

The background of the image is dark with a subtle pattern. A large, semi-transparent clock face is visible, showing the numbers 50, 55, and 60. A network cable connector is also visible, with its metal contacts and plastic housing. The text is overlaid on this background.

60

MINUTES

30

WEB ACCESSIBILITY TIPS



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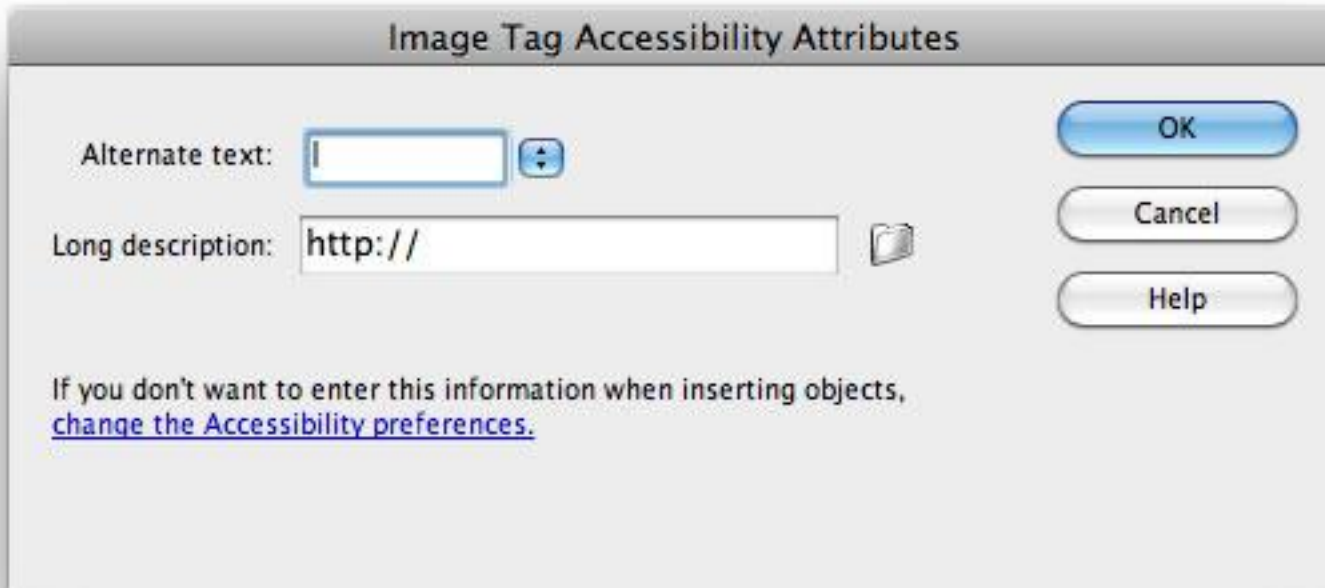
@terrillthompson

<http://uw.edu/accesscomputing/tips>

1. Add proper alt text to images

- People who can't see images depend on alternate text versions of image content
- Almost every document authoring tool supports alt text. Right click on the image to access Image Properties or equivalent, then enter a brief description.
- Keep alt text short and sweet.

