Internal Web for Your Organization

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preface

This book is like an open letter to the managers and employees of any organization in the world. Over the last 20 years, I have worked with many different companies and have seen—especially in the last decade—a great drive to continuously cut costs and improve productivity. Systems have been reengineered *en masse* and organization charts have been streamlined to a fare-thee-well. And yet, despite this tremendous effort, we are still facing many of the same problems that we did 10 or 20 years ago: how to communicate and manage the vast streams of data and information created daily by millions of office workers, manufacturing facilities, design teams, dealers, sales reps, customers, and suppliers worldwide.

It's amazing sometimes, despite the unending improvements in our technology, how little has really changed. When you walk down the hall of any modern corporation, you can still hear the *pop* of the three-ring binder echoing against the walls. Then you turn the corner and immediately stumble across a more recent development: the perpetually gorged recycling bin, where thousands of pages of unwanted information have finally come home to roost.

Despite massive investments in office automation over the years, and persistent dreams of the "paperless office," corporations continue to devour trees at an incredible rate. And, of course, any paper-based information delivery process is something straight out of the Victorian age.

The three-ring binder is only a small part of the problem, but it is a prominent symbol of what we're fighting against. Another part of the problem is that traditional corporate information systems deal with only a small part of the data processed by the typical business. If we want to automate the rest of the process, we will have to make room for the extra traffic in our systems and make it easier for people to use computers for these purposes. In many ways, it will mean making our data networks as open and easy to use as the in-house phone system.

As it happens, recent developments have conspired to put these goals within reach. Over the past 20 years, I have personally seen many technologies come and go, from the keypunch card, to the dedicated word processor, to the CD-ROM drive. More recently, technological solutions like electronic data interchange (EDI) and groupware have helped put a dent in the paper glut. But none of them quite matches the potential of what I will be calling

here "web technology" or "the Intranet" to streamline the information flow, democratize our internal networks, and help free us from the oppressive burden of paper we generate everyday.

In late 1994, when I first started circulating the draft proposal for this book, web technology was not a practical way to deliver large volumes of information online. In the early systems, you had to code the information by hand using a text editor, the same way we once used word processor codes to change fonts or start new paragraphs. The early web servers were plain vanilla: They just sat there and served files. Early browser tools like Mosaic were severely limited: You couldn't do tables, centering, or special positioning of inline graphics—the kind of thing that's second nature for any run-of-the-mill word processor. WYSIWYG authoring, of course, was out of the question. And if you wanted to do advanced applications, such as database access, you had to hire a programmer with expertise in an arcane mechanism called the Common Gateway Interface (CGI).

There were other impediments as well to acceptance of this new technology. Until very recently, many large organizations still had not integrated their individual LANs into wide area networks, so that users could communicate and share files across the enterprise. Others were only starting to reach the point where desktop computers were widely available in their organizations—and well understood. It wasn't that long ago we were still explaining *simple* things to people, like how to use windows and a mouse.

What a difference a year or two can make. Most of the tools mentioned in this book were conceived, developed, and brought to market within the past year. Whereas the web was until recently only a question mark in many peoples' minds, now it's a thriving development environment. And, since many organizations already have the infrastructure in place to make an internal web practical, it's clear that the time for this technology has finally arrived.

A Personal Epiphany

Like many people who've been captivated by the Intranet, I can still remember where I was and what I was doing the first time I laid eyes on Mosaic. I had been asked by one of my clients, a large international services firm, to help develop a way to share information and documentation between various workgroups. The idea was that by sharing information, they might more easily standardize their work methods and avoid many of the integration problems involved in merging the efforts of different groups.

We started planning the project in late 1993 and early 1994, at a time when Mosaic was still practically unknown and groupware like Lotus Notes

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was just beginning to penetrate the market. To put all the information online, we decided to use FrameViewer, a tool we had already used successfully before for other online publishing projects. The idea was to create a "toolkit browser" that the company's in-house software developers could use to view programmer documentation, specifications, and other information online.

I already had an approved design for the browser format worked out and ready to go when some colleagues pulled me into an office one day and asked me to take a look at "this new Mosaic thing." It was one of those hot summer days in Houston and traffic was oozing through the morbid humidity on Westheimer Street 700 feet below. They had sitting on the desk a Sun SPARC 10 running the old Alpha version of NCSA Mosaic for X Windows, with a direct connection to the Internet through the company firewall. Of course, I was amazed as we proceeded to surf the World Wide Web (WWW), browsing through documents located on computers as far away as Chicago, Silicon Valley, and Geneva, Switzerland.

What amazed me was not the *content* of the Web—it was mighty slim pickings then, compared to now—but the *concept*. Here was a browser that would let users not only view information online, but do it transparently across a network. Instead of having to maintain copies of the material at various sites and have users log in to get it, we could serve it from a single node and have *any employee access it automatically worldwide* through the company's internal wide area network. Not only that, but in addition to publishing documents we could also publish interactive forms and actually capture feedback or data from the users. Most importantly, we wouldn't be limited to a certain file type: We could use this tool to provide users with any type of computer object or resource, including not only documents but programming tools, libraries, and software—even sound, video, or live data. And we could serve it to browsers located on any platform: PC, Mac or UNIX.

