Accessibility Features of this Booklet

This booklet includes the following accessibility features and formats which may be downloaded from the Reed Elsevier Accessibility Resources Site under the “Booklet” area

https://reworld.reedelsevier.com/Accessibility

• Narrated/Audio book file
• Tagged PDF version - which allows screen reader compatibility and the ability to enlarge font size
• ePub version - which allows to be used with book reader devices like the Apple iPad
• Microsoft Word version
• Survey to allow user feedback on this and future accessibility booklets

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2010

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Accessibility Matters

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Accessibility and Responsible Publishing

Reed Elsevier takes its role as a responsible corporation seriously. Our company believes that a for-profit corporation can and should have a meaningful social purpose as well. For this reason, we regularly evaluate our performance beyond financial results, and seek out opportunities to leverage our unique expertise to benefit communities around the world.

One initiative that is particularly indicative of such belief is our work on expanding accessibility. As the world’s leading publisher, we feel it is important to account for the fact that disabilities can prevent individuals from accessing content through traditional means and to think about mechanisms for facilitating specialized access on behalf of such individuals. A concrete example of this mentality is Elsevier’s Global Books Digital Archive. In it, files are uploaded in a format that is compatible with speech-to-text technologies, enabling access to content for students with dyslexia or visual impairments.

While giving priority to accessibility is an important way to be socially responsible, it can potentially lead to business opportunities as well. Facilitating access opens up valuable sales channels to organizations that share our commitment. The federal government in the United States is one such example. In addition, our work in this regard gives us a competitive edge when promoting our publishing capabilities to groups like scholarly societies that desire to make their journals available on accessible platforms.

I am proud to work at a company that recognizes the dual-importance of financial gains and societal gains. Initiatives like those related to accessibility can be established from the top down by senior management, but I have found that the most productive efforts are often discovered and championed by those closest to the customers. For this reason, our extensive non-financial success is clearly a testament to the quality and talent of our people. I am certain that Reed Elsevier will maintain its steadfast commitment to such laudable work and I look forward to reinforcing our support for the communities we serve far into the future.

Y.S. Chi
Vice Chairman and CEO S&T, Elsevier
Director, Reed Elsevier Management Committee

Accessibility is Key to Corporate Responsibility

Accessibility is important to Reed Elsevier. So important, it is a publicly stated corporate responsibility objective tracked by our CEO-led Corporate Responsibility Forum.

The Reed Elsevier Code of Ethics and the Reed Elsevier Diversity Statement make clear our obligation to advance access for all, regardless of background or physical ability. We recognise we can increase our revenue, strengthen our corporate reputation, and drive innovation by ensuring our world-leading products and services – in science, legal, risk and business – are available to the widest possible audiences, including customers with disabilities.

The Reed Elsevier Accessibility Working Group is a key resource for colleagues across the business. They share best practice and develop useful tools to increase the accessibility of our sites. Their efforts have been recognized by the first-ever JISC TechDis Publisher Lookup Award for Accessible Publishing in 2010. The judges cited their dedication to “changing and adapting their business processes to meet their customers’ accessibility needs.” This year the Working Group conducted a review of our Reed Elsevier corporate site and we will be implementing a number of their suggestions. Accessibility must begin at the top of our company, improving access for all stakeholders.

Accessibility is an essential strand of our commitment to universal sustainable access to information. It complements other measures we undertake to broaden access including providing free information for researchers in the developing world through programs like Research4Life and the International Law Book Facility.

Accessibility is an ongoing objective and there is much we can do. It is a business prerogative but as a large, multinational business, it is also a responsibility.

Dr. Márcia Balisciano
Director, Corporate Responsibility
Reed Elsevier
FOREWORD

Accessibility is Strategic for Elsevier

There are commercial, ethical, and legal reasons that Elsevier is committed to increase accessibility for people with print disabilities. By a person with a print disability we mean any reader who is blind, whose vision cannot be improved sufficiently by the use of corrective lenses, who is unable to hold or manipulate a publication, who is unable to focus or move the eyes, or who is dyslexic.

Roughly 10% of people in the developed world, and 15% of people in developing countries, have a print disability. Traditionally, this population has been served by libraries and so increasingly we are asked to support our library customers in supporting them to fulfil their obligations to library patrons with reading disabilities. Increasingly this requirement is written into our licence agreements with libraries and library consortia. We are also seeing the emergence of a direct market for the sale of accessible products to people with print disabilities as they campaign for access to the ‘same work, at the same time, at the same price’.

Many publishers, and notably Elsevier, have been active in the area of accessibility since well before the 2007 UN Convention on the Rights of Persons with Disabilities. There is a growing understanding of how publications can be modified to make them more accessible. This understanding is the direct result of a series of practical projects undertaken in partnership between stakeholders including publishers, trade associations, authors, charities, libraries, and technology experts. Together we can make a dramatic difference in the quality of life of people with print disabilities.

Modest investments to audit and improve the accessibility of all our products and services is good business. Modifications for readers with print disabilities tend to improve the experience of sighted readers too. And a commitment to accessibility is a sign of good corporate social responsibility and can generate very positive press coverage for our company. Testimony to this is the recent positive press coverage when Elsevier won the first Publisher Lookup Accessibility award.

Dr. Alicia Wise
Director Universal Sustainable Research Access
Elsevier

Note from the Editor in Chief

When I first learned about accessibility it just seemed at the time a minor part of web product design and something that you do to “cross your t’s” for a few blind persons who use those “screen reader thingies”. As I learned more about accessibility my misconceptions faded and I became intrigued and compelled by all of the side benefits of accessible design. I learned that you can implement accessibility very cheaply which improves overall usability, search engine optimization, and promotes best practice in software engineering. I was sold on Accessibility!

As we look towards the future every form of information, product, and service is going online. The web is a shining “opportunity mall” for persons with disabilities, opening up new avenues for self expression, shopping, news, entertainment, and employment. We as a publisher of Scientific, Legal, Business, and News information have an obligation to open up our wonderful products and services to everyone. When it comes down to it having a web site or product that is usable by everyone is a CIVIL RIGHT and in some cases it is the LAW.

Even with the advancement of assistive technology and a perfectly accessible site, there are still barriers that counter the idea of being an independent person with a disability. For instance, many colleges require 5 or more steps before a student with a disability can receive an electronic text book. One challenge for us as a publisher is balancing the ease in which our content may be used by the widest array of individuals while respecting the copyright restrictions that are core to protecting our business.

The aim of Accessibility Matters is multifaceted, but in a nutshell, the booklet should be educational, interesting, and should speak to how accessibility affects the different aspects of our businesses. It is my hope that once our organization understands accessibility as business-critical and interesting topic that it will compel others to contribute. It is my pleasure to welcome you to the first Reed Elsevier accessibility booklet, Accessibility Matters!

Edward (Ted) Gies
Editor in Chief, Accessibility Matters
Chair, Accessibility Working Group
Sr. User Experience Specialist
Elsevier User Centered Design
What is Web Accessibility?

Web Accessibility refers to the ability of the universal population (everyone) to be able to access the features and content of a website. Web accessibility does not specifically deal with how many days your site is up and running, affordability, or how easily someone can get to your site from a remote location, which are different concepts.

Accessibility Viewed as a Civil Right

When the web first came about no one knew the astounding affects it would have on our culture, communication, and society as a whole. All of the sudden everyone with a proper internet connection and computer could have equal access to information, new opportunities to shop, and new and interesting ways to communicate. Just as everyone should have equal access to vote, equal access to public accommodations such as hotels and businesses, everyone should be able to use a website and read its content. Therefore we can view accessibility as a civil right.

Who In Our Company Owns Accessibility?

The answer is everyone! We all should own accessibility. Accessibility is a relevant concern to just about everyone in the eProduct development groups as well as to Sales, Strategy, and Corporate Responsibility. The table below provides a flavor for how our company deals with accessibility at various levels of the organization.

If everyone owns accessibility, where do you fall?

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Provide support for accessibility initiatives; champion the idea of accessible products.</td>
<td>Incorporate accessibility into early product requirements. Ensure that we have advertised our product accessibility using “info sites”.</td>
<td>Work with UX/UCD to provide product accessibility documentation to customers during sales process.</td>
<td>Understand workflow of end users with disabilities and design around user needs. Design accessible web products. Code according to UI specification, web standards, and guidelines. Ensure UI specifications are followed and proper markup is delivered.</td>
<td>Set and track yearly accessibility objectives as part of our CR Customer Oriented Objectives.</td>
<td>Provide College Disability Services Offices with electronic book files. Ensure that eBook and PDF files are marked up to be usable with screen readers. Publish journals and books in topics of disability, accessibility.</td>
<td>Ensure that disabled customers’ issues are communicated to the right channels. Provide customer support and training for users with assistive technology.</td>
</tr>
</tbody>
</table>
The Text Equivalent

One of the most important fundamental concepts in web accessibility is the idea that information needs to be conveyed in textual form to be accessible for folks who use assistive technology. In fact, the first rule of the W3C Web Content Accessibility Guidelines is that web pages must: “Provide text alternatives for any non-text content so that it can be changed into other forms people need, such as large print, braille, speech, symbols or simpler language.” Problems then occur when important information is not perceivable because it is embedded in a rigid format such as in a graphical image, scanned PDF, Flash Movie, or other non-textual representation.

