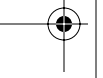
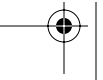
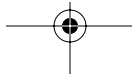
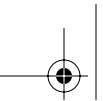


# SECTION 1

## Accessibility and Why It Matters







# 1

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## Introduction

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### WHAT IS WEB ACCESSIBILITY?

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*Maximum Accessibility* is a book about how to make the World Wide Web accessible to everyone, including people with disabilities, and why it's important to do that. Let's begin with an operational definition of *accessibility*. Web sites are accessible when individuals with disabilities can access and use them as effectively as people who don't have disabilities.

That's the definition used in Section 508 of the Rehabilitation Act of 1973, as amended by Congress in 1998.<sup>1</sup> This law, usually referred to simply as Section 508, mandates that, as of June 21, 2001, all electronic and information technology used, procured, developed, or maintained by agencies and departments of the U.S. government must be accessible to people with disabilities. This includes approximately

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1. See <http://www.section508.gov/index.cfm?FuseAction=Content&ID=14>, accessed May 8, 2002.

120,000 federal employees who have disabilities. That's a lot of people, but it's just a tiny fraction of the more than 54 million Americans with disabilities who might one day want or need access to those technologies and the information they produce. Included among the 54 million Americans with disabilities are nearly 6 million children—children who can learn and grow to make significant contributions to the vitality of our society [Bureau of the Census 1997].

## Accessibility Guidelines and Standards

### The Web Content Accessibility Guidelines 1.0

When we talk about accessibility guidelines and standards, we're referring primarily to the Web Content Accessibility Guidelines 1.0, or WCAG (pronounced *WuhKAG*), and to the federal government's Section 508 Internet and Intranet Accessibility Standards.

The World Wide Web Consortium (W3C) published WCAG 1.0 as a formal Recommendation on May 5, 1999, just over two years after launching the Web Accessibility Initiative (WAI) in April 1997. WCAG 1.0 is one element in a comprehensive accessibility strategy; other WAI recommendations address the authoring tools used to create Web content and the user agents that display that material. In fact, the WAI's first product was a major revision of Hypertext Markup Language (HTML) itself (the W3C is responsible for HTML and related specifications). Replacing HTML 3.2 in December 1997, HTML 4.0 introduced many important changes designed specifically to enhance accessibility for people with disabilities. With the publication of WCAG 1.0 five months later, the WAI had for the first time produced a set of accessibility guidelines for the Web that represented a

broad, international consensus among industry representatives, academic researchers, and members of the disability community. This impressive accomplishment was a result of the W3C's rigorous consensus-building process, which we'll describe in Chapter 3.

### Section 508

As we'll also explain in more detail in Chapter 3, WCAG 1.0 has become the basis for accessibility standards adopted by the international community. In the United States, a 1998 law called the Workforce Investment Act, which included a major overhaul of Section 508 of the Rehabilitation Act (originally passed in 1973), charged the U.S. Access Board with the task of producing accessibility standards for all electronic and information technologies used, produced, purchased, or maintained by the federal government. WCAG 1.0 provided a solid foundation for the work of the panels set up by the Access Board: the Section 508 Internet and Intranet Accessibility Standards that went into effect on June 21, 2001, exactly six months after being published by the Access Board, are very close to WCAG 1.0's Priority 1 checkpoints.

In our view, WCAG 1.0 is both broader and deeper than the Section 508 standards for Web accessibility. WCAG 1.0 includes a total of 65 checkpoints. These are arranged under 14 separate guidelines and then further organized into 3 priority levels. By contrast, Section 508 includes 16 standards for Web accessibility; there are no separate checkpoints, and there is just one priority level: required. That is, Section 508 compliance requires that all the standards that apply to a given Web resource must be met.

We'll be discussing WCAG 1.0 and Section 508 in detail throughout this book. The complete text of WCAG 1.0 is available

from the WAI at <http://www.w3.org/tr/wcag10/>. Also available on this site are checkpoints and an extensive techniques document. The WAI Web site at <http://www.w3.org/wai> also offers links to training materials and a great deal of other information related to Web accessibility. Information about Section 508, including the Internet and Intranet Accessibility Standards and a wealth of other information about Section 508 and how it applies, is available at <http://www.section508.gov>.

