

# Why Make Websites Accessible? And How?

Katy Whitelaw  
Northern Illinois University  
Information Technology Services  
Customer Support Center  
DeKalb, Illinois 60115  
815-753-8597  
kwhitelaw@niu.edu

Northern Illinois University is a nationally recognized institution with seven degree-granting colleges, doctoral programs in the arts and sciences and education, and a student body of nearly 25,000 consisting of approximately 18,000 undergraduates and 7,000 graduate students. It is located in DeKalb, Illinois, 60 miles west of Chicago.

## ABSTRACT

A university's website is an essential tool for recruiting students, faculty, and staff, and for conveying information to the campus community, alumni, and the outside world. When a website is inaccessible, the university may lose a prospective student, faculty member or alumni donor; students or employees may not be able to get crucial information; and there may be a legal liability. Also, web pages are accessed in a variety of different situations (hands-free, eyes-free) utilizing an increasing variety of technologies (screen reader, slow modem, small screen, PDA).

This paper discusses six things common to web pages that can easily be made more accessible – the how and why for each:

- Images
- Links
- Color
- Tables
- Headings
- Navigation

## Categories and Subject Descriptors

H.5.2 (Information Interfaces and Presentation – User Interfaces)

## General Terms

Design, human factor, legal aspect, performance

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## Keywords

Accessibility, Internet, universal design, web design

## INTRODUCTION

Why bother making your web pages more accessible? A university's website is an essential tool for recruiting students, faculty, and staff, and for conveying information to the campus community, alumni, and the outside world. When your website is inaccessible, your university may lose a prospective student, faculty member or alumni donor; students or employees may not be able to get information like the schedule of classes, grades, class materials, human resource information, and important campus news; and there may be a legal liability.

In addition, web pages are accessed in a variety of different situations (hands-free, eyes-free) utilizing an increasing variety of technologies (screen reader, slow modem, PDA, Internet-enabled pagers, web telephones). If your pages are accessible to anyone, anytime, anywhere, you will attract new visitors and encourage repeat visitors, increasing the value of your site.

When your pages are clear and navigable without the use of a mouse, you've gone a long way toward making your pages accessible. Many people cannot use a mouse because of a visual impairment, inability to use their hands, lack of eye-hand coordination, or because of the particular equipment they are using to read your page such as a PDA. Also, some people with learning disabilities find it easier to listen to web pages with a screen reader than to read it with their eyes.

Making your pages accessible does not mean that you have to get rid of images, both decorative and informational, color schemes, data tables, and cool navigation. Images, consistent use of color, tables, and clear navigation can help people find their way around your website. People with learning disabilities benefit from images, consistent use of color, and clear navigation schemes.

## 1. IMAGES

Most of us know to use alt tags with images. When you put an alt tag on an image, a screen reader will read the alt tag instead of the file name, which may be something very unhelpful like P010026.jpg. An alt tag such as "smiling sun" or "students enjoying the annual School of Music fall barbecue" tells the listener or the person who has turned off images for speed or is using a PDA something about what they aren't seeing.

The code looks like this:

```
<IMG src="/its/helpdesk/images/sun.jpg" alt="smiling sun" border=0>
```

The person using a screen reader will hear “graphic smiling sun” instead of “slash its slash helpdesk slash images slash sun dot jpg.” There is no need to include “picture of” or “graphic of” because the screen reader will identify the image as a graphic.

For decorative images, use an empty alt tag, alt=“”, so that the screen reader will not say anything. Otherwise, if you have an arrow in front of each item in a list, for example, the screen reader will say the alt tag for the arrow image every time.

We have used alt tags on screenshots on “How To” pages that emphasize the process we are describing, such as “Internet Connection Wizard Step 1. Enter the telephone number.” These alt tags are read by screen readers and also are seen by sighted people when they mouse over the image.

## 2. LINKS

Visitors to your web pages are looking for information, and the more efficiently they can find it, the more valuable your site is to them. Most screen readers have a shortcut command that will give users a list of all the links on a page. This is a way to skim a page quickly.

If your links are all named “click here,” this list will not be helpful. Sometimes you have to do a little editing to make your link names more helpful in the context of a list of links. For example, with a sentence like “For our fall semester helpdesk hours, click here.” some options are “Fall Semester Helpdesk Hours” or “Fall Semester Helpdesk Hours begin on August 25.” I try to name the links the same as the page name for consistency, so a person hearing the link “Configuring Windows 2000 to Link to the Internet” will hear the same thing on arriving at the page after selecting the link.

## 3. COLOR

Consistent use of color can enhance the usability of your pages for many people. Be sure no information is conveyed solely through the use of color. For example, something like “The room numbers in red will not be available on Tuesday, October 25” is inaccessible to people who cannot see or who cannot see color. However, if you have an important announcement like the one above and you put “These room numbers will not be available on Tuesday, October 25: 231, 236 and 237” in a red font, you will get the attention of sighted visitors while conveying the information to those who do not see color.

To see if your color scheme has enough contrast for people who don’t see color, try grayscaling your page by printing it on a non-color printer or use the free grayscale tool from 508 Compliant. Go to <http://www.508compliant.com> and click the Import the Tools button. It will create an accessibility folder under Favorites if you don’t already have one. There are three tools in the set: grayscale your page, see your page with the stylesheet removed, and show images without alt tags. Open a browser, go to your

Favorites, and then the accessibility folder. Find “Grayscale this page” in this folder and click on it to see your page in grayscale. You can also use this to check the contrast on your page. Click the refresh button to see the page in full color again.