Adding alt text in Dreamweaver



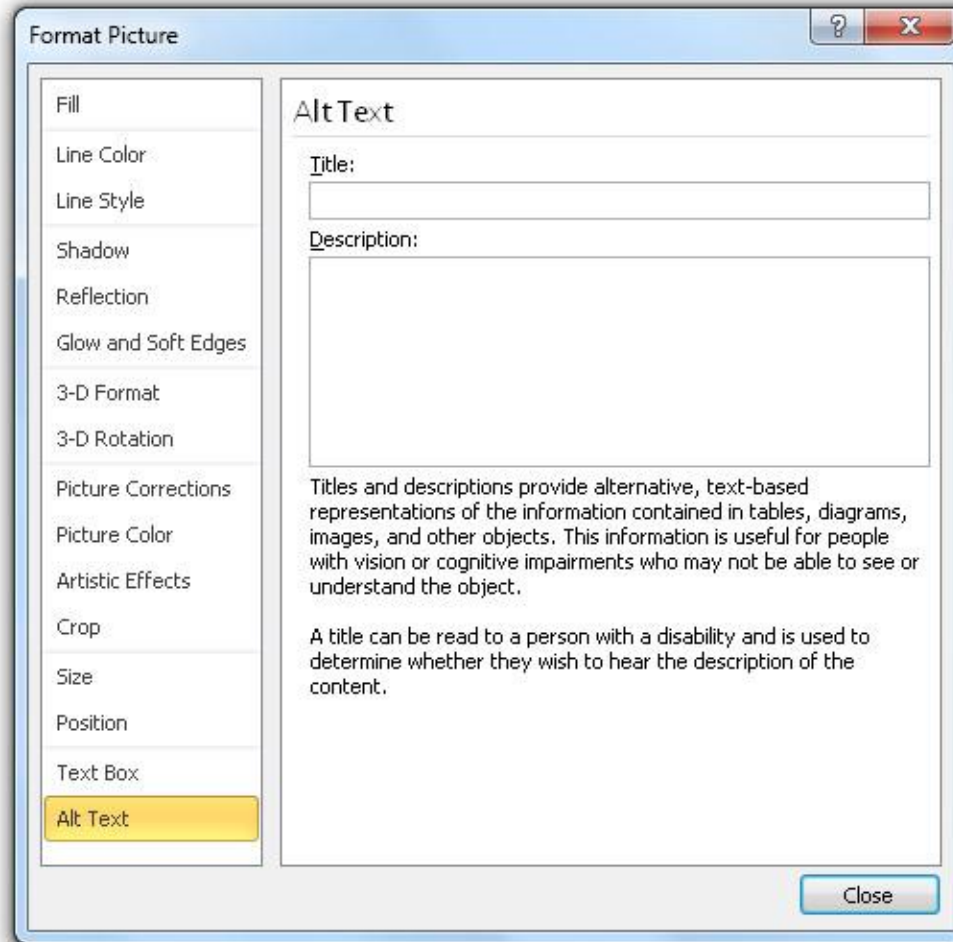
Adding alt text in HTML



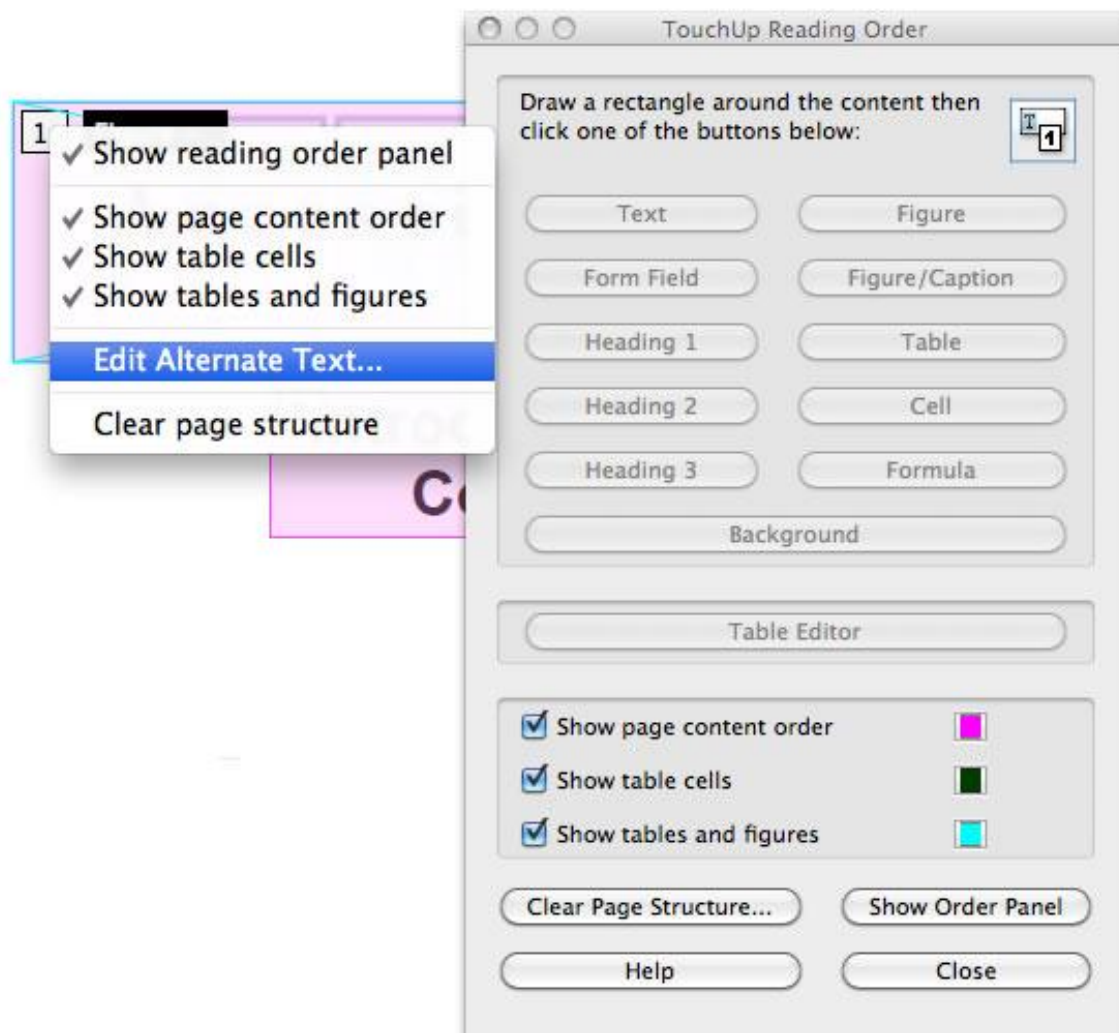
```

```

Adding alt text in Word



Adding alt text in Adobe Acrobat



A Couple of Great Alt Text Resources

- W3C Techniques for providing useful text alternatives

<http://www.w3.org/TR/html-alt-techniques/>

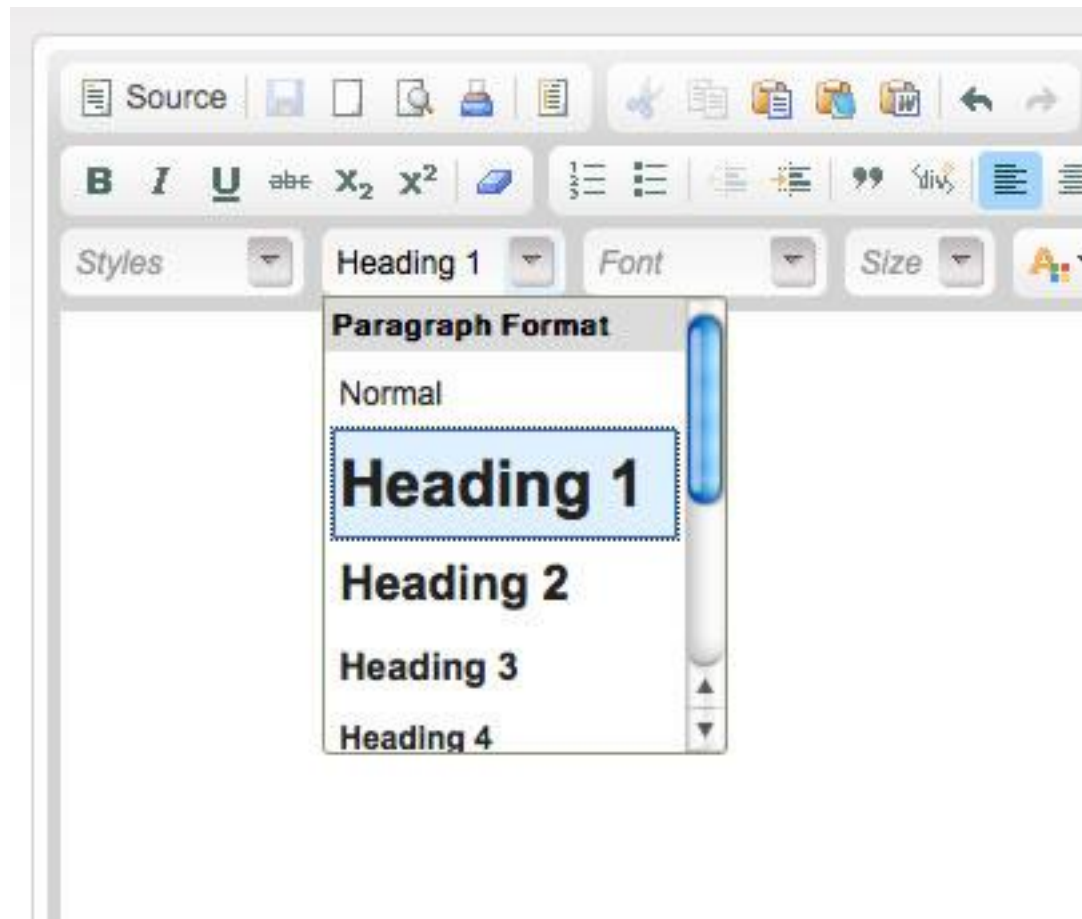
- NCAM Effective practices for describing science content

http://ncam.wgbh.org/experience_learn/educational_media/stemdx

2. Use headings properly

- Headings communicate document structure.
- They help screen reader users, search engines, and more.
- Headings should form an outline of the page (H1 = the main page heading, H2 = secondary headings, etc.)
- Nearly all document authoring tools supporting headings at various levels

Adding headings in CK Editor



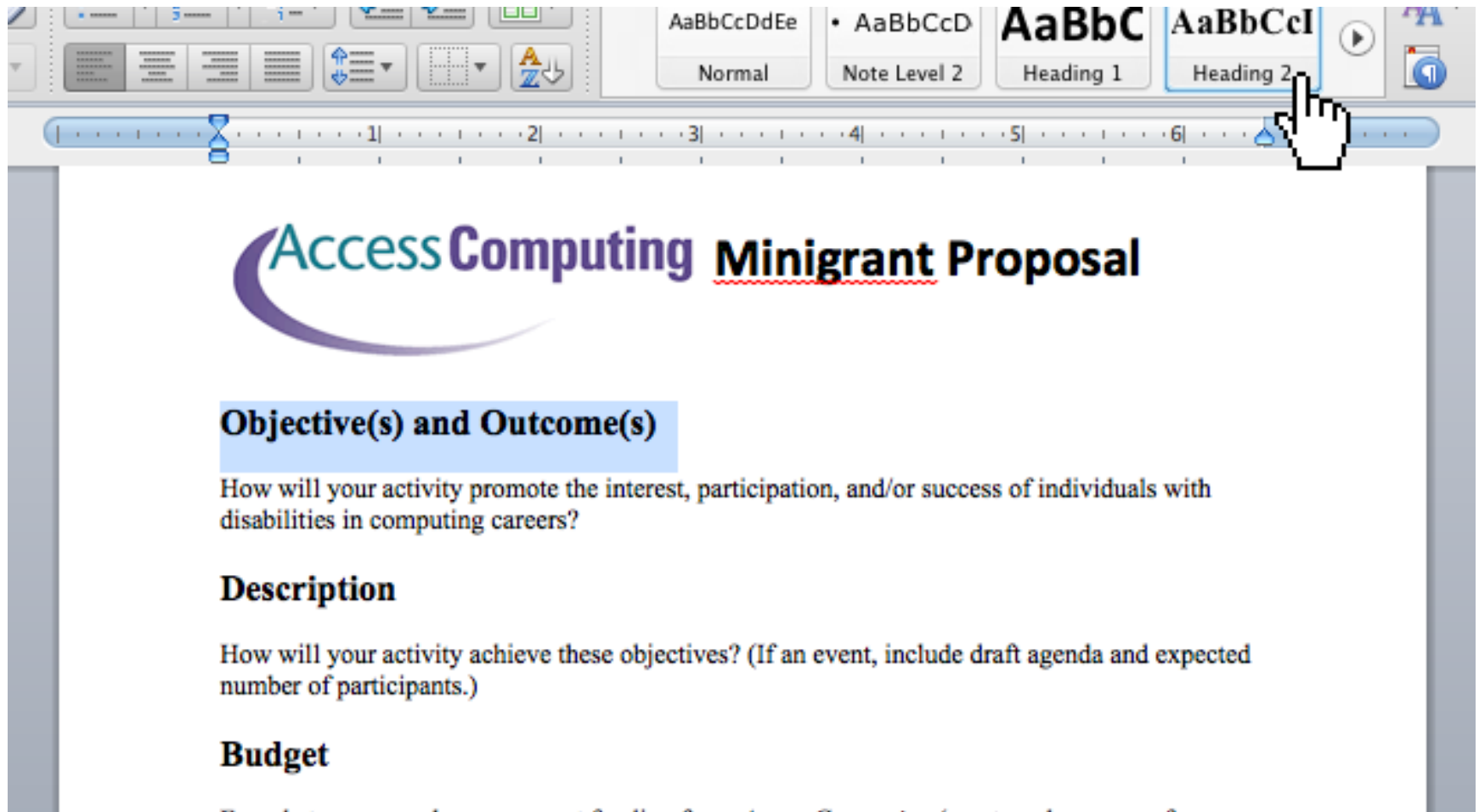
Adding headings in HTML

`<h1>This is the main heading</h1>`

`<h2>This is a secondary heading</h2>`

`<h2>This is another secondary heading</h2>`

Adding headings in Word



The screenshot shows the Microsoft Word ribbon with the Styles section active. The 'Heading 2' style is selected, and a mouse cursor is pointing at it. The document content includes a logo for 'Access Computing' and a title 'Minigrant Proposal'.

Access Computing Minigrant Proposal

Objective(s) and Outcome(s)

