Scientific & Technical Information Division

Section 508 Compliance

The following list of requirements has been taken verbatim from Section 508, § 1194.22 "Web-based intranet and internet information and applications."

a. A text equivalent for every non-text element shall be provided (e.g., via "alt", "longdesc", or in element content). (Suggested techniques for compliance)

b. Equivalent alternatives for any multimedia presentation shall be synchronized with the presentation. (Suggested techniques for compliance)

c. Web pages shall be designed so that all information conveyed with color is also available without color, for example from context or markup. (Suggested techniques for compliance)

d. Documents shall be organized so they are readable without requiring an associated style sheet. (Suggested techniques for compliance)

e. Redundant text links shall be provided for each active region of a server-side image map. (Suggested techniques for compliance)

f. Client-side image maps shall be provided instead of server-side image maps except where the regions cannot be defined with an available geometric shape. (Suggested techniques for compliance)

g. Row and column headers shall be identified for data tables. (Suggested techniques for compliance)

h. Markup shall be used to associate data cells and header cells for data tables that have two or more logical levels of row or column headers. (Suggested techniques for compliance)

i. Frames shall be titled with text that facilitates frame identification and navigation. (Suggested techniques for compliance)

j. Pages shall be designed to avoid causing the screen to flicker with a frequency greater than 2 Hz and lower than 55 Hz. (Suggested techniques for compliance)

k. A text-only page, with equivalent information or functionality, shall be provided to make a web site comply with the provisions of this part, when compliance cannot be accomplished in any other way. The content of the text-only page shall be updated whenever the primary page changes. (Suggested techniques for compliance)

l. When pages utilize scripting languages to display content, or to create interface elements, the information provided by the script shall be identified with functional text that can be read by assistive technology. (Suggested techniques for compliance)

m. When a web page requires that an applet, plug-in or other application be present on the client system to interpret page content, the page must provide a link to a plug-in or applet that complies with §1194.21, "Software applications and operating systems," (a) through (l). (Suggested techniques for compliance)

n. When electronic forms are designed to be completed on-line, the form shall allow people using assistive technology to access the information, field elements, and functionality required for completion and submission of the form, including all directions and cues. ([Suggested techniques for compliance](#))

o. A method shall be provided that permits users to skip repetitive navigation links. ([Suggested techniques for compliance](#))

p. When a timed response is required, the user shall be alerted and given sufficient time to indicate more time is required. ([Suggested techniques for compliance](#))

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A text equivalent for every non-text element shall be provided (e.g., via "alt", "longdesc", or in element content).

For spacer gifs and images that do not stand on their own as a representation of something (e.g. a line or border or a part of a graphic) use empty alt tags. This will allow screen readers to "skip" over the graphic.

    `<img src="spacer.gif" alt="">`

    NOTE: Do not put a space between the quotation marks! When viewing on some browsers, a space will create a small blank box when the mouse is on the graphic. Technically speaking, this is a problem with the browser, but should be taken into account when coding.

For a simple, decorative, or incidental images, a brief description (5 to 15 words) is all that is necessary: e.g.,

    A drawing or photo of a house is might be coded as

    `<img src="home.gif" alt="Drawing of a House.">`

    or

    `<img src="home.gif" alt="Photo of a House.">`

If the image is linked, describe the destination or purpose of the link -- not the image, e.g.,

    `<a href="index.html"> <img src="home.gif" alt="PNNL Home link"></a>`

Provide a text alternative a graphical representation of text is used.

    If the graphic says "Wind Turbines" Then the alt tag should be

    `<img src="files.gif alt="Wind Turbines">`

Images that have associated image maps should be given an alt tag that briefly describes the content of the image map

    `<img src="home.gif" alt="Image Map with Links to PNNL and the U.S. Department of Energy" usemap="#pnnlheader">`

    if there are many links

    `<img src="home.gif" alt="Image Map of Areas in the Library" usemap="#pnnlheader">`

If the information contained in the image is important to the meaning of the page (i.e., some important content would be lost if the image was removed), then provide a longer description that

describes any important content in the graphic to the user.