Good Accessibility Benefits Everyone

In the physical world, we see example of accessibility all over the public space. The idea that hotels are required by law to have rooms that are equipped and usable by people with wheelchairs is one good example of accessibility. Such rooms might have wider entrance doors and handlebars for toilets and showers.

What is great about accessible facilities is that it makes the space more usable for everyone! Take for example wheelchair entrances to museums. Not only does this feature allow the museum to be usable by a person with a wheelchair, but it also means that someone with a baby stroller, rolling luggage, or crutches can more easily gain entrance to the facility.

Just as a long flight of stairs would be a barrier to someone in a wheelchair or with a sprained ankle, there are barriers in the Web world that pose challenges to people with impairments, whether it be a disability, injury, or lack of a good internet connection.

In the web, good accessibility also helps everyone. The added benefits of web accessibility include (but are not limited to): cross-browser compatibility, usability, search engine optimization, and page loading times.

The Page Title Example

You probably never think about the importance of something as mundane sounding as having a descriptive page title, (&lt;Title&gt; in HTML), but the idea that such an easy to implement feature could have huge payoffs may pique your interest. In fact, having a good, descriptive page title has many usability and search engine optimization payoffs in addition to enhancing Accessibility. If you are listening to a page using a screen reader, how do you know if you arrived at the News page for instance? Do you survey the content and determine this or do you know this immediately unless the screen reader announces that you are on the “News Page”? Titles are especially important if you are not familiar with the structure of a site and need feedback about your current location.

As far as usability goes, good page titles offer easier Tabbed browsing, easier bookmarking, easier search history, better printing, and better Google search results. As far as search engine optimization, Google will index your pages better in the sea of results if you have a good, specific page title for all your content pages.

Accessibility
A good page title orients screen reader users to the intended web page.

Usability
A good page title also helps to identify pages in “tabbed” browsing, bookmarking, search history, and search results.

Search Engine Optimization
A good page title helps identify the right destination page for Google search Results.
Prevalence of Disabilities

One common misconception about persons with disabilities is that they are small in numbers. More specifically, within our business there is a misconception that there are no disabled scientists, doctors, and lawyers, for example. The data below was collected from reputable sources and depicts the prevalence of different disability types.

**WORLDWIDE:**

10% An estimated 650 million people (about 10%) live with disabilities around the world (WHO)

**OUR USERS:**

7% Percentage of lawyers with some type of disability. (27,280 individuals) (ABA).

7% Percentage of employed people with either a Science & Engineering degree or in a Science & Engineering occupation in 2006. (NSF).

2% Percentage of Science & Engineering doctorates awarded to U.S. citizens and permanent residents in 2007. (NSF).

3% Percentage of non-Science & Engineering doctorates awarded to U.S. citizens and permanent residents in 2007. (NSF).

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### PREVALENCE OF DISABILITY

*All percentages are based upon U.S. statistics*

- **Near/Farsightedness:** 35%
- **Hearing Loss:** 11.7%
- **Color Blindness (Men):** 8%
- **Color Blindness (Women):** 0.5%
- **Cognitive, Mental & Learning:** 7%
- **Blindness:** 3.6%
- **Dexterity:** 3.1%
- **Speech:** 0.8%
- **Deafness:** 0.3%

---

### A CROSS-SECTION OF DISABILITY PREVALENCE FROM A RECENT FORRESTER STUDY

*Excerpted from Research Study commissioned by Microsoft Corporation and Conducted by Forrester Research, Inc., in 2003*

- **Speech:** 4%
- **Cognitive:** 20%
- **Hearing:** 21%
- **Dexterity:** 24%
- **Visual:** 27%
# Types of Disability & Impact On Using Computers

<table>
<thead>
<tr>
<th>Disability</th>
<th>Assistive Technology</th>
<th>Impact On Using Websites/Computer</th>
<th>Problematic Areas of Websites</th>
<th>Accessible Website Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Vision</td>
<td>Monocular Screen magnification</td>
<td>Experience a small lens or limited picture of a screen</td>
<td>Poor text contrast</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Screen reader</td>
<td>Experience a website in 1 dimension, serially and through auditory sense</td>
<td>Graphical text</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Application of own style sheet (e.g. high contrast)</td>
<td>Experience a website in 1 dimension, serially and through auditory sense</td>
<td>Multi-column text</td>
<td></td>
</tr>
<tr>
<td>Low Vision</td>
<td>Screen reader</td>
<td>Experience a website in 1 dimension, serially and through auditory sense</td>
<td>Improper style sheets</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Refreshable Braille display</td>
<td>The mouse is irrelevant, use keyboard only</td>
<td>Frames</td>
<td></td>
</tr>
<tr>
<td>Blindness</td>
<td>Braille stickers</td>
<td>Information in graphical only form is not useful</td>
<td>CAPTCHAs</td>
<td></td>
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<tr>
<td></td>
<td>Tactile embossers</td>
<td>Will not be able to experience content conveyed in audio only</td>
<td>PDF only content</td>
<td></td>
</tr>
<tr>
<td>Hearing Impairment</td>
<td>Hearing aids</td>
<td>Will not be able to experience content conveyed in audio only</td>
<td>Flash only content</td>
<td></td>
</tr>
<tr>
<td>Dexterity, e.g. MS, Essential Tremor, Arm Cast</td>
<td>Mouse adapter</td>
<td>Difficulty using a mouse</td>
<td>Menus requiring a mouse</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Accessible keyboard</td>
<td>Difficulty with dynamic menus and small links</td>
<td>Odd or illogical tab order</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Voice recognition</td>
<td>Difficulty using a mouse</td>
<td>Content available only in audio.</td>
<td></td>
</tr>
<tr>
<td>Severe Physical Limitation, e.g. Paraplegia, Quadriplegia, M.S.</td>
<td>Sip and puff</td>
<td>Difficulty using a mouse</td>
<td>Small links and buttons</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mouth pick</td>
<td>Difficulty using a mouse</td>
<td>Menus that only work with a mouse</td>
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<tr>
<td></td>
<td>Voice recognition</td>
<td>Difficulty using a mouse</td>
<td>Odd or illogical tab order</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Screen reader</td>
<td>Difficulty using a mouse</td>
<td>Pages with too many links</td>
<td></td>
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<tr>
<td></td>
<td>Application of own style sheet</td>
<td>Difficulty using a mouse</td>
<td>Menus that only work with a mouse</td>
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<tr>
<td></td>
<td></td>
<td>Difficulty using a mouse</td>
<td>Unforgiving or error-prone forms</td>
<td></td>
</tr>
<tr>
<td>Cognitive, e.g. Dyslexia, Learning Disability</td>
<td>Screen reader</td>
<td>Long passages of text can be problematic</td>
<td>Long passages of text</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reading and typing may become very tiring</td>
<td>Poorly designed navigation and page structure</td>
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<tr>
<td></td>
<td></td>
<td>Long passages of text can be problematic</td>
<td>Embedded font styles</td>
<td></td>
</tr>
</tbody>
</table>

## Accessibility Concepts

- Proper use of style sheets
- Within site text enlargement
- Text equivalents for buttons and images
- Skip navigation links
- Video content in a format accessible to the visually impaired
- Text transcripts
- Captioning or subtitle tracks synchronized to audio
- Sign-language overlays
- Text transcripts

## Problematic Areas of Websites

- Small links and buttons
- Menus that only work with a mouse
- Odd or illogical tab order
- Pages with too many links
- Menus that only work with a mouse
- Unforgiving or error-prone forms
- Long passages of text
- Poorly designed navigation and page structure
- Embedded font styles
- Logical visual groupings, e.g. headings, bulleted lists
- Chunked or pages of content
- Site maps
- Separate style sheets
Screen Readers

THE BASICS

If you are privy to any conversations about accessibility, inevitably the term Screen Reader will come up. Screen readers fall under the label of “assistive technology” and are used by people with vision impairments and cognitive impairments to access the computer and websites. The important thing to know about screen readers is they read aloud the text on a web page, almost like a “laundry list”.

Because users of screen readers have a 1-D serialized view of a web page, they miss the visual clues such as groups of graphical tabs, visual clusters of related links, blocks of text, and the overall layout of a screen design. Sites that do not take accessibility in mind will result in some major pain points experienced by screen reader users.

Users with screen readers employ the following strategies to more efficiently use a web page:

- Viewing a summary of all links within a page
- Using the find command, e.g. Ctrl + F on “News”
- Listing all headings on page and jumping from heading to heading
- Using keyboard shortcuts such as: “Where is the cursor?” and “Move to the next form”

Sites with poor accessibility can make the auditory screen reader experience particularly painful for users, including:

- Difficulty in understanding the structure and content of a web page
- Difficulty in orienting themselves to how a site is organized
- Painfully tabbing through every link on the page to find what they are looking for
- Tediously listening to every single line of text on a web page to find what they are looking for
- Links that would require the use of a mouse
- Difficulty with non-textual content such as heavy use of images, flash, or scanned PDFs

Did you know?