### Beyond Compliance

The WCAG Working Group produced a checklist to accompany WCAG 1.0 when it was published in May 1999. A number of other organizations have produced comparable checklists for the Section 508 standards as well. These checklists are extremely convenient, but it would be a serious mistake to conclude that accessibility is just a matter of checking off items on a list. It's much more than that—and a lot more *interesting*, too. Accessibility goes beyond compliance with the requirements of Section 508 or WCAG 1.0. It's possible to produce Web resources that conform to WCAG 1.0's Priority 1 checkpoints and comply with Section 508's standards for Web accessibility but *still* don't make sense to people with disabilities—or anyone else, for that matter. Which raises a question: If accessibility isn't compliance with the guidelines and standards, what is it?

Answers to this question can have different starting points, depending on whether you're talking about the way individuals with disabilities use the Web or about the way designers and developers set up Web sites. We'll begin with the user's perspective because that's where it all comes to a head.

## Accessibility Is an Aspect of the User Experience

An important thing to notice about the definition of accessibility with which we began is that it's user-centered, not document-centered. In other words, it defines accessibility as an aspect or quality of the individual user's *experience* of the Web site, not a property of the document itself. This has important implications for Web designers and developers: it means that the job is to produce the *experience* of accessibility. That makes it important to have a better understanding of how people with disabilities experience the Web now. Then we'll be in a better position to think of ways to use accessibility guidelines and standards as resources for improving the Web experience, not just a bunch of rules we have to follow.

An analogy with going to see a play or a movie might be helpful here. The experience of going to the theater isn't just about the script (the text of the play). It's not just about the stage set, either, nor about the actors, the director, the producer, the stagehands. The play lives in the way audience members experience the *interplay* of all these things and more (the theater building, the crowd in the lobby, the memories of previous experiences).

## Accessibility Is Environmental

In other words, experience doesn't happen in a vacuum. The Web experience isn't just about the particular site you happen to be visiting at the moment. The Web experience, too, lives in the interplay of many elements. There's the Web site, the browser (such as Internet Explorer or Netscape Navigator), the computer hardware, the operating system, and more—including, of course, *you*: your memories and expectations, the mood you're in, the room where you're working, what's

going on around you, the other sites you've been to before you reached the one you're looking at now, your body.

For people with disabilities, assistive technologies such as screen readers, talking browsers, refreshable Braille displays, voice recognition, and other alternative input devices are often a key part of the mix. And so is frustration and the memory of having been frustrated before, as site after site turned out to be inaccessible and unusable, in whole or in part.

## THE SCALE OF THE PROBLEM

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How big a problem is accessibility on the Web? A report called *Beyond ALT Text*, published late in 2001 by Kara Pernice Coyne and her colleague, usability expert Jakob Nielsen, gives us a way to begin measuring the dimensions of the accessibility barrier.

The purpose of the Section 508 accessibility standards and the WCAG 1.0 is to establish parity between the experiences that people with and without disabilities have when they use Web-based resources. *Beyond ALT Text* gives us, for the first time, a measure of how great the *disparity* between these two groups is.

According to Coyne and Nielsen [2001, p. 3], users with disabilities were about *three times less likely to succeed* than users without disabilities in carrying out such routine Web tasks as searching for information and making purchases.

That's a *huge* discrepancy—and it's not as though the control group of users without disabilities did all that well, either. The control group succeeded 78.2 percent of the time, as against about 26 percent for the users with disabilities [p. 4]. Twenty-six percent is



just plain embarrassing. But the figures for people using screen readers and screen magnifiers are even worse: 12.5 percent and 21.4 percent, respectively [p. 4]. Coyne and Nielsen are careful to point out that these figures do not reflect incompetence or inexperience on the users' part: test participants who were blind had been using computers and assistive technology for more than three years [p. 127], and many of them were employed as knowledge workers [p. 124]. But even 78 percent is only a C+! Nothing to write home happily about. And 78 percent is high, say Coyne and Nielsen—typically, usability studies find that the success rate is between 40 and 60 percent. That's an F. The good news is that there's really no place to go but up.