For example, if the graphic is a chart with sales for ice cube trays in certain years, the Alt tag would be:

<img src="icecube_graph.gif" alt="Graph of Freezy Corporation Ice Cube Sales by Year. 1996 -132,000; 1997 - 148,000.">

TIP: A good test to determine if a text equivalent is useful is to imagine reading the document aloud over the telephone. What would you say upon encountering this image to make the page comprehensible to the listener?

When constructing alt tags, use the following style:

For short titles, important words including verbs should be capitalized.

Photo of an Alternatively Fueled Bus or *Drawing of a Countertop at a Drug Store*

When using complete sentences, capitalize the first word and any proper nouns (normal style).

This alternatively fueled bus is headed toward a shelter at Zion National Park.

In the future: All browsers will support a feature called "longdesc". Longdesc provides an optional a link to the description file called "graph1.html" which is a separate html file with no limit on length. However, until longdesc is supported more widely, alt tags should be used.

<img src="graph1.gif" longdesc="graph1.html" alt="3-d Sales Chart.">

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Equivalent alternatives for any multimedia presentation shall by synchronized with the presentation.

The best possible solution is to provide a text equivalent of all audio tracks and an audio description of all video tracks synchronized with any video or time-based multimedia presentation. If this is not possible, provide a full text script with a description of all important visual cues as well as dialogue.

A text equivalent for the audio track of a video would be similar to the textual transcript of the spoken voices recorded in an audio file. This can be either a synchronized text equivalent (i.e., closed captions)—the preferred method—or a simple text file, as shown here:

Man: *Go long, way out.*

Professor: *Submitted for your consideration: the ball has been thrown, and you want to catch it. But how do you know where it will go so you can be there when it comes down?*

One way is to use this formula.

It factors in velocity, acceleration and time to calculate the distance the ball will go. But then, you knew that. Your brain estimates all of these values in the first seconds of the ball's flight to calculate where you have to go to catch the ball.

This math equation helps us understand the physical world and how we function in it. Whether you do it on the board or on the field, they both work. So, next time you go out for that long pass, remember: Math is everywhere.

Text: *Math is everywhere!*

An abstract or summary that captures the main ideas of any audio and video tracks is also acceptable.

TIP: Hire a writer to prepare the summary or abstract to ensure that the main points of the video or audio track are highlighted appropriately.

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Web pages shall be designed so that all information conveyed with color is also available without color, for example from context or markup.

For example: (On a form) - Required fields are denoted by red text.

or

The preferred method is listed in green:
Method 1, Method 2

Without color, you can't tell which fields are required or which method is preferred.

Ensure that foreground and background color combinations provide sufficient contrast when viewed by someone having color deficits or when viewed on a black and white screen.

Good contrast	Bad Contrast
Text is easy to read in color.	Text is difficult to read in color.
Text is easy to read in grayscale.	Text is difficult to read in grayscale.

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Documents shall be organized so they are readable without requiring an associated style sheet.

When using style sheets for positioning, be sure to use style attributes to enable readers to read the page correctly.

IMPORTANT: Style sheets for fonts should not affect usability.

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Redundant text links shall be provided for each active region of a server-side image map

Provide redundant text links for all active points on the map directly under the mapped image.

Server-side image maps (those using the ISMAP attribute in the IMG element) usually don't or can't provide any textual information about the links that are coded into them. (Although not commonly used for most image maps, server-side image maps are still important for applications like geographical information systems and mapping applications where each point (coordinate pair) is active.)

NOTE: Use client-side image maps whenever possible.

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Client side image maps shall be provided instead of server-side image maps except where the regions cannot be defined with an available geometric shape.

Client-side image maps allow the use of alt descriptions to give the user information about each link. ALT descriptions must be included when using client-side maps.

For example:

```
<map name="thismap">
<area shape="rect" coords="10,25,30,45" href="thatpage.html" alt="This link description">
</map>
```

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Row and column headers shall be identified for data tables

Tables used strictly for layout purposes do NOT have header rows or columns. (i.e., tables used to create left side navigation, columns, etc.)

If data must be presented in tabular format, at a minimum, use the HTML TABLE element and its supporting elements and attributes (i.e., TR, TD, TH and CAPTION).