It is common for a person with blindness to listen to their screen reader at a rate of over 400 words per minute, and for most people this is too fast to comprehend!

Did you know?

That “screen readers” do not actually read what is on the visible screen? A screen reader will actually interpret the HTML web page code and then convert this to a spoken version. Therefore a screen reader is more like its own web browser versus something that “reads” the “screen”.

Google to a Sighted Person

Google as Interpreted by a Screen Reader
Webaim Survey of Screen Reader Users

In October 2009, WEBAIM reported the results of their second survey of screen reader users. 665 users of screen reader responded, 90% of which reported using a screen reader due to disability. Excerpted below are some of the more interesting findings.

- Most problematic items on the web are CAPTCHA (28%), Flash (22%), ambiguous links, poor/missing alternative text, complex forms, and poor keyboard accessibility.

- Headings are the primary mechanism (50.8% of respondents) for finding information within a page. This compares to using the find feature (22.9%), reading through links (16.1%), and reading through the whole page (10.1%).

- 71% use a screen reader with some version of Internet Explorer (correlates to large number of JAWS users).

- 62.6% say it is somewhat unlikely or very unlikely for Flash content to be accessible to them.

- 53% of respondents with disabilities use a screen reader on a mobile device.

- 49% of respondents commonly use more than one screen reader. 23% use more than two.

- 29.4% use screen reader together with a Braille device.

- The majority of respondents found blogs, Facebook, Twitter, MySpace, and YouTube to be accessible and most reported LinkedIn as being inaccessible.

- 51.3% reported using YouTube as the most used social media site, followed by Blogs (47.7%) and Facebook (42%).

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**Most Problematic Items Reported by Screen Reader Users**

<table>
<thead>
<tr>
<th>Issue</th>
<th>Percentage of Survey Respondents (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAPTCHA</td>
<td>28%</td>
</tr>
<tr>
<td>Flash</td>
<td>22%</td>
</tr>
<tr>
<td>Ambiguous links</td>
<td>16%</td>
</tr>
<tr>
<td>Poor Keyboard Accessibility</td>
<td>15%</td>
</tr>
<tr>
<td>Missing/Improper Alt Text</td>
<td>12%</td>
</tr>
<tr>
<td>Complex or Difficult Forms</td>
<td>10%</td>
</tr>
<tr>
<td>Unexpected Screen Changes</td>
<td>8%</td>
</tr>
<tr>
<td>Poor or Missing Headings</td>
<td>6%</td>
</tr>
<tr>
<td>Too Many Links</td>
<td>5%</td>
</tr>
<tr>
<td>Complex Data Tables</td>
<td>4%</td>
</tr>
<tr>
<td>Lack of “Skip” Links</td>
<td>3%</td>
</tr>
<tr>
<td>Inaccessible/Missing Search</td>
<td>2%</td>
</tr>
</tbody>
</table>

Data excerpted from the webaim.org 2009 Screen Reader Survey
Elsevier and Web Accessibility
By Richard Lane, Web Editor of The Lancet

When I became blind 18 years ago my expectations of using a typewriter—let alone a computer—were very low. But little did we know that the internet revolution would soon be upon us, connecting the world from a computer or mobile phone. Even if I had known about the internet revolution, the same question would still arise: fine, but how can you participate in this if you are unable to see your computer screen?

Thank goodness for another branch of the electronic revolution: research and development into screen readers, software which converts on-screen text into speech. Back in the early 90s I used a screen reader called HAL, operating in MS DOS (remember that?); today JAWS, produced by Freedom Scientific is the industry standard screen reader for the Windows environment. This enables a person with impaired vision or total blindness to write and read content, browse the internet, create e-mails, navigate Blogs and social networking sites, and even to hold down jobs in electronic publishing!

For the past five years my work has focused on editorial content for The Lancet; writing copy, scheduling content online ahead of print, producing and presenting our journals’ podcasts, and overseeing our Media Relations function. The work is genuinely interesting, demanding (with constant deadlines), and I hope contributing to the success of The Lancet’s journals online. What is also clear, as a screen reader user, is how fast and complex the growth and development of online functionality is, and, paradoxically, how the rapid technological expansion of online publishing is at risk of leaving screen reader users behind.

What do I mean by this? The ability to read text on a screen using a screen reader such as JAWS is but the first step in the process; for equitable online browsing for a blind person, navigation is everything. Reading a long document from top to bottom, listening to an electronic artificial voice is not the solution. Websites have to be accessible and navigable, from within the article view, and between different parts of the website. The blind user has to try and keep up with the sighted experience of vision and mouse clicks. Fortunately, the technical ability of JAWS, combined with accessible online design, can make this a reality; though this level playing-field is not often realized. I am no technical expert on CSS and website design; however I can highlight some examples of good design/accessibility that should be a useful checklist. For professional guidelines on accessible web design please refer to The UK Royal National Institute of Blind People.

Common features that can enhance web accessibility:

Jump to content links at top of page
Not visible to the eye, but JAWS will read out if in situ, this is industry standard worldwide and enables a non-sighted user to quickly access the key content areas of the page. This has been incorporated into thelancet.com.

Browsing by section
Logical CSS coding by section will enable screen readers to easily jump section by section through a webpage (the letter ‘h’ performs this with JAWS).

Alt text
Should be used for all graphical content (screen readers are smart, but they cannot describe images unless complementarily alt text is incorporated). Alt text is also required to ensure multimedia audio/video players are fully accessible.

Avoid using ‘Click here’ links
Not only is this advisable from the SEO perspective, it will ensure that a quick view of all links on a page (a keystroke with JAWS can list all links easily) is meaningful.

PDF accessibility
There are two ways you can ensure this. Content authors can start with a tagged Word Document (or source document), and use the recommended converters. The other alternative is to provide properly structured HTML or Word versions of the content.

Last, but by no means least, aside from the business sense and, I hope, moral imperative that electronic content should be accessible to all, there exists disability legislation to ensure that disabled people are not excluded or discriminated against. For me, the threat of a law suit should not be what drives the effort to inclusive and accessible web design; that should be about our collective desire to reach out to all our readers and customers, taking account of the differing ways that people need to access electronic information. An important final point is this: by accessible web design we do not always have to fully comply with the (exact) W3C requirements.

Importantly, there is a middle ground where-by electronic publishers should not feel constrained or intimidated by a huge shopping list of web accessibility features, that could absorb valuable human and financial resources and potentially impede publishing outreach; rather, the implementation of a key set of achievable accessibility features can transform the delivery of content to the many millions of people worldwide who need to engage with the technological revolution using different technologies. It goes without saying that Elsevier is in a strong position to drive web accessibility across all its platforms, and some good practice already exists. We now need a drive across all publishing forums to make good web accessibility a ‘given’ in all our electronic publishing activity worldwide.

Did you know:
Assistive Technology is not cheap! JAWS, the most common screen reader is about $1,000 USD. Electronic note takers/Braille displays are about $5,000 USD!

Did you know:
It’s not just persons with visual impairments who use screen readers? It is very common for persons with dyslexia to listen to a screen reader while following along in the visual text.
2009-2010 Notable Achievements and Activities

2009-2010 was an exciting period for Accessibility in that we had several noteworthy accomplishments for educating folks internally, product accomplishments, as well as external recognition. Elsevier UCD presented 5 educational webinars to different groups across Reed Elsevier. Chad Braun of New Lexis taught 2 class sessions in house to help our staff to better understand the new W3C guidelines. Class participants included FTE developers off-shore developers, contractors, and quality assurance.

In Dayton we had an accessibility learning station at The Boonshoft Children’s Museum as part of World Usability Day 2009. The accessibility station included activities where kids tried out assistive technology such as using a mouth pick, screen reader, and Braille. Kids also were able to experience simulated disabilities such as trying to use the keyboard using heavy gloves and separately simulating vision impairment with dark glasses. Laughs were shared by all as kids heard the rather robotic JAWS screen reader recite the theme song to SpongeBob SquarePants.

Accessibility Webinars & Presentations Program 2009-2010

- Print disabilities and AccessText network
- Vision impairments and screen readers
- Accessibility 101
- Meet Our Users Day including disability simulation
- Elsevier wins JISC 2010 Publisher Lookup Award for Accessibility
- The Elsevier Archive fulfilled over 3,100 book requests in 2010 to various international disability services offices
- Launch of AccessText.org, which Elsevier helped co-found
- Elsevier UCD completed over 15 Accessibility site reviews 2009-2010
- Release of the Elsevier UCD Product Dashboard, with ratings for Accessibility
- Over 40 tracked and completed accessibility projects in 2009
- Accessibility Achievements included in the RE Corporate Responsibility Report 2009
- The New Lexis Accessibility Golden Rules approved by Upper Management
- Elsevier Strategy created the Universal Sustainable Research Access group
- Elsevier enables text-to-speech on eBooks

How are we doing?