## 4. TABLES

There are two simple things you can do to make tables more accessible without changing their appearance. One is to use the summary attribute. This attribute goes in the table tag along with the border, cellpadding and other attributes. For example:

```
<table summary="This data table has 4 columns and 4 rows. It displays the lab name, phone number, room number, and hours for the 4 computer labs in Lincoln Hall." width=100% border=2 cellpadding=0 cellspacing=0>
```

A screen reader will read this before the table so that a visitor who is blind will have an idea of what information is in the table.

The other thing you can do is use the scope attribute in the first cell in each row and first cell in each column.

If the scope attributes have not been used, the screen reader will read the table below as follows:

**Table 1. Sample Table**

Lab Name	Phone Number	Room Number	Hours
Biology	751-1234	103	8am-10pm
General Purpose	751-2345	251	8am-8pm
Math	751-3456	334	8am-10pm
English	751-4567	338	8am-9pm

Lab Name Phone Number Room Number Hours Biology 751 dash 1234 103 8am dash 10pm General Purpose 751dash 2345 251 8am dash 10pm, etc. If the table has several columns, it’s impossible to remember where you are in the row.

The scope attribute code looks like this:

```
<tr>
<td width="10%" scope="col">Lab name</td>
<td width="10%" scope="col">Phone number</td>
<td width="10%" scope="col">Room number</td>
<td width="10%" scope="col">Hours</td>
</tr>
<tr>
<td scope="row">Biology</td>
<td scope="row">General Purpose</td>
<td scope="row">Math</td>
<td scope="row">English</td>
</tr>
```

When a visitor uses a screen reader to hear this table, he or she can then use the arrow keys to move around the table and on each cell the column and row associated with that cell will be heard. For example, if you use the arrow keys to go to the second row, third column, you hear: Lab Name General Purpose Room Number 251.

## 5. HEADINGS

Those of us who are sighted use headings as a quick way to scan the organization of a page. To create headings, many people use the font tag to make larger text. However, most screen readers have a shortcut command that produces a list of all the headings on a page created with the heading tag. If your page is well-organized and uses heading tags for headings, this can be a great way for visitors using screen readers to skim your page. Here is how the code looks:

Replace `<font size=2>Paragraph heading</font>`  
With `<h2>Paragraph heading</h2>`

As with most of these suggestions, your effort in this matter has benefits beyond those using screen readers in your audience. If the list of headings shows the organization of your page, your page will be clearly organized, which helps everyone. In addition, software for converting pages to PDA-accessible pages relies on heading tags for the structure of web pages.

## 6. NAVIGATION

Visitors should be able to navigate through your web site without using a mouse. This is one area where the appearance of your web site might have to change. We had flyouts on our navigation for a while that looked very cool but were inaccessible to screen readers, required hand-eye coordination, crashed in Netscape 6, and worked very slowly on slower computers. Eventually, everyone was clamoring for us to change the navigation. We approached the creation of a new navigation scheme with the principles of universal design. The new design, which you can see at [www.helpdesk.niu.edu](http://www.helpdesk.niu.edu), is more popular with everyone.

Hidden anchor tags can improve your navigation for screen readers without changing the appearance of your page. These anchor tags go to different sections of your page so that people don't have to listen to every link on their way to a section. If you go to the link above, before you hear the content of the page, a screen reader will read 43 links.

A hidden anchor tag can go straight to the content of the page, or a table of constantly changing data. Our web site navigation includes anchor tags at the top of the page that go to the subnavigation, the content, the footer, and the contact information at the very bottom of the page. Here is what the code looks like:

```
<a href="#nav" accesskey="2">Skip to Navigation</a>  
<a href="#sub" accesskey="3">Skip to Subnavigation</a>  
<a href="#content" accesskey="4">Skip to Content</a>  
<a href="#footer" accesskey="5">Skip to the Footer</a>
```

The link at the top of the page, `<a href="#anchor_name">`, is invisible. When a person hears the link and selects it, he is taken to the place on the page where the anchor tag, `<a name=anchor_name>` is in the HTML. The anchor tag is also invisible. This gives users of screen readers choices early in the page to go to certain areas; for example, the link to the content of any page in our website is the third one you hear.

## CONCLUSION

There are several easy things you can do to make your web pages more accessible, often without changing the appearance of your page. When you have made your web pages more accessible to people with visual disabilities, you have also made your pages more accessible to people who cannot use a keyboard because of a physical disability or because of the way in which they visit your page.

Often the changes you make to increase the accessibility of your pages for people with disabilities also make your pages clearer, more consistent, and more accessible to people visiting your website in a variety of ways.

Having accessible web pages sends a message to prospective students, faculty, and staff with disabilities that they are welcome, to alumni that your virtual campus is friendly, and to those with technology like PDA's that your campus is ready for them.

## REFERENCES

A free downloadable version of the JAWS screen reader:  
[http://www.freedomscientific.com/fs\\_downloads/jaws.asp](http://www.freedomscientific.com/fs_downloads/jaws.asp)

The World Wide Web Consortium's HTML Home Page:  
<http://www.w3.org/MarkUp/>

EASI (Equal Access to Software and Information):  
[http://www.its.niu.edu/its/CSupport/accessibility\\_policy.shtml](http://www.its.niu.edu/its/CSupport/accessibility_policy.shtml)

Northern Illinois University Web Accessibility Standards:  
[http://www.its.niu.edu/its/CSupport/accessibility\\_policy.shtml](http://www.its.niu.edu/its/CSupport/accessibility_policy.shtml)

508Compliant  
<http://www.508compliant.com/tools.htm>

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A mailing list of web developers and disabled users who review their pages for accessibility: [uvip-web-test@egroups.com](mailto:uvip-web-test@egroups.com)