For example:

Simple data table created using HTML markup.

	Column 1 header	**Column 2 header**
Row 1 header	Column 1 Row 1	Column 2 Row 1
Row 2 header	Column 1 Row 2	Column 2 Row 2

The code for this table is:

```
<table border="1">
<caption>Simple data table created using HTML markup.</caption>

<tr>
<td> </td>
<th>Column1 Header</th>
<th>Column2 Header</th>
</tr>

<tr>
<th>Row 1 Header</th>
<td>Column1 Row 1</td>
<td>Column 2 Row 1</td>
</tr>

<tr>
<th>Row 2 Header</th>
<td>Column 1 Row 2</td>
<td>Column 2 Row 2</td>
</tr>
</table>
```
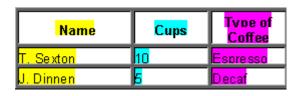
Data tables with two or more logical levels of row or column headers must also be marked up to associate data cells to the header cells. *See [requirement (h)](#) for more information.*

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Markup shall be used to associate data cells and header cells for data tables that have two or more logical levels of row or column headers.

Break up complex tables into many simple tables

If unable to break up, the headers and scope attributes can be used to clarify relationships between cells and headings

headers - associates header cells with data in the table using id and headers attributes.

Name	Cups	Type of Coffee
T. Sexton	10	Espresso
J. Dinnen	5	Decaf

```
<table border="1" >
<tr>
<th id="header1">Name</th>
<th id="header2">Cups</th>
<th id="header3">Type of Coffee</th>
</tr>

<tr>
<td headers="header1">T. Sexton</td>
<td headers="header2">10</td>
<td headers="header3">Espresso</td>
</tr>

<tr>
<td headers="header1">J. Dinnen</td>
<td headers="header2">5</td>
<td headers="header3">Decaf</td>
</tr>
</table>
```

An example of a table with two or more logical levels of row headers using the headers and id markup

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Travel Expense Report

	Meals	Hotels	Transport	Subtotals
San Jose				
25-Aug-97	37.74	112.00	45.00	
26-Aug-97	27.28	112.00	45.00	
Subtotals	65.02	224.00	90.00	379.02
Seattle				
27-Aug-97	96.25	109.00	36.00	
28-Aug-97	35.00	109.00	36.00	
Subtotals	131.25	218.00	72.00	421.25
Totals	196.27	442.00	162.00	800.27

```
<table border="1">
<caption>Travel Expense Report</caption>
<tr>
<th> </th>
<th id="header2">Meals</th>
<th id="header3">Hotels</th>
<th id="header4">Transport</th>
<td>Subtotals</td>
</tr>

<tr>
<th colspan="5" id="header6">San Jose</th>
</tr>

<tr>
<td id="header7">25-Aug-97</td>
<td headers="header6 header7 header2">37.74</td>
<td headers="header6 header7 header3">112.00</td>
<td headers="header6 header7 header4">45.00</td>
<td> </td>
</tr>

<tr>
<td id="header8">26-Aug-97</td>
<td headers="header6 header8 header2">27.28</td>
<td headers="header6 header8 header3">112.00</td>
```

```
<td headers="header6 header8 header4">45.00 </td>
<td> </td>
</tr>

<tr>
<td>Subtotals </td>
<td>65.02</td>
<td>224.00</td>
<td>90.00</td>
<td>379.02</td>
</tr>

<tr>
<th colspan="5" id="header10">Seattle</th>
</tr>

<tr>
<td id="header11">27-Aug-97</td>
<td headers="header10 header11 header2">96.25</td>
<td headers="header10 header11 header3">109.00</td>
<td headers="header10 header11 header4">36.00</td>
<td> </td>
</tr>

<tr>
<td id="header12">28-Aug-97</td>
<td headers="header10 header12 header2">35.00</td>
<td headers="header10 header12 header3">109.00</td>
<td headers="header10 header12 header4">36.00 </td>
<td> </td>
</tr>

<tr>
<td>Subtotals</td>
<td>131.25</td>
<td>218.00</td>
<td>72.00</td>
<td>421.25</td>
</tr>

<tr>
<th>Totals</th>
<td>196.27</td>
<td>442.00</td>
<td>162.00</td>
<td>800.27</td>
</tr>
```

```
</table>
```