There have been some huge wins in our company with accessibility making it into the most detailed product requirements and specifications. Both LexisNexis User Experience and Elsevier User Centered Design have created Product Dashboards/Scorecards which track the accessibility of a product in addition to several other UCD activities over time.

Links to the UCD Dashboard and the LN UX Total Solutions Scorecard are provided in the Resources and Credits.
The crowning accessibility achievement for 2010 was Elsevier winning the JISC 1st Annual Publisher Lookup Award for Accessibility. JISC (Joint Information Systems Committee) and TechDis have been instrumental in working with publishers to clarify accessibility issues and raise awareness of the needs of people with disabilities. Elsevier submitted their nomination for the Award and felt very honored to win at the London Book Fair on April 21st, 2010. This project was sponsored by JISC TechDis, JISC Collections and the Publishers Licensing Society.

Alistair McNaught, senior advisor at JISC TechDis, said: “Elsevier was selected from a really strong field of candidates. Judges were impressed with Elsevier’s response rates to customer enquiries and their strong, embedded accessibility strategy. Accessibility is a cross-management responsibility at Elsevier and evidently part of the organizational culture.”

Publishers Palgrave MacMillan and Sage, also present at the awards ceremony, were both highly commended for their accessibility strategies and received commemorative plaques. Nature, Taylor & Francis and Ebsco received honourable mentions.

Elsevier also recently participated in JISC’s multi-publisher project to explore the accessibility of e-book platforms. The goal of the study was to offer specific confidential advice for participating partners and to provide generic guidance for publishers and aggregators. The final report may be downloaded from techdis.ac.uk
The Business Case for Accessibility

When you attach a dollar amount to accessibility, some may shy away from it, doubting the merit of the value proposition. Sure, having accessible products is the right thing to do, but below there are several compelling reasons that accessibility makes good business sense.

1. **You can make money from users who are disabled.**

Don’t think that there are any users with disabilities? *Think again:*

- Persons with disabilities earn 1 trillion USD and have 220 billion USD in discretionary spending. (U.S. Census Bureau).

**OUR USERS:**

- There are approximately 27,280 disabled lawyers: (7% of all lawyers) in the United States. (American Bar Association).
- 7% of employed people with either a Science & Engineering degree or in an Science & Engineering occupation have some type of disability (U.S. NSF).

2. **You can be sued for not being compliant**

Oracle, Target.com, Southwest and American Airlines, and The Olympics Committee have all been taken to court over inaccessible web sites. Target Corporation settled for damages of $6 million USD and attorney’s fees and costs of over $3.7 million after a lawsuit by The US National Federation of the Blind (NFB). Historically with accessibility litigation, it is not so much the dollar cost but the bad reputation that hurts.

3. **Competitive advantage**

Your accessible sites will have a competitive edge over other companies who may not have taken such care with their own web products. Customers, especially government (internationally) are increasingly asking for accessible products as part of the sales terms and RFP. Customers favor those products that have demonstrably superior accessibility.

4. **Increases in usage, SEO**

If your content is in text or HTML format, then Google and other indexing engines are going to point your customers to your content. Google gives higher weighting to content that has been appropriately marked up with proper tags and accessible structure. Accessible sites are also poised to offer a good mobile device user experience.

5. **Usability**

Since good accessibility markup makes common features like bookmarking easier, everyone will benefit from the overall increased usability. Accessible sites will have increased usage and repeat satisfied users.

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**International Lawsuits around Web Accessibility**

- Maguire vs. SOCOG Sydney Olympics (1999) (Australia DDA)
- Latif vs. Project Management Institute (U.K. DDA)

“Why should I spend money making my product accessible? There aren’t any blind doctors!”

-Anonymous

“No customer has required full compliance from Elsevier as of yet but the time may be coming…Being 100% compliant can only further benefit the perception of Elsevier amongst our customers and can help avoid any issues with contract renewals in future years in an area that provides important revenue for Elsevier.”

Steven Lagerveld

Account Manager

Elsevier
U.S. Government Section 508 guidelines and VPATs
A Perspective from Sales
Interview with Steven Lagerveld, Elsevier Account Manager, by Ted Gies

Ted: Which customers typically ask for Section 508 or accessibility compliancy information? Is it only the U.S. government like the FDA or is it also universities?

Steven: Section 508 compliance is required by all federal agencies through the Rehabilitation Act in 1998. However, in my experience, the only customers that I deal with that request accessibility compliance information are the Department of Health and Human Services agencies; these are the Food and Drug Administration (FDA), the National Institutes of Health (NIH), and the Centers for Disease Control and Prevention (CDC). From my understanding, there was an initiative several years ago within HHS to become more compliant and follow Section 508 closer. In addition to my customers, I understand that the Social Security Administration has also requested Elsevier to complete a VPAT for Section 508 compliance. While Section 508 addresses the obligations of only US Federal Govt. Agencies, State Governments as well as some Universities have adopted 508 standards for vendors to meet.

Ted: Are most requests for VPATs with ScienceDirect or for package deals, etc?

Steven: I have had to provide VPATs to both the NIH and the FDA for many of our products including ScienceDirect, Scopus, Embase, Reaxys, and now, most recently, PharmaPendium. A VPAT needs to be completed for each individual product that the purchasing agency is contracting for.

Ted: Do our products have to be 100% compliant with the Section 508 guidelines for each sale?

Steven: From what I understand from past VPATs that we have completed, Elsevier does not meet all of the guidelines required by Section 508 standards. Although we do not meet the standards, that is acceptable as long as we are clear what obligations we do not comply with. Up until now, this has been acceptable to both the NIH and FDA, however, there is no guarantee that they will not require full compliance in future years. In fact, during contract negotiations with the NIH in the fall of 2009, we were informed by the Contract Officer that full compliance may become necessary.

Ted: Is every scenario different with purchasers in terms of VPAT requests, or is there a standard section where VPATs fall into?

Steven: The scenarios that I have had to deal with for both the NIH and the FDA have been very similar. We are requested to complete and provide the Contract Office with a copy of the VPAT for the particular product being contracted for when responding to the Request for Proposal. The VPAT is never included in the contract but must be documented as received by the Contract Officer before moving forward with a contract.

Ted: We’ve heard that recently U.S. Government customers are becoming stricter in terms of not only requiring a VPAT, and soon may require 100% 508 compliancy, what can you tell me about that?

Steven: As stated above, no customer has required full compliance from Elsevier as of yet but the time may be coming. Elsevier should take this seriously and, if not already started, begin working to become 100% compliant. Being 100% compliant can only further benefit the perception of Elsevier amongst our customers and can help avoid any issues with contract renewals in future years in an area that provides important revenue for Elsevier.

Ted: How can we as a company better support the sales team in making sure they have the right information about our products’ levels of accessibility?

Steven: The work of the Elsevier UCD has been excellent in supporting the needs of the Government Sales Team here in North America. The renewals that required VPATs in the fall of 2009 went very smoothly because Ted and team had these compiled and was able to provide these to our staff very quickly. This is a vast improvement over past years where much explanation and searching for the right person was needed in order to move past what should be a simple and standard point of any contract negotiation.

Looking ahead, Elsevier should be prepared with VPATs completed/updated each year for each product to prevent any delays in the negotiation process. It should be made clear to all sales staff that these are available and where to easily find as the issue of accessibility compliancy will begin to affect more and more of our customers every year.
I Just Got Hit by the Accessibility Hammer!

It’s the eleventh hour and you’ve just discovered a new requirement on accessibility while writing your response to the request for proposal (RFP) during an otherwise fairly standard renewal process with one of your largest customers. Though you’ve heard about accessibility and understand the basic concept, you aren’t really sure how to respond or what steps are needed to get your response completed and sent back to the customer. Hundreds of thousands of dollars hinge on your ability to not only respond back to the customer but also ensure that every question they have is answered to their satisfaction and this new requirement is preventing you from making that happen. What are you going to do?

Contact UCD and UX. We can help.

Please see the contacts page at the end of the booklet in case you would like support on creating a VPAT for your product. LexisNexis User Experience and Elsevier User Centered Design are well equipped to support a variety of accessibility support for your project!

Case Study: LexisNexis and the IRS

In early 2008, LexisNexis had a contract up for renewal with the IRS for several of our products including lexis.com, Tax Center, Shepard’s® CheckCite®, CourtLink®, and Dossier. During the response to the RFP, the proposal team discovered a new requirement around accessibility compliance and the LexisNexis User Experience (UX) team was called into action. We gathered the materials and audit information we had and handed it over to the proposal team even though the majority of the audit reports showed that none of the products that were part of the proposal were completely accessible. In the past, many firms and agencies had been forgiving on many accessibility requirements as long as they understood that LexisNexis was committed to accessibility and had an ongoing process for evaluating and correcting accessibility problems in our products. The proposal team sent the response back to the IRS and waited. Eventually the IRS responded, and it was not favorable. The IRS informed LexisNexis that they could not entertain proposals that did not meet the minimum requirement of having all the products part of the proposal as 100% compliant with Section 508 of the Rehabilitation Act of 1973. This came as a surprise and posed a significant challenge to many in the organization. Losing the IRS contract would mean a loss of millions of dollars in revenue.