No one *means* for it to be like that—we've never met anyone who deliberately set out to make a Web site that would be inaccessible to 50 million people (except for training purposes). But it happens just the same, not just once or twice but many times. Great Web experiences don't happen often enough for anyone, but for people with disabilities, great Web experiences are downright rare.

## ACCESSIBILITY FROM THE DEVELOPER'S POINT OF VIEW: YOU CAN MAKE A DIFFERENCE

You *can* make a real difference in the way people with disabilities experience the Web by designing and building *your* sites so that people with disabilities can access and use them as effectively as people without disabilities. And if you're someone who has responsibility for seeing to it that Web sites get built for your organization, you can make sure the people who will be building the sites for you

understand that accessibility—not just compliance—is a high-priority requirement.

## Accessibility Guidelines and Standards Are Resources for Design

When we said that accessibility goes beyond compliance we didn't mean that the standards don't matter or that it isn't important to follow the guidelines. But we *did* mean to say that compliance in and of itself isn't the point. The point is maximum accessibility. Accessibility is defined in terms of the user's experience, that is, his or her ability to access and use the site and its resources as effectively as someone without a disability.

That's where the guidelines and standards come in. WCAG 1.0 and the Section 508 standards are means to achieving that end. They're tools you can use to do your part in creating a significantly better Web experience for people with disabilities—and *all* the people who visit your site or use the resources you provide. With that in mind, we'll be talking extensively about guidelines and standards throughout this book to help you add them to your creative repertoire.

## Good Design Is Accessible Design

Whether you're a Web developer or someone who manages Web developers, we want to persuade you that *good design is accessible design*. No responsible Web designer, in 2002, would create a Web site knowing that African-Americans, Mexican-Americans, Asian-Americans, or members of any other ethnic or racial group would be unable to use it simply because of their racial or ethnic heritage. It should be

equally unthinkable to create Web sites that people with disabilities can't use simply because of their disabilities. It's not enough for a site to be visually appealing. The visual should work in concert with other senses, too. The site should appeal to the ear *and* the eye and allow for economy and ease of movement.

Accessibility doesn't just happen. On the contrary: what you get when accessibility isn't factored into the design equation is a site that's at least partly or maybe completely inaccessible. That's why so many existing sites will have to be retrofitted, often at considerable expense.

This book will show you that there are lots of things you can do to retrofit an existing Web site for accessibility, just as there are lots of things architects and engineers can do to retrofit a building with wheelchair ramps and wider doorways. Thousands of sites will be retrofitted over the next few years. That will make a big difference in the way many people with disabilities experience the Web. But the best experiences will happen as developers who share our belief that *good design is accessible design* make maximum accessibility a design goal from the beginning of every project.

## OVERVIEW OF MAXIMUM ACCESSIBILITY

### Why Are So Many Sites Inaccessible?

We believe there are two main reasons why so many Web sites are inaccessible. First, most Web developers don't have disabilities themselves, and they may not know anyone who has a disability (or maybe they do but don't realize it). So they may not fully understand how their design decisions and implementation techniques affect people with disabilities. Second, even if Web developers are aware of the

problem and committed to fixing it, they may not know how to go about it. We hear the same questions again and again: *Where should we start? What do we do?*

We've written this book to answer those questions. We'll try to tackle both sides of the accessibility challenge, to help readers understand why accessibility is so important and what to do about it. We've divided the book into two sections.

### Section 1: Accessibility and Why It Matters

Section 1 lays out the multiple dimensions of accessibility. We'll talk about accessibility and disability in law and international policy. We'll talk about the role of community organizations in raising awareness and providing efficient, cost-effective training to prepare people with disabilities for meaningful participation in the life and work of our society, and we'll talk about the contributions that people with disabilities have made. We'll provide the information you need to build the business case for integrating accessibility into your organization's Web development policies and practices.