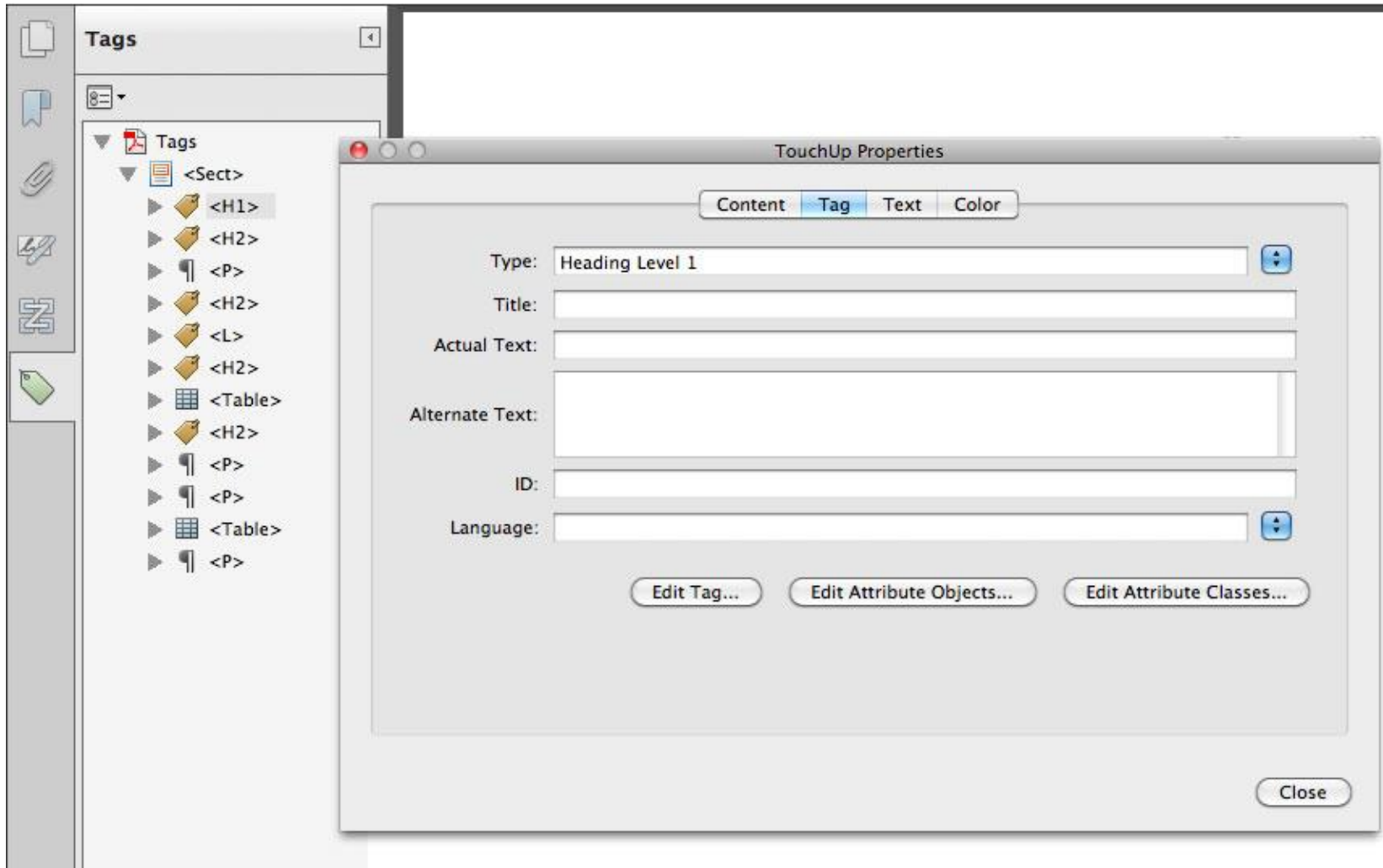
How will your activity promote the interest, participation, and/or success of individuals with disabilities in computing careers?

Description

How will your activity achieve these objectives? (If an event, include draft agenda and expected number of participants.)

Budget

Adding headings in Adobe Acrobat



3. Create accessible PDFs

- Not all PDFs are equal:
 - Image PDFs
 - PDFs with text, but no structure
 - Tagged PDF (the only accessible type)
- Can create an accessible PDF from scratch
 - Using a tool that supports tagged PDF (e.g., Word)
 - Save as tagged PDF
- Can fix an inaccessible PDF using Adobe Acrobat Pro

Fixing a PDF in Acrobat Pro

1. Convert to text (if needed)
2. Add tags to document (if needed)
3. Touch up reading order,
add alt text to images
4. Check/correct headings and other tags
5. Create links from URLs (if needed)
6. Define document language
7. Run an accessibility check

More on PDF Accessibility

- <http://uw.edu/accessibility/pdf.html>
- Includes workflows for:
 - Making a PDF accessible from scratch
 - Exporting from Word to tagged PDF
 - Repairing an inaccessible PDF using Acrobat Pro
 - Repairing inaccessible PDF forms using Acrobat Pro
 - Creating accessible PDF forms using Acrobat Pro
 - Creating accessible PDF forms using LiveCycle Designer
- Also includes *additional* resources

4. Know when to use PDF

PDF is great for documents where:

- Appearance is critical. Document must be the same across all platforms.
- Security is critical. Document requires encryption, digital signatures, watermarks, etc.

For many documents, HTML or Word may be a better choice

5. Use ARIA, especially landmarks

- ARIA = Accessible Rich Internet Applications
- Draft W3C spec
<http://w3.org/TR/wai-aria>
- WebAIM slides on ARIA and HTML5
<http://weba.im/ahg2011>
- MDN ARIA site
<https://developer.mozilla.org/en/aria>
- HTML5 Accessibility
<http://html5accessibility.com>

Landmark Roles

Already well supported by screen readers

<http://www.html5accessibility.com/tests/landmarks.html>

- role="banner"
- role="navigation"
- role="main"
- role="search"
- role="form"
- role="complementary" (e.g., sidebar)
- role="contentinfo" (e.g., footer)
- role="application" (use with discretion)

6. Add labels to form fields

Explicitly associate labels/prompts with the fields they represent

First Name:

Adding labels in Dreamweaver

The screenshot shows the 'Input Tag Accessibility Attributes' dialog box. It has a title bar with the text 'Input Tag Accessibility Attributes'. The dialog contains several fields and options:

- ID:** A text field containing 'FirstName'.
- Label:** A text field containing 'First Name:'.
- Attach label tag using 'for' attribute:** A radio button that is selected.
- Style:** Two radio buttons: 'Wrap with label tag' (unselected) and 'No label tag' (unselected).
- Position:** Two radio buttons: 'Before form item' (selected) and 'After form item' (unselected).
- Access key:** An empty text field.
- Tab Index:** An empty text field.

On the right side of the dialog, there are three buttons: 'OK' (highlighted in blue), 'Cancel', and 'Help'.

At the bottom of the dialog, there is a note: 'If you don't want to enter this information when inserting objects, [change the Accessibility preferences.](#)'

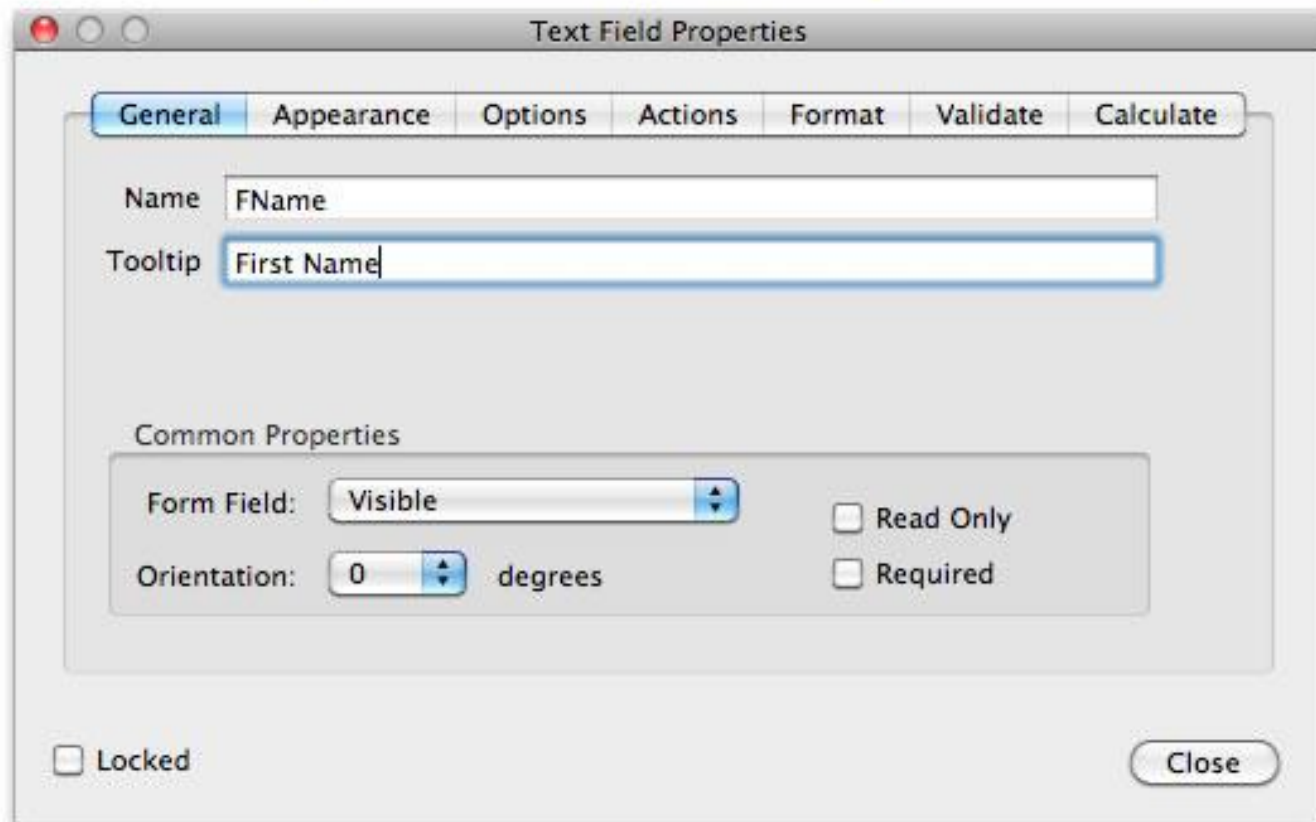
Adding labels in HTML

```
<label for="firstname">First Name:</label>
```

```
<input type="text" name="fname" id="firstname">
```

In PDF, use tooltips for labels

First Name:



7. Group related form fields together

When form fields are logically grouped together (especially radio buttons and checkboxes) non-visual users need access to *both* prompts

Select a major:

- Computer Science
- Engineering
- Economics
- Physics
- Psychology

In HTML, use fieldset and legend

```
<fieldset>
```

```
  <legend>Select a major:</legend>
```

```
  <input type="radio" name="major" id="maj1">
```

```
  <label for="maj1">Computer Science</label>
```

```
  <!-- etc. -->
```

```
</fieldset>
```

In PDF, use tooltip like <legend>

Select a major:

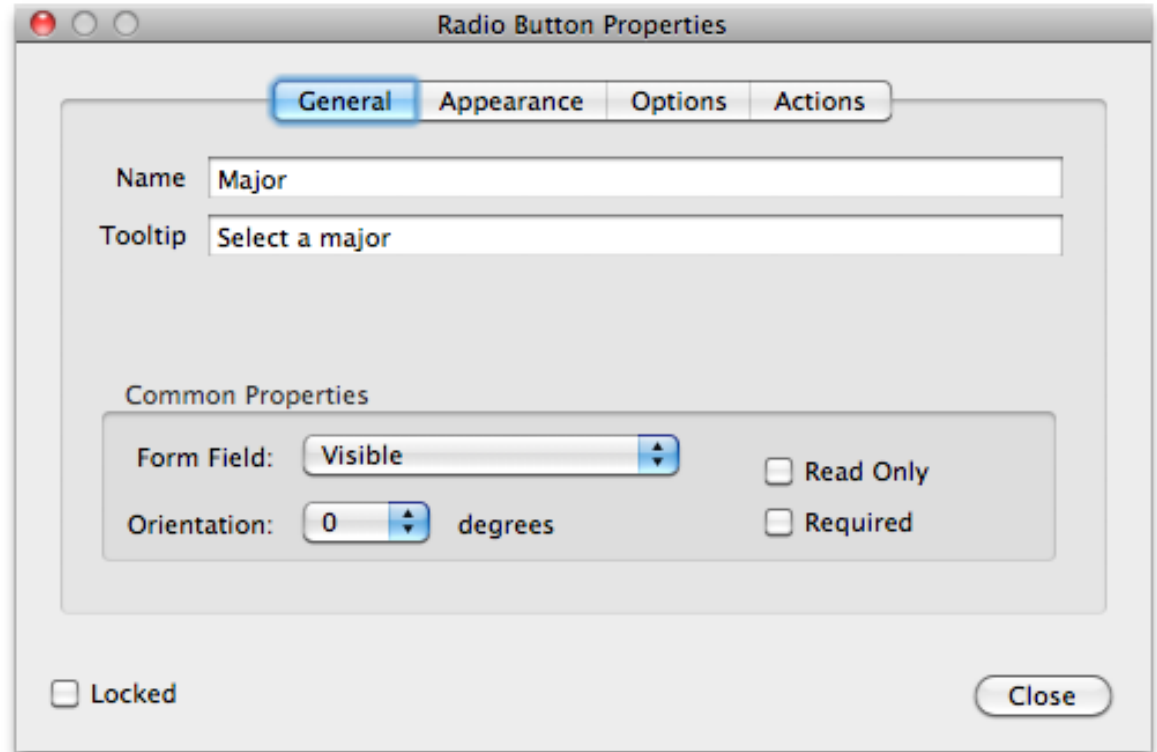
Computer Science

Engineering

Economics

Physics


Psychology





And “Radio Button Choice” like <label>


Select a major:

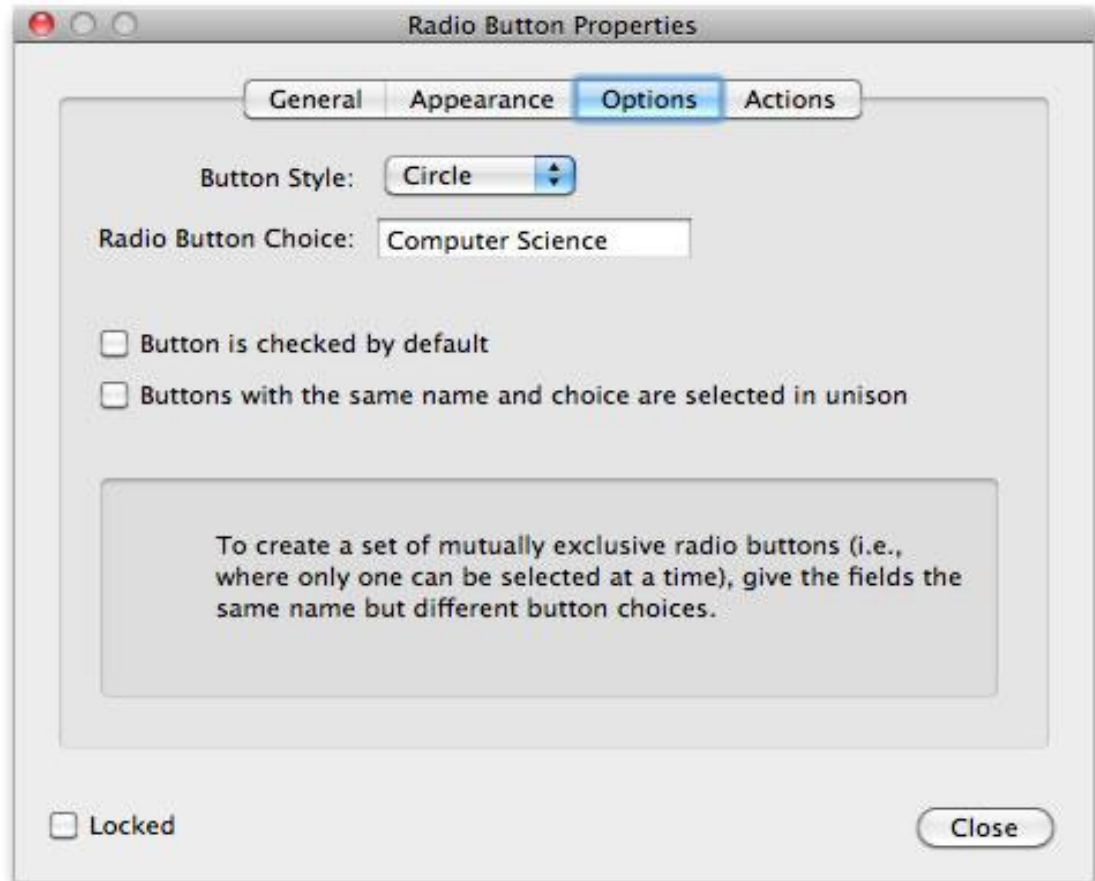
 Computer Science

 Engineering

 Economics

 Physics

 Psychology



8. Markup tables appropriately

- Include markup that clearly communicates the relationship between table headers and the cells within their scope

Example Simple Table

Class Schedule

Week	Topic	Reading Assignment
1	Course Introduction	Chapter 1
2	Inertia, equilibrium, kinematics	Chapters 2-3
3	Newton's laws, vectors, momentum, energy	Chapters 4-7
4	Matter, elasticity, scaling	Chapters 8-10
5	Wave kinematics, sound, electricity, magnetism, induction	Chapters 11-15
6	Light, reflection and refraction, emission	Chapters 15-18
7	Review, final exam	

Example Simple Table in HTML

```
<table>
  <thead>
    <tr>
      <th scope="col">Week</th>
      <th scope="col">Topic</th>
      <th scope="col">Reading Assignment</th>
    </tr>
  </thead>
  <tbody>
    <tr>
      <th scope="row">1</th>
      <td>Course Introduction</td>
      <td>Chapter 1</td>
    </tr>
    <!-- etc. -->
  </tbody>
</table>
```

Example complex table

AU Enrollment Trends

	2007-08						2008-09					
	<u>CS</u>	<u>Eng</u>	<u>Eco</u>	<u>Phy</u>	<u>Psy</u>	<u>Spa</u>	<u>CS</u>	<u>Eng</u>	<u>Eco</u>	<u>Phy</u>	<u>Psy</u>	<u>Spa</u>
Total	84	126	43	32	112	59	82	140	45	34	101	64
% Male	89	84	73	69	20	47	87	80	69	69	22	48
% Female	11	16	27	31	80	53	13	20	31	31	78	52

Accessible complex table in HTML (just the highlights)

```
<th id="ay0708" colspan="6">2007-08</th>
```

```
<th id="eco1">
```

```
  <abbr title="Ecological Sciences">Eco</abbr>
```

```
</th>
```

```
<th id="female">% Female</th>
```

```
<td headers="ay0708 eco1 female"> 27</td>
```

Accessible PDF tables in Acrobat

	2007-08						2008-09					
Total	g	p	y	a	g	p	y	a	g	p	y	a
Male												
% Female	11	10	27	31	60	53	13	20	31	31	70	52

Table Cell Properties

Type

Header Cell Scope: None

Data Cell

Attributes

Row Span: 1

Column Span: 1

ID:

Associated Header Cell IDs: eco, ay0708

Cancel OK

Add Table Header ID

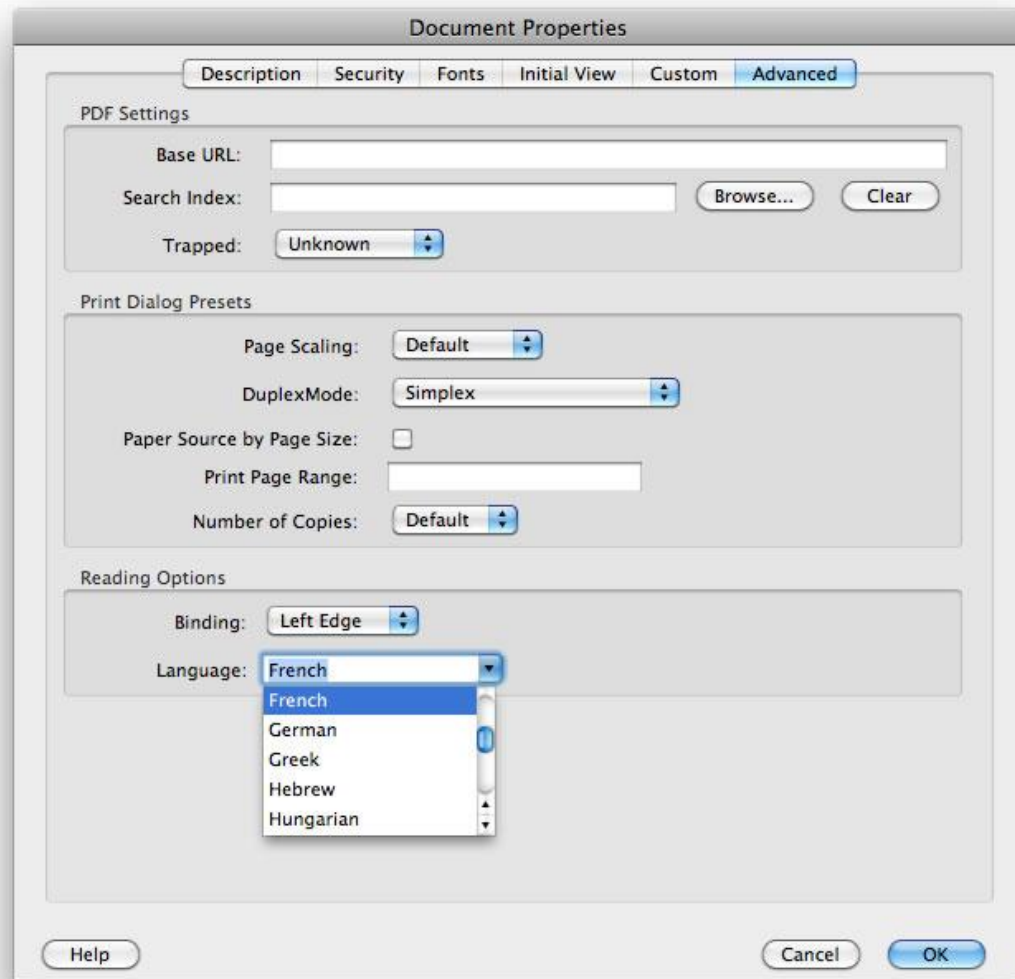
Header ID: female

Cancel OK

9. Identify language of text

- Identify default language of document
`<html lang="en">`
- Identify changes in language
`<p lang="fr">Après la pluie le beau temps.</p>`

Identifying language in PDF (using Adobe Acrobat Pro)



More on Language

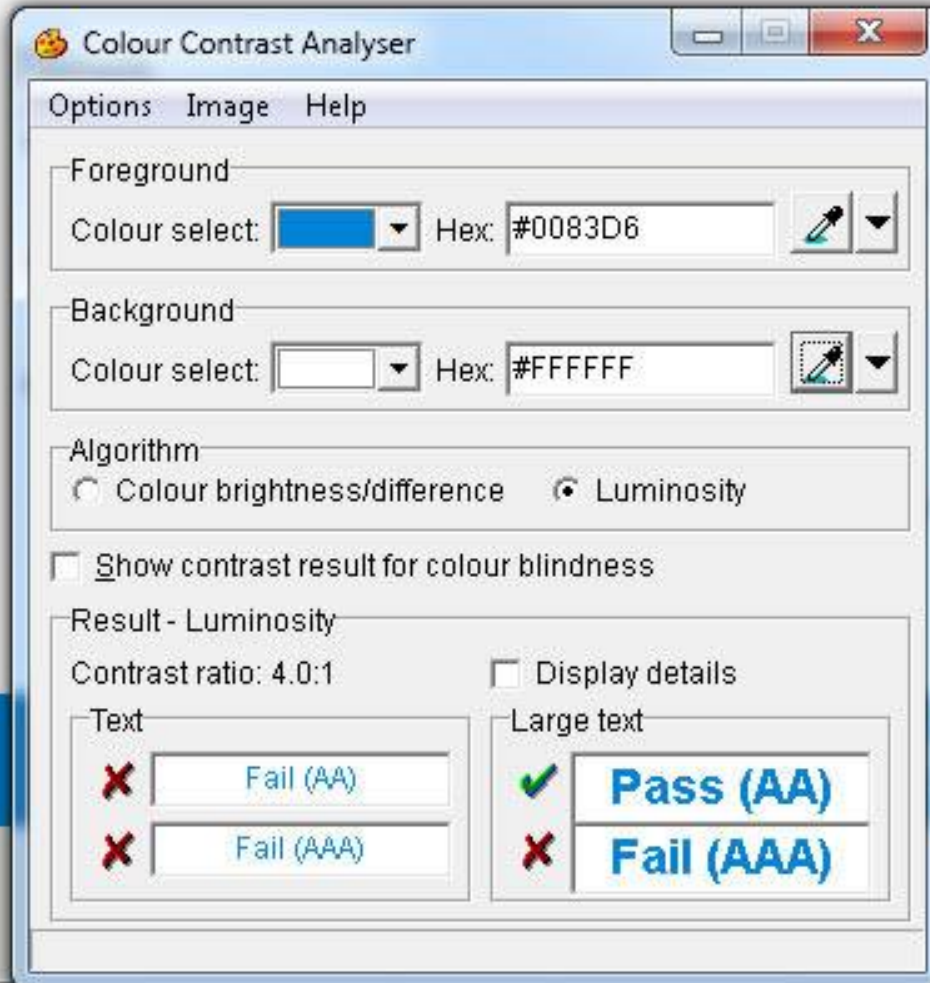
- Experiments with Language and Accessibility
<http://terrillthompson.com/blog/30>

10. Use a color contrast checker

- WCAG 2.0 Level AA:
 - Contrast ratio of 4.5:1 for normal text
 - or 3:1 for large text (18 pt or 14 pt bold)
- WCAG 2.0 Level AAA:
 - Contrast ratio of 7:1 for normal text
 - Or 4.5:1 for large text

Example Contrast Checker

<http://www.paciellogroup.com/resources/contrast-analyser.html>



Events

'Terra Nova': Nov. 9 to 13

REEL Rock Film Tour: 7 p.m. Nov. 15

Financial illiteracy: 5:15 p.m. Nov. 16

Take Back the Night: 7 p.m. Nov. 17

Harry Potter Trivia Night: 6:30 p.m. Nov. 21

11. Avoid using tiny fonts

Paragraph with font-size:8px

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Nulla feugiat diam magna. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. In bibendum ornare dolor, eget venenatis sem congue eget. Cras ac diam felis. Mauris sit amet orci a ipsum tincidunt laoreet ut quis nisl. Ut porta pulvinar velit vel malesuada. Nam lacinia vestibulum purus, ac blandit leo auctor eget. Praesent bibendum pharetra metus, pharetra commodo lacus placerat sed. Cras commodo venenatis mauris a pretium. Curabitur pellentesque, augue eu tempor fermentum, nulla sapien commodo quam, vitae laoreet diam mauris bibendum odio. Ut dolor sapien, cursus ut ornare id, laoreet vel neque. Curabitur malesuada gravida hendrerit. Suspendisse massa nulla, laoreet in eleifend sed, eleifend ut odio. Sed a volutpat felis.

Paragraph with font-size:1em

= *my* default size as defined in my browser preferences

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Nulla feugiat diam magna. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. In bibendum ornare dolor, eget venenatis sem congue eget. Cras ac diam felis. Mauris sit amet orci a ipsum tincidunt laoreet ut quis nisl. Ut porta pulvinar velit vel malesuada. Nam lacinia vestibulum purus, ac blandit leo auctor eget. Praesent bibendum pharetra metus, pharetra commodo lacus placerat sed. Cras commodo venenatis mauris a pretium. Curabitur pellentesque, augue eu tempor fermentum, nulla sapien commodo quam, vitae laoreet diam mauris bibendum odio. Ut dolor sapien, cursus ut ornare id, laoreet vel neque. Curabitur malesuada gravida hendrerit. Suspendisse massa nulla, laoreet in eleifend sed, eleifend ut odio. Sed a volutpat felis.

12. Respect white space

- Space between lines
- Space between paragraphs
- Can help users who have difficulty tracking text horizontally.
- Contributes to a cleaner, more aesthetically pleasing interface for everyone.

Sample CSS with white space

```
p, li, blockquote {  
    line-height: 1.5em;  
    margin-bottom: 1.5em;  
}
```

Clean and simple is good.

The Google logo is centered on the page. It consists of the word "Google" in its signature multi-colored font: 'G' is blue, 'o' is red, 'o' is yellow, 'g' is blue, 'l' is green, and 'e' is red.A long, empty rectangular search input field with a thin blue border, positioned horizontally below the Google logo.

Google Search

I'm Feeling Lucky

13. Provide visible indication of focus

```
a {  
    color: black;  
    background-color: white;  
}  
a:hover {  
    color: white;  
    background-color: black;  
}
```

Focus is especially important for keyboard users

```
a {  
    color: black;  
    background-color: white;  
}  
  
a:hover, a:focus {  
    color: white;  
    background-color: black;  
}
```

14. Use text, not pictures of text

- Pictures become blurry when enlarged
- Pictures take longer to download
- Pictures are more difficult for you (the website author) to edit.
- You can attain very good visual effects using text and CSS.