LexisNexis rose to the challenge

Employees from across the company came together and immediately came up with a plan, schedule, funding, and resources to get all the products part of the proposal brought into compliance. A revised proposal was submitted to the IRS including Voluntary Product Accessibility Templates (VPAT) stating that the products would be fully compliant at the time of the contract award. This seemed to satisfy the IRS temporarily and work began to quickly bring the various products into compliance per Section 508. As stated in the proposal back to the IRS, the issues were identified and fixed throughout the remainder of the year. In early 2009, word came across the organization that LexisNexis had successfully secured the renewal of the Internal Revenue Service contract with a new 5-year award beginning February 1, 2009. The contract renewal resulted in a total revenue value of over $10 million USD for the company. The company’s decisive and quick action to partner with the User Experience team, development, and people across the organization to address the accessibility concerns with our products was an integral part to the success of this contract award.

Lessons learned

We can learn a great deal from this case study to help us prepare for similar situations and requests in the future. Though we were able to react to the IRS request very quickly and win a large contract for the company, we can still do more. Certainly most would agree that anytime we can get ahead of the competition and serve our customers better is a winning situation. Being proactive about accessibility enables us to incrementally enhance and build our products to be accessible in a way that saves us money in the long run. Proactively addressing the issues of accessibility also gives us the ability to react more quickly to sales requests and sends a positive message to our customers.

VPAT key points

A VPAT…

• Is a scorecard that outlines the extent a product meets the U.S. Section 508 guidelines.
• Helps sales teams. U.S. Govt. and State University contracts require a completed VPAT.
• Can give you a competitive edge over an inaccessible competitor product.
• Helps everyone in the company better understand accessibility improvement needs.
• Is typically created by a User Experience or User Centered Design professional.
Accessible Web Development

Chad Braun is a true pioneer in the company when it comes to Web Accessibility. Chad has been leading the W3C WCAG 2.0 compliance effort with the New Lexis Project. We had a chance to catch up with Chad during his busy role as a Sr. Software Engineer. Interview conducted by Ted Gies, Sr. User Experience Specialist.

TG: So I’ve heard that New Lexis will is slated to adhere as closely as possible to W3C WCAG (Web Content Accessibility Guidelines) 2.0? How do you feel about being the first product in the company to claim that achievement?

CB: Still a little early to call it an achievement (laughs). I’m leery, because there’s still so much that can go wrong. Overall I’m very proud that we have been asked to do it, and really, it’s something that we should be doing on all projects. I was shocked that we were going all the way to WCAG instead of just 508.

TG: Is it true that you actually trained some of the internal and offshore teams on accessibility concepts? And how was that experience?

CB: Yes, I trained both FTEs’, interns, and contractors. We had a total of 6 - 2 hour sessions. It was a really, really good experience. I’m a little odd, because I’ve been working on the web so long and I’m not a strict engineer per say in Java or ASP for example. I have a finer appreciation for the details and standards of the client side stuff, HTML and JS, which most engineers don’t have. You really need to develop that in your applications for accessibility to work. Accessibility is all based on client side technologies. You can have cleanest Java code in world, but if the HTML and JS is not up to standard, you will have accessibility issues. That’s probably the hardest thing for engineers to get around.

HTML especially, has always been viewed as this ‘off’ language. The most challenging thing is to get engineers to stop looking at HTML as a ‘visual presentation’ language and start looking at it as a content markup language. But all of them are really happy to learn. Everyone wants to do the best they can. I think we got that across in the training sessions. Mistakes are being made, but we are looking at getting those corrected.

TG: What do you think other web developers should do to arm themselves with the right knowledge and tools to construct accessible code?

CB: The W3C is always an excellent tool. I know a lot of developers view it as being very technical and difficult to read at times. But, the W3C is defining what the web is supposed to be, and honestly to not follow what they have written takes us back to the web when it first started out. Back then it was IE and Netscape, both doing their own thing. Web developers were having a difficult time developing for both browsers. Today we’re dealing with more than just browsers, cell phones, PDAs, screen readers. People can view the web on their television. The W3C is writing the standards to tell us how to get it to work in all of them.

TG: You have the unique perspective of being both a lead Web developer and an accessibility champion. In your mind what’s the different in level of effort between an accessible product and an inaccessible?

CB: I think it’s a lot lower than a lot of people think. If you talk to a product or business person they view it as extra dollars. Development views it as extra work. But, if you build it in initially, yes, you will spend a little more time and money, but it’s a lot easier and less expensive than trying to put it in later.

Taking code that you have already written and trying to refactor it for another device is always more expensive. That was one of the definite lessons learned in old Lexis. Lexis.com was a 10 year old application built for 2 specific browsers with no consideration for accessibility; it was one of the hardest things to try and make it accessible. So, yes, there is a small level of effort to build it initially, but it is a lot cheaper than the level of effort needed to build it in later.

TG: Why do you think that a company like ours does not typically prioritize Web Accessibility when it comes to our electronic products?

CB: Ignorance not only of the problem but of what accessibility truly means. Accessibility is still pretty new. The knowledge of the problem is not as well known as it should be. Also, I think we’re still getting over the hurdle that it doesn’t cost as much as one might think. I’ve been on several of projects that have been canned because the immediate payoff wasn’t there to warrant its continuation. Accessibility can unfortunately fall into this category. What needs to be communicated is that making an application accessible to all people opens up dollars to you. True accessibility means ‘barrier free’. It means building an application that works not only in a desktop browser, but a mobile browser, a screen reader, a keyboard, etc. When you make an application accessible, you might pay a little more, but it opens up more avenues and other places for you to put your product and have it used to make money.

TG: Yes, I think the mobile example is one of my favorite “side benefit” examples; if you start with accessible code it should make the mobile experience good by default.

CB: I’ve been talking about that for several years in regards to mobility. They want apps that work on mobile devices. Remember, HTML, if written properly, is XML. And XML can be processed by just about any device. Unfortunately JavaScript can be problematic in many devices, but the W3C had started working on XML that is ‘dynamic’ without the need for JS. A technology that covers all devices would be a great benefit for accessibility.
TG: Should we have Accessibility standards in the company?
CB: I’m all for them. I’m currently writing a document to create those standards. We are creating a set of Accessibility Golden Rules similar to the Architectural Golden Rules golden rules. Accessibility is not just something that we talk about; we have to work toward it. Standards are necessary in any area. They are a major plus and a major need in the company.

TG: You can’t do it all Chad; you are the champion for LN right now. LN is one division within Reed Elsevier, have we ever thought of forming an Accessibility group within RE?
CB: This would be a big plus. Perhaps, something with little teeth behind it. We have the Elsevier UCD which is doing magnificent work in spreading word, but we need to take this one step further. To be able to ask the questions: Why wasn’t this made accessible?, Was there a valid reason it can’t be accessible, or was it just a matter time and money? It would be a great benefit, not just to company but to accessibility in general.

TG: In your opinion should own accessibility?
CB: I don’t think accessibility can be owned by any one group or individual. When I first investigated Lexis.com I came to conclusion that development could not handle all accessibility features on its own. There were cases where the UX design itself did not meet accessibility guidelines. UX needs to be able to design accessible web pages. The development teams needs to be able to build accessible web pages, and we need the testing group to make sure all accessibility features are met. This goes all the way back to the data entry level and what they are inputting for the data. One example is the use of images in full text documents. We have logos which you can retrieve in full text documents, like company logos, but not the required alternative text. So, the individual who put in the data added a reference to an image but did not put in the text equivalent required by screen readers. Since no one has the means to dynamically add the ‘alt text’ to the data after the fact, the ability to provide accessible content is lost because of lack of information in the data

TG: Great point. In Elsevier we have the same challenge with our 2500+ journal titles. Our HTML articles have pictures of a human cell for instance, but no meaningful text equivalent.
CB: Exactly, I’ve also seen data tables written with spaces and tabs to provide visual columns and headers. There is no way to turn them into actual data tables that can be properly read by screen readers.

TG: Is it true that there are some dedicated off shore staffs that are actually responsible for ensuring accessible code?
CB: We have an offshore team that does all the testing on new Lexis and an offshore team that does all the coding fixes of the issues. Assigned not to me, but assigned to do the work and managed by Kevin Lee, the release lead.

TG: I think that’s great that management has funded a dedicated team with a mission to develop and test accessible code. You guys are pioneering best practice here!
CB: Yes, especially with the testing aspect. Before this, all aspects of accessibility were up to the engineer. Having a dedicated team is a major step forward.

TG: Getting a little more tech now, which I’ve heard engineers like to do…Recently I’ve observed product teams gravitating towards UI packages such as JQUERY and YUI, do you think using such packages affects the ability to develop an accessible product?
CB: It definitely has impacts. Personally I never liked the whole third party libraries. I like knowing what code does from top of method to bottom and it’s difficult to maintain code that an outside party has created. Because these packages provide a much faster means for development, they have become very popular. These libraries often times have issues when it comes to accessibility. With New Lexis, where we find accessibility issues, we look at stripping the components out, finding better ones or building them in house. It takes a little time but it gets it done right.