**USER EXPERIENCE NARRATIVES.** Our user experience chapters (Chapters 2, 5, 7, and 8) offer a unique perspective on accessibility. We've provided detailed narratives about the accessibility barriers we encountered when we visited actual Web sites. You can do more than look at screen shots in these chapters—you can read verbatim transcripts of what people who use screen readers hear on these same pages. We'll also go “behind the scenes” to look at the source code, in order to learn about the HTML that produced the experiences we're describing. This will be new to some readers. The powerful Web-authoring tools now on the market allow Web developers to create visually rich, highly in-

teractive sites without writing a single line of HTML code. But because most authoring tools don't automatically support accessible content—as they would if they conformed to the Authoring Tool Accessibility Guidelines 1.0 (ATAG), published by the WAI in February 2000—there will be times when it's necessary to edit HTML source code in order to meet your accessibility goals. In the user experience chapters, you'll have a chance to see what incorrect code looks like. In these chapters, we'll also talk about how the accessibility guidelines and standards apply to the sites we visit, so you'll be able to understand more clearly what to do in your own work—and what to avoid.

Another unique feature of our user experience narratives: they're written to be accessible to people who can't see the screen shots. We've tried to provide enough descriptive detail so that readers who are blind or visually impaired still get a good sense of what's happening on the Web pages we discuss.

The sites we visit aren't obscure ones. They're large sites for the most part, representing large, well-known organizations that have devoted substantial resources to their Web presence—organizations with the means to make their sites accessible if they choose to do so. The problems we describe are typical of the problems people with disabilities encounter on the Web every day. The problems are typical in two ways: (1) they cause real frustration, and (2) most of them could easily have been avoided if the developers had known what to do. That brings us to Section 2.

## Section 2: Strategies and Techniques for Maximum Accessibility

In Section 2 we'll tell you about things you can do to create a more accessible Web experience for your users. We'll tell you about the tools

and resources that are available to you, and we'll show you specific techniques that enhance accessibility. You'll learn how to write effective text equivalents for everything from small images to complex image maps, charts, and graphs—even works of art. You'll learn how to create Web-based forms that are as accessible to people using screen readers and talking browsers as they are to people who can point and click, and how to design tables so that the data make sense whether you're looking at the page or listening to it. We'll explain how to use Microsoft Word and Adobe Acrobat to create simple PDF documents that are accessible to people using screen readers. You'll learn how multimedia can be an important tool for enhancing accessibility. You'll also learn what to do about scripts, applets, and plug-ins to ensure that all your users can take advantage of your site's interactivity. We'll provide advice for developers of sites that depend heavily on scripting languages to generate complex pages on demand. And we'll show you how to use Cascading Style Sheets to bring out the structural elements of your designs while enhancing their readability and visual appeal.

In each case, you'll learn how accessibility guidelines and standards apply to different situations—and how you can turn those guidelines and standards into resources for creative problem solving.

### **Beyond the Standards, Beyond the Tools: The Human Element**

Something to remember as you use the resources in this book is that, while we will introduce you to some great tools and techniques that will help you make your work more accessible, and even the means to check the accessibility of that work, in the end it all comes down to *people*, the human element that can't be overlooked. People with dis-

abilities who use the Web can be your best source of accessibility testing—as well as loyal customers and great employees. We hope you will learn to incorporate their experiences as you test the usability of your work.

Human review can help ensure clarity of language and ease of navigation. Invite people with disabilities to review your documents. Expert and novice users with disabilities can provide valuable feedback about the barriers they encounter and the things that work well for them. That feedback will help you improve your site for all users. Hearing and seeing and feeling your Web site through the ears and eyes and hands of people with disabilities can be a surprising and sobering experience—it gives new meaning to the tired old cliché that you can't judge a book by looking at the cover, as we'll see in Chapter 2 when we visit a well-known e-commerce site. But the fact that it can be so difficult to predict what a site will *sound* like from the way it looks is exactly why it's so important to get input from people who have disabilities.