15. Think twice about the words you choose

- Word length and sentence complexity have an effect on the ability of certain individuals to decode the words on a page.
- Juicy Studio Readability Test:
<http://juicystudio.com/services/readability.php>
- Struggling with Understandability:
<http://terrillthompson.com/blog/10>

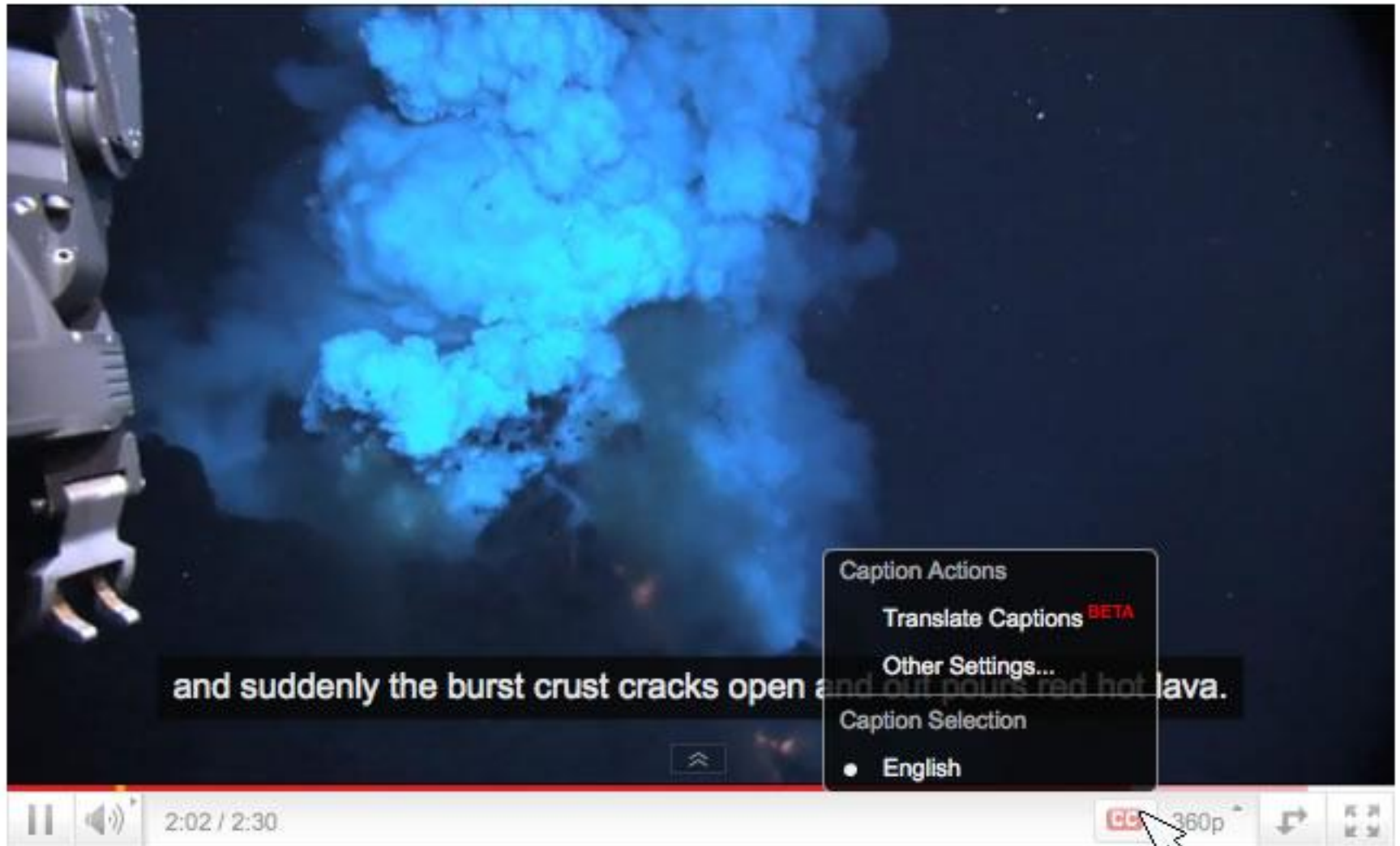
Example choices to make text easier to read

- Understandable → “easier to read”
- Manipulated → Changed
- Subsequently → Later
- “Testimonials from individuals with disabilities...” →
“People with disabilities talk about...”

16. Caption video

- Captioned video is accessible to people who can't hear it
- Captions make video full-text searchable (YouTube)
- Captions can be automatically translated to other languages during playback (YouTube)
- Captions can be used to generate an interactive transcript (YouTube)

Example YouTube Video with Captions



The image shows a YouTube video player interface. The video content displays a bright blue, glowing lava flow against a dark background. A white robotic arm is visible on the left side of the frame. A black caption bar is overlaid at the bottom of the video, containing the text: "and suddenly the burst crust cracks open and out pours red hot lava." A context menu is open over the caption bar, listing the following options: "Caption Actions", "Translate Captions ^{BETA}", "Other Settings...", "Caption Selection", and "English". The video player's control bar at the bottom includes a play/pause button, a volume icon, a progress bar showing "2:02 / 2:30", a "CC" icon, a "360p" resolution indicator, and other standard video controls. A mouse cursor is pointing at the "CC" icon.

and suddenly the burst crust cracks open and out pours red hot lava.

2:02 / 2:30

CC 360p

Free Tools For Captioning

- MAGpie
[http://ncam.wgbh.org/invent build/web multimedia/tools-guidelines/magpie](http://ncam.wgbh.org/invent_build/web_multimedia/tools-guidelines/magpie)
- Universal Subtitles
<http://universalsubtitles.org>
- dotSUB
<http://dotsub.com>
- Review of various tools on my blog:
<http://terrillthompson.com/blog/45>

A Few Commercial Tools & Services for Captioning

- DocSoft

<http://www.docsoft.com/>

- CaptionSync

<http://www.automaticsync.com/captionsync/>

- 3PlayMedia

<http://www.3playmedia.com/>

17. Describe video

- Describe content that is otherwise only accessible to people who can see it. Examples:
 - Words on the screen
 - Critical actions
 - Other critical details about the setting, etc.
- Script it first. Then record the narration. Then sync it with the video.

Description in MAGPie

- Write script using the caption interface
- Record audio description segments
- Save as Real or Quicktime.
- Output is a SMIL file that synchronizes the wav files with the video
- Play the SMIL file in Real Player or Quicktime

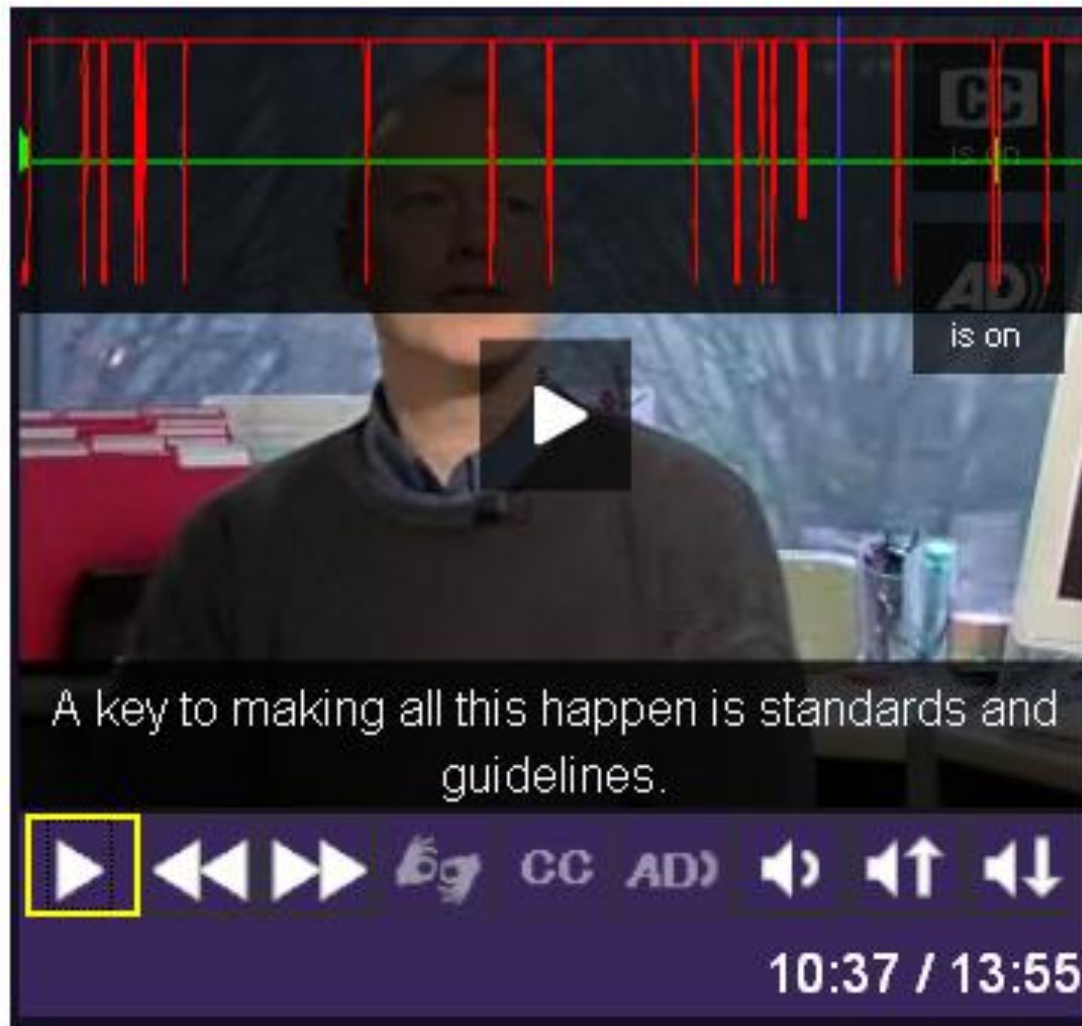
Description using JW Player

- JW Player supports a single MP3 audio description track
- Includes ducking so it automatically lowers the program audio when audio description starts (experimental solution)

Example Described Video in JW Player



Example Described Video in JW Player at uw.edu/doit/video



Outsourcing Audio Description

- Many examples of vendors' work at:
http://listeningislearning.org/background_what-is-description.html

Text description in HTML5

```
<video controls tabindex="0">  
  <source src="myvideo.mp4" type="video/mp4">  
  <source src="myvideo.ogv" type="video/ogg">  
  <track kind="captions" src="mycaptions.vtt">  
  <track kind="descriptions" src="mydesc.vtt">  
  <!-- fallback content goes here -->  
</video>
```

Text Description Proof of Concept

- From Greg Kraus, NCSU: <http://bit.ly/ncsudesc>



Captions

my sections like "Live Scores" or the "Welcome" and so forth, all of those are heading 2s.