TG: I really appreciate your time Chad! This has been an informative interview… much kudos from me and everybody else in the company for all your hard work. We all look forward to seeing new Lexis when it releases!
CB: I hope that it meets the expectations that I have.

TG: Thanks again Chad!
CB: Thanks!

Top Ten Tips to Improve Your Site’s Accessibility

1. Make sure each image and non-text element (e.g. video) has a text equivalent.
2. Do not rely exclusively on PDF files or Flash movies for your content... also offer HTML or text versions.
3. Make sure the site is operable using keyboard only.
4. Use clear and descriptive link text (no “click here”).
5. Use headings <h1>, <h2>, etc. to appropriately structure your pages.
6. Use a unique and descriptive <Title> for each page.
7. Use <label> tags to markup forms appropriately.
8. Avoid the use of visual or auditory CAPTCHAs for security measures.
9. Do not use tables for page layout and presentation, use CSS and <DIV>.
10. Usability test your site with real end users.
Alternatives to CAPTCHA

Are you shutting out blind users?

To Web users who are blind, CAPTCHAs are more than an annoyance. For many, a CAPTCHA is an insurmountable obstacle, even when an audio (read-aloud) alternative is provided. In one study, the success rate was only 46 percent when blind users attempted to complete audio CAPTCHAs. The average time to complete an audio CAPTCHA correctly was 65 seconds. This is an absurd amount of time just to ensure that “yes, I am a real person trying to enter your site, not a spam bot!”.

CAPTCHAs are annoying to all end users; to some, they are simply an insurmountable hurdle. Therefore, dropping the use of CAPTCHAs altogether is an alternative that deserves serious consideration.

Google, Yahoo and other sites have started to provide accessibility for blind and visually challenged users by providing an audio alternative to CAPTCHAs. These so-called audio CAPTCHAs require users to type in a series of characters that are read aloud by a computer generated program. However, there are a number of significant issues associated with these audio CAPTCHAs, which dramatically reduce their use as a viable alternative to regular CAPTCHAs.

Audio CAPTCHAs: a poor alternative

- Users with screen readers will simultaneously hear both the voice of the screen reader and the read-aloud CAPTCHA audio. This makes it difficult or even impossible for the user to hear what is being said.
- Persons who are blind are required to memorize or write down letters as they are being spelled out. This results in frustration and a high error rate.
- Persons with hearing impairments such as deafness will not be able to perceive the needed spoken characters.
- Audio CAPTCHAs are easily breakable by hacker software unless severe background noise is used. This background noise makes it even harder to success fully solve the CAPTCHA for all users.
- Sound is often turned off on publicly accessible computers, for instance in university libraries and labs, completely disabling the use of audio CAPTCHAs.
- Language issues - the characters are read out in English, posing a problem for people who do not speak any English or speak English poorly.

Logic puzzles

An alternative to CAPTCHAs are so-called “logic puzzles” or “challenge questions”. These are questions that computers are not smart enough to answer, but are simple enough for any human to solve. Such logic puzzles can for instance be simple math problems (“what is three plus seven?”) or multiple-choice questions (“Which of the following is a bird: alligator, elephant, eagle”), or even just ask the user to perform a simple task like typing in a certain word or phrase (“please type the following word: orange”).

Because such logic puzzles do not rely on visual identification, they are fully accessible to users with visual impairments. Note that some types of logic puzzles do rely on the ability to see (such as the “click the picture that matches the word” type puzzles) and therefore are as inaccessible to visually challenged users as CAPTCHAs are. To ensure accessibility, avoid using logic puzzles that rely on visual identification.

Although logic puzzles can offer full accessibility to users with visual impairments, there are also a number of significant issues associated with this alternative:

- Can come across as annoying, frustrating and weird to users, which can negatively impact the perception of the product and decrease conversion rates (e.g. registrations and sales).
- Can pose significant language and cultural issues. For instance, they are inaccessible to non-English speakers.
- Can pose significant problems for people with dyslexia (particularly when the user is asked to type in a certain word or phrase) and to people with cognitive disabilities.
- Can require significant development time: little or no off-the-shelf software is available, so solutions will need to be developed in-house.
- There is little research available to support that this solution is actually effective against spam.
The honey pot method: A better alternative

Instead of using CAPTCHAs, there are various techniques available (so-called “invisible CAPTCHA”) that do the same as CAPTCHAs, namely to determine whether the user is human and thereby weed out the spambots. The aspect that sets these techniques apart from CAPTCHAs is that they work silently in the background, invisible to the end user.

The honey pot method is one such alternative. The idea here is to place a hidden field – the “honey pot” – in a form that is hidden to human users but visible to computers. Spambots try to fill in every field in a form, so they will naturally try to fill in the form, while humans will ignore the field because it is invisible. All that is needed, then, is to verify that the honey pot field has been left empty to allow real users in.

Some important technical notes on the use of this method:

• The field (or the layer surrounding it) should not be called “honey pot” but some thing a spam bot may think is legitimate like “e-mail” or “URL”.

• The field must be hidden using CSS (placing it in a layer set to display:none, or by using off-screen positioning), not by giving the field the property type="hidden".

• Screen reader programs used by visually disabled users may see the field as a regular form field, so it is essential that the field is labeled as a field that should not be filled in.

Example: `<input name="url" id="url" value="" title="You do not need to fill in this field. It is provided only to trap automated form submissions" />`

There are also various other methods to check for spambots automatically. One such method is to check the time it takes for the form to be submitted. If the time between the moment the page finishes loading and the time at which the form is submitted is less than, say, 2 seconds, you can be confident that the form was not submitted by a human but a spambot.

Another method is executing some JavaScript code when the submit button is clicked. For instance, when the submit button is clicked, the JavaScript code could solve a simple math problem like 3+5 and put the end result (in this case 8) into a hidden form field. When the form is submitted, you need to do is check whether the hidden form field indeed contains the expected value (8). If not, it’s safe to assume that the form has been automatically submitted by a spambot and can be ignored. This method is used by the WP-SpamFree WordPress anti-spam plug-in for instance.

Spam filtering checks the submitted text for key phrases used by spammers, such as “cheap” or “viagra”. There are many off-the-shelf software solutions available for this that can be easily plugged in. This method can be used as an additional safeguard but is not likely to be very effective as the first line of defense.

The above techniques, and others, can be used alone or in combination, offering a CAPTCHA-free experience to all your users, significantly enhancing the user experience of your site and making your site accessible to all users, regardless of visual or auditory impairment.

Further reading

See: “Making CAPTCHA More Accessible for the Blind” in the Resources & Credits section.
There are many types of print disability, but put simply, it means that one of our customers cannot easily read a printed book. Fortunately, Elsevier can provide digital files which are used to help those with disabilities. Blind students can use Word files in text-to-speech programs which “read” our textbooks aloud. A student with dyslexia might prefer a PDF file which also can be read with text-to-speech software. A student with limited sight might enlarge a PDF file to create their own “large print” book on the fly.

The Global Books Digital Archive responds to over 3,100 disability requests a year. Under the Americans with Disabilities Act (ADA) schools are required to make reasonable accommodations to help students with print disabilities. Canada, the United Kingdom, and many other countries have similar legislation. As a result, schools rely on Elsevier to provide alternate formats for use by their disabled students. As an international company, Elsevier assumes that responding to disability requests is a responsibility regardless of the country of origin. Elsevier also actively supports “Chafee-authorized” organizations such as Recording for the Blind and Dyslexic (RFBD) by providing digital copies of our titles free of charge. The Chafee Amendment is an exception to copyright law which allows non-profit groups such as RFBD to use publishers’ content to produce alternate book formats for disabled readers.

The Archive is proud of its long-standing commitment to filling the needs of disabled students. It strives to fulfill disability requests the same day they arrive. Elsevier has the best track record for filling disability requests of all the major publishers. Our average turnaround time is less than a day!

Over the last 15 years, the Archive has sent files to just about every country where English might be spoken. We have sent files to Tanzania, New Zealand, Australia, India, Canada, Ireland, the United Kingdom and, of course, to every state in the U.S. The students who use our files range from medical students to freshmen at a local community college.

Going forward, Elsevier’s many investments in technology will make our products even more accessible. Using an “XML First” production path allows us to convert titles into formats such as ePUB that are easily read by digital book readers such as the Kindle or iPad. These readers have built-in text-to-speech capabilities and offer the disabled community new ways to interact with our products.

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**FUN FACTS ABOUT THE ARCHIVE:**

- The number of disability requests for accessible book files has been increasing by about 10% each year.
- The Global Books Digital Archive regularly gets “thank you” notes from our customers who appreciate the fast turnaround. Notes that say “You Rock!” are our favorites.
- Most requests come in at the beginning of the school semester but we get requests throughout the year.
- Elsevier provides files to authorized Disability Services offices. It does not send files directly to students.
- Most students prefer PDF files for use with their text-to-speech software. JAWS and Kurzweil are the two most popular programs in use.
- There are five people on the Archive staff. Overall, the Archive handles about 15,000 requests a year from both inside and outside the company.