It all sounded too good to be true. Certainly there had to be a catch. What would happen, for instance, if we didn't want just *anybody* to have access to the information? Suppose we wanted to limit it? No problem, we could password-protect just about anything. Suppose we still wanted to use a publishing tool like FrameMaker to create the content? No problem, there were conversion tools that could automatically generate the web content from our FrameMaker documents using a single batch command.

Needless to say, I was sold on the idea. We immediately threw out the FrameViewer design—lock, stock, and barrel, as they say—and adopted the web as our platform of choice. It's been nearly two years since that first web experiment, but we've had no regrets about our decision, and we never looked back.

Who Needs This Book

You will find this book most useful if your job description fits one of the following profiles:

- *Managers/department heads.* Web technology works best in an environment where upper-level managers clearly understand the technologies and issues involved. This includes not just information technology (IT) managers, but department and division heads who may end up blindsided not only by the power of the technology, but also by how large these systems can grow and how fast they can become unmanageable. If you are a manager, this book will help you understand the value of the technology and the key management issues involved. If you are not a manager, but are involved in a haphazardly planned or controlled internal web system, please make sure someone upstairs sees this book.
- *Communicators.* Nearly everyone in the business world fits this description, since we all have something to communicate with others. However, this technology will be extremely helpful to those who regularly provide information or services to the rest of the organization, or those who would like to. In particular, those involved in corporate communications, marketing communications, or technical communications may find the Intranet an ideal way to distribute information to employees, customers, distributors, or suppliers.
- *Data guardians.* Those who manage large databases or data warehouses may find the Intranet an ideal way to get more mileage out of the data by serving it to a wider audience of employees, customers, or suppliers. This book describes both the database publishing aspects and the security angles.
- *Work groups.* An Intranet is an ideal way for work groups and teams to publicize their efforts within an organization. In particular, teams using client-server groupware applications like Lotus Notes may find in this technology an intriguing alternative.
- *Systems analysts, developers.* A web interface may be the best way to cut down on the work involved in developing graphical user interfaces (GUIs) for client-server applications. In particular, you will learn how the Intranet allows developers to create a single point of access for a wide variety of applications, and how you can

roll out self-documenting applications online without much of the effort previously required in introducing a new system.

- *Corporate trainers and seminar leaders.* Peoples' understanding of Intranet technology is clouded by their confusion over the Internet. Most companies will see a necessary period of adjustment similar to what happened shortly after the introduction of Windows 3.1 and other mouse-and-window interfaces. To help ease people into the new Intranet technologies, this book may provide an excellent background text.
- *Re-engineering teams.* Teams dedicated to the task of improving or re-engineering internal processes may find that web technology provides an excellent way to streamline and eliminate many of the costs associated with paper-based information delivery systems.

Where Web Technology Fits

Web technology is not the best solution for every problem, but it's always amazing to see so many companies using it in the various ways they do. In particular, the technology is a natural fit for companies where the following conditions exist:

- *Internal network running TCP/IP.* Web technology is designed for use in a networked environment containing desktop computers, whether they are Macs, UNIX workstations, or PCs (and especially if the network supports a mixture of these operating systems). Web technology is device-independent and works well in a cross-platform environment. The main requirement is that the network support TCP/IP communications. This is not as uncommon as it may sound. Even if your network runs Netware, SNA, or any of the other widespread protocols, it may already have a TCP/IP overlay on it, especially if there are UNIX machines being used as servers anywhere on the network. The best way to find out is to check with the closest network administrator, examine your networking configuration or look for programs running on your local machine with names that include words like TCP or Winsock.
- *Dispersed but connected work groups.* You can use web technology productively for the benefit of individual work groups as small as a dozen people working in the same suite of offices. But it's most use-

ful for improving communications between widely separated work groups—especially those that operate on separate but interconnected LANs or WANs spread across an office building, a campus, or around the globe. The key word here, however, is *connectivity.* Web technology will not work in parts of the network that are isolated and not addressable through TCP/IP. Later chapters will explain how this works.

- *High ratio of desktop computers.* Since it is completely online, this technology is of course best used in organizations with a high ratio of computers to employees. To a certain extent, you can work around this by using kiosks in work areas (such as a dedicated or shared web client at the packing station in a warehouse). The user base should be familiar with use of a mouse, but few other skills are needed with a well-designed interface.

What's in This Book

In case you haven't figured it out yet, let me clarify. This book is emphatically *not* about the Internet or the World Wide Web per se—although you will see them mentioned many times herein. (If you've been to the bookstore lately, you know there are already far too many books on those subjects, anyway.)