Audio Description

points to the title of the page, an image, in upper left corner

Toggle Audio Description Voicing:

On Off

18. Provide a transcript

- Benefits individuals who are deaf-blind (easier to read than captions with a Braille device)
- Benefits individuals with low Internet bandwidth (who can't play the media)
- Benefits all users by allowing them to access content quickly

19. Choose media players that support accessibility

- Does this player support closed captions?
- Does it support description?
- Can it be operated without a mouse?
- Are buttons and controls accessible to screen reader users?

A Few Media Players To Check Out

- JW Player

<http://www.longtailvideo.com/players>

- Ohio State JW Player Controls

<http://wac.osu.edu/examples/jwpc/>

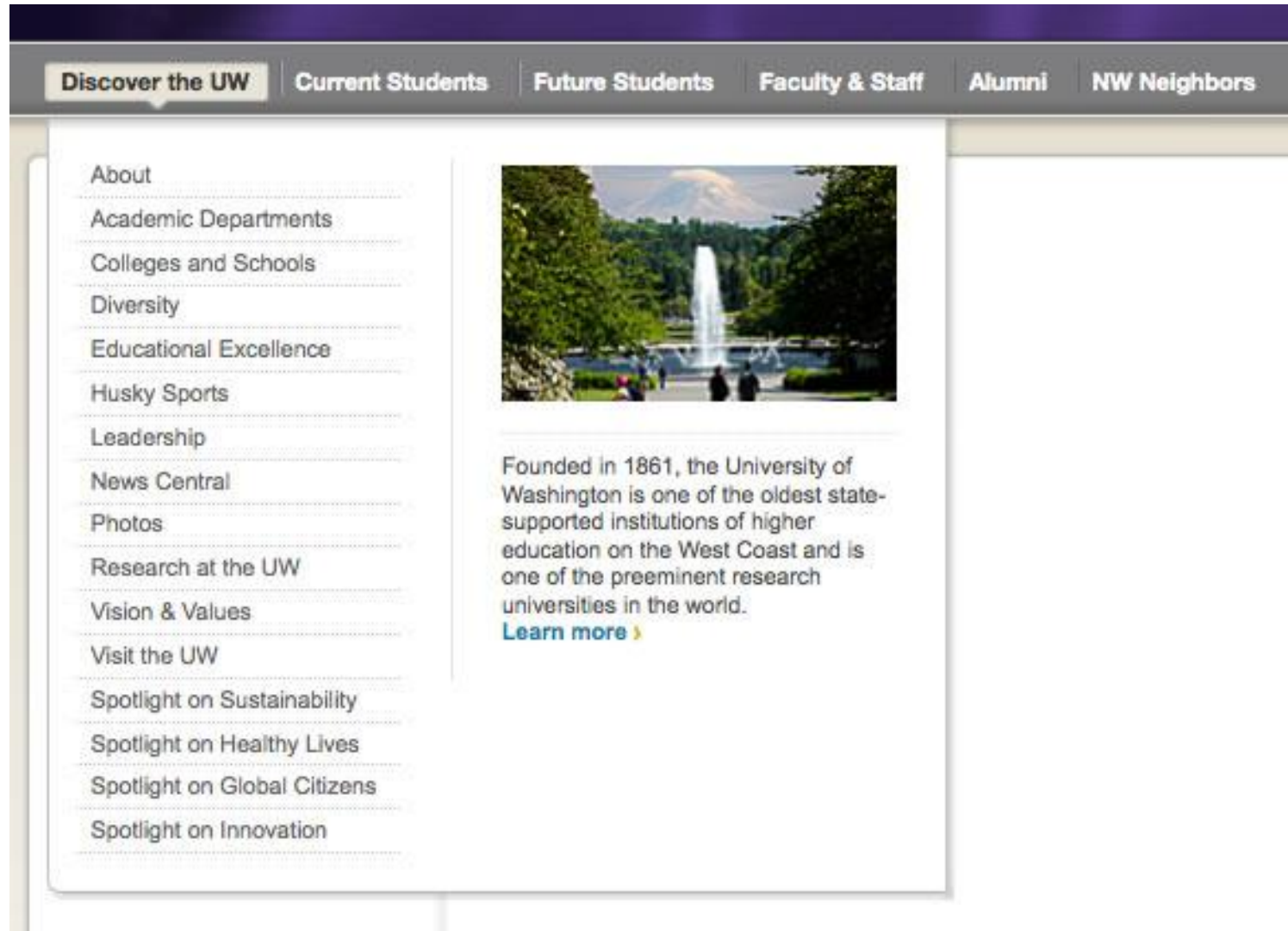
- NCAM ccPlayer

http://ncam.wgbh.org/invent_build/web_multimedia/tools-guidelines/ccplayer

- See also my blog on HTML5 video and JW Player

<http://terrillthompson.com/blog/40>

20. Choose a menu system that works for all users



The image shows a screenshot of the University of Washington website. At the top, there is a dark purple header with a navigation bar containing the following links: "Discover the UW", "Current Students", "Future Students", "Faculty & Staff", "Alumni", and "NW Neighbors". Below the header, on the left side, is a vertical navigation menu with the following items: "About", "Academic Departments", "Colleges and Schools", "Diversity", "Educational Excellence", "Husky Sports", "Leadership", "News Central", "Photos", "Research at the UW", "Vision & Values", "Visit the UW", "Spotlight on Sustainability", "Spotlight on Healthy Lives", "Spotlight on Global Citizens", and "Spotlight on Innovation". To the right of the menu is a featured article. It begins with a photograph of a large fountain in a park-like setting with a mountain in the background. Below the photo, the text reads: "Founded in 1861, the University of Washington is one of the oldest state-supported institutions of higher education on the West Coast and is one of the preeminent research universities in the world." This is followed by a blue link that says "Learn more" with a right-pointing arrow.

How a Modern Menu Should Work

Source: Dynamic HTML Style Guide

http://dev.aol.com/dhtml_style_guide

- Tab enters and exits the menu
- Navigate with left/right arrow keys
- Open sub-menu with enter, space bar, or up/down arrows
- Navigate sub-menus with arrow keys
- Exit sub-menu with escape
- And much more!

A Few Menu Systems to Check Out

- YUI3 MenuNav Node Plugin
<http://developer.yahoo.com/yui/3/node-menunav/>
- UDM4
<http://udm4.com/>
- HTML5 with ARIA: OpenAjax Alliance
Menubar Example
<http://oaa-accessibility.org/example/25/>

21. Choose JavaScript widgets that support accessibility

The image displays a screenshot of the Western Washington University website. On the left is a blue navigation menu with the university logo and the following categories: ABOUT, ACADEMICS, STUDENT SERVICES, STUDENT LIFE, and COMMUNITY. The 'ABOUT' section lists links for Quick Facts, Costs, Green Campus, Photos and Tours, Campus Administration, National Recognition, and President's Welcome. The main content area features a background image of a sailboat and a snow-capped mountain, with the tagline 'Active Minds Changing Lives'. Overlaid on the bottom right are several news article widgets. One widget titled 'Engineered critters bring 'world' title to UW' includes the text: 'Their uniforms are lab coats. They don't have a team cheer but 23 UW students and their advisers won a world championship in synthetic biology.' and is attributed to 'UW Today'. Another widget titled 'Lightning network helps get a handle on volcanoes' includes the text: 'A worldwide lightning monitoring program at the UW has been keeping tabs on a remote volcano that recently rumbled to life.' and is also attributed to 'UW Today'. A third widget titled 'ds 'Meet the mammals' at Burke Museum' includes the text: 'Hundreds of children and their parents visited the museum on Saturday for the annual family day.' and is attributed to 'Seattle Times'. A fourth widget titled 'Wash. chooses, condemns quarry bears to crushing ocean depths' is attributed to 'UW Today'. At the bottom of the news widgets is a navigation bar with a question mark icon, a left arrow, a play button icon, and a right arrow.

Accessibility in Javascript Libraries

- jQuery
 - jQuery Accessibility Google Group
<https://groups.google.com/group/jquery-a11y>
 - Accessible jQuery-UI Components
<http://hanshillen.github.com/jqtest/>
- Dojo Toolkit (Dijit)
 - <http://dojotoolkit.org/reference-guide/dijit/a11y/statement.html>
- Yahoo! User Interface (YUI3)
 - <http://www.yuiblog.com/blog/2009/08/03/aria-made-easier-with-yui-3/>

22. Test JavaScript widgets – don't *assume* they work for everyone

- ARIA is a work in progress
- ARIA is not *fully* supported by AT
- ARIA requires relatively new AT
- Test! Test! Test! (see tips 24-27)
- Ask users with disabilities to help with testing
- Practice progressive enhancement
- If you *must*, practice graceful degradation

23. Chose LMS and CMS that support accessibility

- Learning management systems (e.g., Blackboard, Desire2Learn, Moodle, Sakai) will have a huge impact on students' educational experience.
- Content management systems (e.g., Drupal, Plone, Joomla, WordPress) will have a huge impact on a institution's Web.
- Accessible LMS or CMS = Accessible **everywhere**
- Inaccessible LMS or CMS = Inaccessible **everywhere**

Questions to ask

- Can it be used effectively without a mouse?
- Is it accessible to AT users?
- Are third party plug-ins accessible?
 - Example: “The Drupal Accessibility Pledge”
<http://groups.drupal.org/node/66383>
- Can content authors use the tool to create inaccessible content? (Answer: Yes)
- Does the tool prompt authors to include accessibility, and provide relevant help?