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**Did You Know?**

Elsevier was a founding member of AccessText, a platform that makes it easier for students with disabilities to request text book files.
Recently Elsevier invested in a capability that will allow our books to be produced in the ePub (Electronic Publication) format. ePub is a free and open E-book standard, created by the International Digital Publishing Forum (IDPF). ePub books can be read by electronic book readers such as the Apple iPad, Sony Book Reader, Adobe Digital Editions Reader, and even the Mac Safari web browser. The ePub format supports graphics, including SVG, embedded fonts, and in the future will support specialized markup such as MathML.

Epub also has been widely adopted as the preferred book format for a number of online eBook retailers including: KOBO (Borders e-book store), Barnes & Noble, Apple’s iBook store, and Google books. At this time ePub books are not compatible with Amazon’s Kindle without using some conversion software, although there is plenty of consumer and industry pressure for Kindle to better support ePubs.

**Accessibility**

The great thing about the ePub file format is that it’s well-defined structure makes it inherently accessible. Folks using an ePub with assistive technology will be able to benefit from the added navigation controls inherent in the ePub format. ePub navigation mechanisms allow users who are blind (as well as all users) the ability to jump straight to a chapter or section when using an eBook reader like the Sony Reader.

Epub files are also “reflowable”, which means that they will display nicely in various sized eBook readers. As for accessibility, this means that users who cannot view small type will be able enlarge the font size while maintaining the nice margins and layout. Furthermore, ePub files will allow users with dyslexia or vision impairment to apply their own contrast and font styles to make reading easier. ePub file accessibility features are very similar to DAISY (Digital Accessible Reading and Publishing for All). The DAISY Consortium (since 1996) has promoted the worldwide standard for the navigation and structure of Digital Talking Books. In fact, the specification for the navigation control file for ePubs, which contains the table of contents, was developed by the DAISY Consortium.

**Copyright and Digital Rights Management**

Epub formats do support DRM (digital rights management), a feature that protects publishers’ content and helps to avoid a wild wild west of freely exchanged books (as in MP3 files ala Napster). Using some level of DRM is key to protecting the copyright of publishers’ and authors’ works. Unfortunately, one downfall of DRM mechanisms is that they can diffuse the ability to use some screen readers such as JAWS. A possible solution is the idea of DRM interoperability, which would allow books to be viewed across a customer’s different reading devices. DRM interoperability would make it easier for screen reader and other assistive technology developers to integrate their software with an interoperable DRM framework.

Copyright protection measures are also in place with our electronic book files that are supplied by the Elsevier Archive to university disability services offices around the world. Elsevier assumes all university requests are legitimate; however university disability services offices have rigorous checks in place to validate student disability. Some schools such as Kirkwood College (see next article) require a strict process to verify disability as well as proof of purchase before an electronic book is granted.

Currently under debate is whether copyrighted ebooks should be automatically enabled for eBook reader text to speech features. Amazon was recently in the news for a new option for publishers to disable the text to speech feature on a per title basis. Some publishers’ rights and authors’ rights advocates are concerned that text-to-speech may infringe on copyright law and that it might also hurt sales of (audio books) sales. The counter to this argument is that a synthetic text-to-speech reader is not equivalent to narrated audio books that are spoken with emotion and diction. Most recently Elsevier has enabled the text to speech on its ePub book titles.

**Who creates ePubs?**

Elsevier’s (EPD) Electronic Production has created a tool that converts XML to ePub format via an ‘afterburning’ route. A technical team in Chennai converts XML from the Electronic Warehouse and sends the resulting ePub files to customers upon request. Both journals and books may be created in ePub as long as the full text XML source is available. PDFs, Quark, InDesign, and hardcopy may also be used, but some require pre-conversion steps. In the case of Amazon, they use our ePubs too, but use the ‘KindleGen’ tool to covert them into their own proprietary mobi format.

**Did you know?**

This booklet, Accessibility Matters, is also available in an ePub format which you may download from the Reed Elsevier Accessibility Resource Site:

https://reworld.reedelsevier.com/Accessibility
Kirkwood College is a friend of Elsevier and is renowned for having an accessibility friendly campus as well as having a state of the art lab for people who use assistive technologies. Mike Scallon (Support Services Coordinator) and Chuck Hinz (Dean of Learning Services) were gracious enough to help us better understand why Kirkwood College is an institution at the forefront of Accessibility.

Elsevier: What makes Kirkwood College stand out in terms of being an accessibility friendly campus?

Kirkwood: It is Kirkwood’s people who make the college stand out. Kirkwood Community College works very hard to make our campuses accessibility friendly. We have an available nurse, small class size, counseling/advising, academic prep classes, and a writing center—just to name a few.

The Learning Services department also arranges special accommodations for students with learning disabilities through writing support, assistive technology, extra tutoring, alternative tests, alternative text, and sign language interpretation.

Elsevier: Tell us a little bit about your assistive technology lab.

Kirkwood: The main purpose of the Assistive Technology program is to make academic computing accessible to all students with disabilities. Another purpose is to bring technological academic supports to students with learning disabilities. Traditional computers used so extensively by college students may present barriers to some students with disabilities. Modification to the computer, software, or work environment may eliminate or lessen these barriers.

Our technology includes something as simple as a low-cost tool that enlarges text on the computer screen. Computers equipped with natural sounding speech highlights text and produces audio as it reads the text (Read and Write Gold). These tools enable student use with screen reading software for school, work and everyday life. If the educational institutions can receive an e-file there are numerous ways to enable a student with a disability (large print, embossing, e-files/audio, and screen reading).

Screen reader search capabilities allow students to go directly to a page or subject and allows a much faster user experience for a reading assignment. This also means that a student using an electronic book can keep up with the rest of the students in a class when asked to open a book to a reference page for lecture discussion. More and more students are bringing their laptop to lecture classes so that they can use Read & Write Gold (screen reader) to be able to adapt to this challenge.

Students with mobility or muscular disabilities often have difficulty manipulating traditional text books. There are alternative pointing systems for individuals who have a mobility disability which allows them to manipulate a computer hands free.

Kirkwood Community College’s Assistive Technology Lab is well-equipped with speech recognition software, screen reader software, on screen keyboard software, cognitive support software (Read and Write Gold), and text enlarger/reader software (ZoomText).

Elsevier: If I am a student with a disability what would I need to do to get access to the right electronic textbook?

Kirkwood:

Step 1: Apply for ADA accommodations with Kirkwood Community College Learning Services by completing and turning in paperwork to Learning Service Office Coordinator.

Step 2: Student is assigned a case manager. Student and case manager develop an accommodation plan to meet student’s learning disability.

Step 3: If an accommodation plan includes alternative text, the student meets with staff in Tutoring Services to make the request or produce e-files in electronic format.

Step 4: Student gives textbook requests to Tutoring Services personnel to obtain...
alternative text. Per our agreement with the publishers, we must have proof of textbook purchase.

**Step 5:** Once Tutoring Services receives the e-file from the publisher and the proper media format for print disability is created, the student is contacted. After media is distributed the student will go to Assistive Technology to receive orientation for proper use.

Elsevier: If I am a student with a disability, what are some of the challenges dealing with paper based information such as textbooks and classroom materials?

Kirkwood: One of the challenges is reading the textbook or hard copy assignment. Printed copy can be difficult to read for any students who might have Attention Deficit Disorder, Attention Deficit Hyperactivity Disorder, and Dyslexia. Mobility-impaired students can have difficulty physically manipulating a textbook or hard copy handout.

When an instructor hands out hard copy assignment (classroom materials) the student can come to Tutoring Services to have the paper converted to an electronic format. Typically the case manager for the student can request e-files be made available to the students for any assignment or classroom use in an accommodation plan at the beginning of the semester.

Elsevier: Given that Elsevier offers electronic book files to university disability offices, how have we been doing compared to other publishers?

Kirkwood: Elsevier customer service allows us to communicate in real time on any issue and that can be very important. Elsevier is very responsive and can make e-files available to us in a very short time.

Elsevier: At one point we thought the Kindle would be a boon for eBook accessibility, but that proved to fall short of students’ needs. Are there any new devices such as the iPad that hold promise for providing more accessible eBooks?

Kirkwood: iPad has more than enough space for e-files but the baseline price creates accessibility problems. The purchase price of $500 would just be a starter to enter in the market and to purchase additional features that would go upwards more than $800 for expenditure. However, the iPad is a step in the right direction. It has features such as a built-in screen reader and support for closed-captioning.