Instead, it is intended to show anyone with a little technical savvy how to apply *the same technologies* used on the Internet and WWW to the typical business enterprise LAN, WAN, or Internet gateway. Why? To help you automate and streamline the flow of documents, data, and other mission-critical information in ways they've never been streamlined before. And to share important business data with *all* the people who are vital to the success of your business; not just customers but also employees, dealers, and suppliers. This *includes* the idea of using the technology on the Internet, but it is by no means limited to that use alone.

To avoid the familiar traps—and provide a fresh viewpoint on the subject—this book takes the position that the Intranet is perhaps the highest and greatest use of web technology. The idea comes rather late to the publishing world, which has had its attention riveted by the Internet. At a time when up to 70 percent of all Internet products sold were being used for Intranet, exactly 0 percent of the books were dedicated to the concept. That is an imbalance it is time to correct. Typical books on the Internet and the World Wide Web are of little help when it comes to understanding or designing Intranets. In fact, the ground rules change considerably when you apply this technology internally

versus externally, which is why few of the traditional Internet providers and Web design houses get involved in Intranet work. And because of these differences, internal webs require a completely different approach to the technology, as you will see.

As an added fillip, this book tries to take a holistic approach to the concept of communication within an enterprise. Too often, people take a simplistic approach to technology that looks at the individual limbs without seeing the whole tree. What they end up with is a system that is harder to use and maintain than it should be. For instance, we are already beyond the point where people should have to learn something obscure like Hypertext Markup Language (HTML) to be able to publish web documents, just as no one has to code raw PostScript these days to get a nice-looking printout. We are also near the point where we will no longer need programmers to connect web systems to external applications like databases.

The other challenge is to take a balanced approach to the use of web technology. Organizations that have rushed onto the World Wide Web while ignoring internal applications suffer from a sort of myopia induced by all the Internet hype. Suddenly, they've found a way to provide their customers with in-depth information online, but somehow ignore the fact they could use the same technologies to benefit their employees, dealers, and suppliers. This book will help restore balance by offering an integrated business model that gives proper weight to both the internal and external uses of a web.

Even for organizations that have started their own Intranets already, there is still a sort of myopia involved. The people who are entrusted with web development, while usually the most technically savvy, aren't always the best communicators. We must never forget that data is information, and information requires communication—especially in a web environment where we can now apply desktop publishing techniques on-the-fly and present even the rawest, ugliest data in a pleasing document-like dinner coat. So even if you are one of those technosavvy webheads, this book can help you learn how to communicate your data more clearly to end users.

Although many people already understand HTML and how to create web documents, they may not fully understand the new approaches to document creation and management this will make possible. Many people instinctively want to apply old paradigms without rethinking the requirements of the new medium. Once we start taking our documents online, the way we structure them will inevitably change to match the unique capabilities of the new publishing medium. Because webs and the entire Intranet environment make it possible to present some information *exclusively* online, we also need to take a look at how that will change the whole way we go about creating, present-

ing, storing, and retrieving the information. This book explores the idea that documents could become more like data—and data more like documents—so that eventually there may be a merger between the two.

Finally, many people who dabble in web technology still don't understand the full power available for delivering high-value information resources. Consequently, this book has several chapters devoted to the concept of advanced content delivery, including database, multimedia applications, and more. And it makes the assumption that—to get full use out of Intranet technology—you really need to understand how it compares to and interacts with other computing technologies, such as mainframe-centric, groupware, and client-server.

This book was written to address all these concerns in ways that nearly anyone with a little computer savvy should be able to understand. There's something here for everyone, including writers and communicators, trainers, system developers, designers, network administrators, and managers of every hue and stripe. That's because the web itself covers all these disciplines and more. And everyone—management especially—can benefit from a complete overview of both the science and the art involved in creating an internal web.

A Quick Tour

Chapter 1, "What Every Business Can Learn from the Internet," explains how the Internet model applies to business and gives a first glimpse of the concepts involved in the Intranet.

Chapter 2, "A New Kind of Information System," explains the developments in technology that have made Intranets feasible for the enterprise and discusses how it may change the way we all do business in the future.

Chapter 3, "The Birth of the Information Center," explains how any department in an organization can use a web server to create its own "information center."

Chapter 4, "The Corporate Intranet in Practice," provides examples of how companies like DEC, Chevron, Sun, and Nortel are already using web technology for internal applications.

Chapter 5, "Toward the Paperless Office," explains how to use an internal web as a publishing medium, including how to create web documents and bring large publishing groups online.

Chapter 6, "Harnessing the New Media," covers the issues and concepts of delivering multimedia over an internal web.

Chapter 7, "Serving Data and Applications," explains how the internal web can be used to serve information from databases and other client-server applications.

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Chapter 8, "Interfacing with the Internet," explains the relation between an internal web system (the Intranet) and an external one delivered over the Internet.

Chapter 9, "Managing the Web Explosion," explains how to manage the inevitable growth that will occur as your first Intranet applications evolve into large-scale web systems.

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