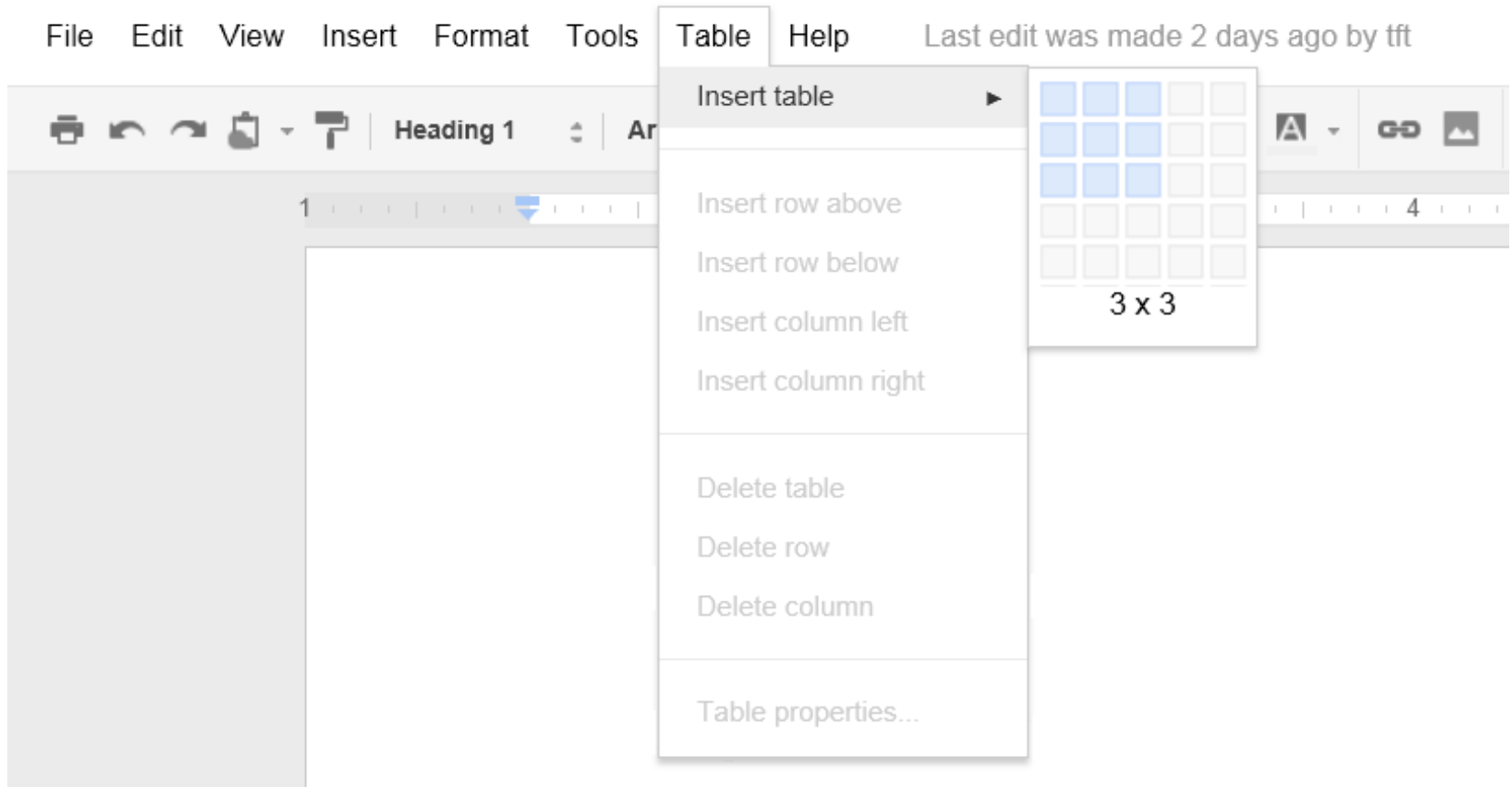
24. Test with a keyboard

- Use the tab key (and other keys where doing so makes sense)
- Don't touch the mouse!
- Can you access all features?
- Can you operate all controls?

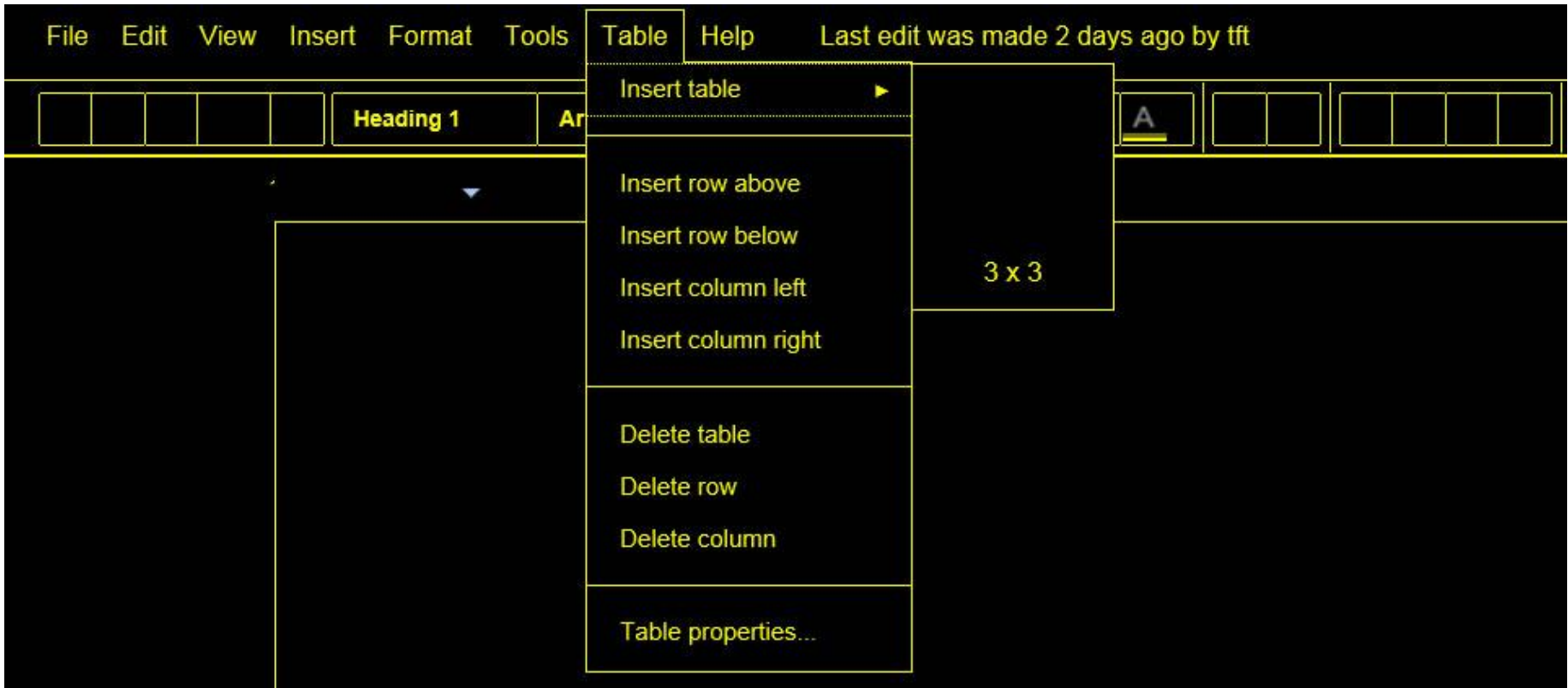
25. Test with high contrast color schemes

Is all important content still visible?

Google Docs Example #1: Default Contrast



Google Docs Example #2: High Contrast in Windows



26. Test pages with screen readers

- JAWS

<http://freedomscientific.com/products/fs/jaws-product-page.asp>

- Window-Eyes

<http://www.gwmicro.com/Window-Eyes/>

- NVDA (Free!)

<http://www.nvda-project.org>

- VoiceOver (built in to Mac OS X and iOS)

<http://www.apple.com/accessibility/voiceover/>

27. Test pages on mobile devices

- 66.7% of screen reader users now use a screen reader on a mobile device
Source: WebAIM Screen Reader User Survey #3:
<http://weba.im/survey3>
- Test on various mobile devices with and without a screen reader
- W3C mobileOK Checker
<http://validator.w3.org/mobile/>
- W3C Web Content Accessibility & Mobile Web
<http://www.w3.org/WAI/mobile/>

28. Ask vendors specific questions about accessibility of their products

- ~~• Is your product accessible?~~
- Do you have a Voluntary Product Accessibility Template (VPAT)?
- Can you demonstrate how to operate your product without a mouse?
- What sort of testing have you done with users with disabilities? (probe for details)
- Fact check their answers with other users

29. Demand accessibility!

- Not accessible? Don't buy it. Don't use it. Don't support it.
- If no comparable product is accessible, buy it only with the understanding that the vendor must address its accessibility shortcomings.
- Work to implement policies on your campus that require IT purchases to be accessible.

Hold vendors accountable

- Representations and Warranties. Vendor represents and warrants that *[the product]* is fully accessible to persons with disabilities in accordance with Title II of the Americans with Disabilities Act *[or Title III for private institutions]* and Section 504 of the Rehabilitation Act *[or delete the “and” and add your state statute after the Rehab Act]* and further hereby indemnifies University from all claims, liability and damages for any violation of those statutes traceable to Vendor’s *[product]*.

30. Get involved!

- EDUCAUSE IT Accessibility Constituent Group
 - Working to get accessibility on the radar of EDUCAUSE, CIO's, and other IT Leaders
 - <http://edUCAUSE.edu/groups/itaccessLink>
 - <http://bit.ly/itaccessfaq>
- Access Technology Higher Education Network (ATHEN)
 - Activities include active collaborations with vendors
 - Home page: <http://athenpro.org>
 - Collaboration site: <http://collaborate.athen.org>