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-Mike Scallon
Support Services Coordinator, Kirkwood College

**Kirkwood College**

- Is located in Cedar Rapids, Iowa
- Is named after Samuel J. Kirkwood, governor of Iowa (1860-64) and (1876-77). He also served as a United States Senator and Secretary of State
- Has had record enrollment with more than 18,000 credit students in more than 100 career and college-transfer programs
- Elsevier is the chosen publisher for seven textbooks utilized in the Nursing curriculum
Case Study
An Anonymous Nursing Student Talks About Dyslexia

Elsevier: What makes the use of traditional paper books and journals less than ideal for you?

Student: With my learning needs, paper books can cause stress. Because I am a slow reader and often see words on a page in strange or different order, the E-Text Reader program is very helpful.

Elsevier: How has the ability to gain electronic access to eBooks led to your educational success?

Student: I am able to better comprehend class material in a timely manner when I follow the text word by word in the way E-Text Reader allows. This is beneficial to my learning process.

Elsevier: Do you use specific technologies that help you to access the information you need?

Student: I use Read & Write Gold to assist in my readings. The support I receive from Read & Write Gold is similar to E-Text Reader, but is a bigger help.

Elsevier: Are there strategies that you employ to help navigate and read through electronic text books?

Student: Each chapter of a book I may receive electronically is separated into its own document making navigation uncomplicated. However, sometimes the chapters themselves can be massive and finding a specific page or phrase could be a challenge, but a Kirkwood Tutoring Services staff member showed me a way to locate a specific page selection easily. In MS Word, Mr. Scallon showed me how to use the “Find” function. With “Find” I can type in a few keywords from my hard copy and then MS Word will automatically find those words in the electronic document. With the separated chapters and the “Find” button, navigation through my electronic text books is trouble-free.

Elsevier: What is it that textbook publishers should know about persons with different needs that would help them better serve students?

Student: Although I feel that I am receiving wonderful service from the textbook publishers, I would appreciate a system that worked at a faster pace. Being able to request and receive my books electronically prior to the start of my classes would be beneficial and would prevent me from getting behind.

Elsevier: Describe the ideal electronic book.

Student: The ideal electronic book would come with its own screen reader. Preferably this built-in reader would be very similar to Read & Write Gold as it has been the biggest help to date.

Did You Know?
15-20% of the population has a language-based learning disability.
(International Dyslexia Association)

Case Study
An Anonymous Nursing Student Talks About Dyslexia

elsevier: What makes the use of traditional paper books and journals less than ideal for you?

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student: each chapter of a book I may receive electronically is separated into its own document making navigation uncomplicated. however, sometimes the chapters themselves can be massive and finding a specific page or phrase could be a challenge, but a kirkwood tutoring services staff member showed me a way to locate a specific page selection easily. in MS word, Mr. Scallon showed me how to use the “find” function. with “find” I can type in a few keywords from my hard copy and then MS word will automatically find those words in the electronic document. with the separated chapters and the “find” button, navigation through my electronic text books is trouble-free.

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Lessons Learned
A Renowned Book Author Talks About Dyslexia

We had a few minutes to chat with Sandy Fritz, author of some of Elsevier’s biggest selling massage titles such as: Mosby’s Fundamentals of Therapeutic Massage, Clinical Massage in the HealthCare Setting and Sports & Exercise Massage. Sandy is currently working with Kellie White (Sr. Editor, Elsevier) and Kelly Milford (Developmental Editor, Elsevier) on learning the new EMSS (Electronic Manuscript Submission System) to help with her new book revisions. Sandy happens to be dyslexic and was enthusiastic about sharing her unique perspectives as a book author.

Elsevier: What are some important things to remember about the way a person with dyslexia reads print?

Lots of dyslexics have trouble processing from a printed page. A lot of us like to “read” by listening. Even borderline dyslexics may process better through the ears. It is really helpful to have the printed page and to be able to follow along as the book is read out loud. Often dealing with black text on white background, especially shiny white can be a nightmare. Sometimes we cannot discern areas with light yellow background if the contrast is not crisp enough. Some people with dyslexia tend to read up and down (like Chinese) instead of left to right. We recognize patterns. Because of this we may see blocks of text instead of individual words. We may get distracted by a sense of pattern in the text when we shouldn’t necessarily be paying attention to them. We process pictures and sequence better than written instruction. If you have dyslexia, reading can make you physically tired. Retention may be affected. For some of us, using a pencil and taking notes may also be physically painful and we often can’t read our own writing later.

Are there improvements that publishers could take on to help meet the needs of readers with dyslexia?

Having larger printed text and more space will make books easier to read. Online courses are really nice for students because of the clean chunks of content that you can read in 15 minutes and there is the ability to click instead of type to get to various content.

As a reader, essentially anything that you do to help someone with a visual impairment will also help someone with dyslexia. So for instance having an auditory reader is critical. At the same time I want the capability to do a text search to get to the correct section in the text book. Ideally I like to have the book read out loud while I follow along in print. An ideal book reader would have both note taking and highlighting capabilities. The ability to highlight and cut and paste is a great help with note taking.

How are you working now with Elsevier to improve the workflow between author and publisher?

Working with Kelly Milford has been great. Currently Kelly is helping me learn how to use the new EMSS book editorial system which should help alleviate the problem of sending drafts back and forth and keeping track of which draft to use.

How can book editorial systems be improved to make it easier for authors with dyslexia?

Just keeping track of all the steps is an issue. However, solving what I struggle with will make it easier for everyone to use. For instance, I struggle with setting up the figures, lists, and numbers at the end of the process instead of in the context of the written text. I want to put the figures in as I am doing the writing, not at the end. When writing legends, I need to have the picture there to help me remember the content as I am typing. Today the legend input and actual figure are separate. Citations are a nightmare. Anything that could put references in proper citation form would be wonderful.

Describe the ideal authoring tool:

If the manuscript development tool could set up a template box for the different sections, such as a box for objectives, introduction, the structural outline, and then I could write in the content. Wow that would be great. When I was writing the online course the template was a problem. Sometimes I get confused with what feature to use and how to add it to the template. I ended up creating a template within a template, which got weird.

Often times I paraphrase factual data. Because I do not want to retype the data I copy and paste from the internet. Then I paraphrase from that original section of cited text. So I want to start with the original text I copied and then change. I have forgotten at times that I have not rewritten the content and “ugh...” almost plagiarism. Fortunately the editors caught these before print. If there was like a notepad feature next to my section in the manuscript to allow me to have it right there to refer to as I do my revisions that would be great.

Any tools that help me better sequence sections and figures would be great. I sometimes avoid revising my book structure or argue with myself against adding another figure because revising the sequences aspect feels like a disaster.

Then there is spelling, don’t even go there! A spell check feature would be great even though I use MS Word to do that today. I really would rather copy and paste than have to retype anything. Acronyms are also problematic. Too many letters with no inherent clues as to what they mean.

Finally, if I could have an easier way to write my bibliography, that would be a great help, for instance hitting a button to generate a Mosby’s style bibliography would be tremendous. Dealing with the numbering of references can be challenging to keep track of, not to mention the fine details required with the formatting.

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Resources and Credits

Contact Us

For more information regarding accessibility or to find out how to get a product audit or VPAT, please contact the following person(s) for your area:

Ted Gies - Sr. User Experience Specialist (Elsevier – Dayton, OH)
Steve Noble – Manager User Experience (LexisNexis – Dayton, OH)
Jorrit van Hertum – Web developer (Elsevier – Amsterdam, NL)
Chad Braun – Sr. Software Engineer (LexisNexis – Dayton, OH)

For more information regarding print accessibility, AccessText.org, and electronic book files, please contact: Tripp Narup – Archive Manager (Elsevier - St. Louis, MO)

Reed Elsevier Accessibility Resources

You can find tutorials on web accessibility, recordings of previous webinars, valuable links, and alternative document formats of Accessibility Matters at the Reed Elsevier Accessibility Resources site: https://reworld.reedelsevier.com/Accessibility

Contact Ted Gies (t.gies@elsevier.com) to sign up for our accessibility webinars or to join The Accessibility Working Group.

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Robert Bruning, Regional Sales Director, Elsevier
Y.S. Chi, Vice Chairman and CEO S&T, Elsevier
June Doyal, Director User Experience, LexisNexis
Cynthia Dunlevy, Reed Elsevier Innovation Team (I-Team)
Sarah Dyson, Corporate Responsibility Coordinator, Reed Elsevier
Nick Fowler, Director of Strategy, Elsevier
Sandy Fritz, Author, Elsevier
Dori Ann Gardner, Manager, USRA, Elsevier
Michael Goddard, Web Developer, LexisNexis
Frans Heeman, Manager UCD, Elsevier
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About Accessibility Matters

This booklet was created by Elsevier User Centered Design. It may be viewed as a PDF, ePub, and as a Word document. There is also a narrated version available.
Resources and Credits

Links and References

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JISC Tech  techdis.ac.uk
The Lancet Journal  thelancet.com
Making CAPTCHA More Accessible for the Blind  nfb.org/images/nfb/Publications/bm/bm09/bm0901/bm090108.htm
National Center for Health Statistics  cdc.gov/nchs
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U.S. Census (Statistics on Disability)  census.gov
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U.S. Section 508  section508.gov
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