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Markup shall be used to associate data cells and header cells for data tables that have two or more logical levels of row or column headers. (contd)

scope - associates header cells with data in the table using scope

<th scope="col">Meals</th>

Associates everything in the column with meals

TRIP, date	Meals	Room	Trans.	Total
San Jose				
25 Aug 97	37.74	112.00	45.00	
26 Aug 97	27.28	112.00	45.00	
Subtotal	65.02	224.00	90.00	379.02

<th scope="row">25 Aug 97</th>

Associates everything in the row with 25 Aug 97

TRIP, date	Meals	Room	Trans.	Total
San Jose				
25 Aug 97	37.74	112.00	45.00	
26 Aug 97	27.28	112.00	45.00	
Subtotal	65.02	224.00	90.00	379.02

Table header rows divide tables into logical sections.

i. **<thead></thead>** - allows header to print on every page

ii. **<tfoot></tfoot>** - allows footer to print on ever page

iii. **<tbody></tbody>** - divides table into logical sections there can be several tbody sections

<th scope="rowgroup">

Associates everything in the <tbody></tbody> tags

TRIP, date	Meals	Room
San Jose		
25 Aug 97	37.74	112.00
26 Aug 97	27.28	112.00

```
<table border="1" cellpadding="2" cellspacing="3">
<thead>
<tr>
<th>TRIP date</th>
<th>Meals</th>
<th>Room</th>
</tr>
</thead>

<tbody>
<tr>
<th scope="rowgroup" colspan="3">San Jose</th>
</tr>

<tr>
<td>25 Aug 97</td>
<td>37.74</td>
<td>112.00</td>
</tr>

<tr>
<td> 26 Aug 97</td>
<td>27.28</td>
<td>112.00</td>
</tr>
</tbody>
</table>
```

A more complicated example

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Travel Expenses (Actual Cost, US$)

Trip, Date	Meals	Room	Trans.	Total
San Jose				
25 Aug 97	37.74	112.00	45.00	
26 Aug 97	27.28	112.00	45.00	
Subtotal	65.02	224.00	90.00	379.02
Seattle				
27 Aug 97	96.25	109.00	36.00	
28 Aug 97	35.00	109.00	36.00	
Subtotal	131.25	218.00	72.00	421.25
Totals	196.27	442.00	162.00	800.27

```
<table border="1" cellpadding="2" cellspacing="3">
<caption>Travel Expenses (Actual Cost, US$)</caption>
```

<thead>
```
<tr>
<th><p>
```
****Trip****,`<br>`
**** Date****`</p></th>`
`<th` **scope="column">**Meals`</th>`
`<th` **scope="column">**Room`</th>`
`<th` **scope="column">**`<abbr="Transportation">`Trans.`</abbr></th>`
`<th` **scope="column">**Total`</th>`
`</tr>`
</thead>

<tbody>
```
<tr>
```
`<th` **scope="rowgroup" headers="t1-r1-l1">**San Jose`</th>`
`<td colspan="4"> </td>`
`</tr>`

```
<tr>
```
`<td` **scope="row" headers="t1-r1-l2">** 25 Aug 97`</td>`
`<td>37.74</td>`
`<td>112.00</td>`

```
<td>45.00</td>
<td> </td>
</tr>

<tr>
<td scope="row" headers="t1-r1-l2"> 26 Aug 97</td>
<td>27.28</td>
<td>112.00</td>
<td>45.00</td>
<td> </td>
</tr>

<tr>
<td scope="row">Subtotal</td>
<td>65.02</td>
<td>224.00</td>
<td>90.00</td>
<td>379.02</td>
</tr>
</tbody>

<tbody>
<tr>
<th scope="rowgroup" headers="t1-r1-l1">Seattle</th>
<td colspan="4"> </td>
</tr>

<tr>
<td scope="row" headers="t1-r1-l2"> 27 Aug 97</td>
<td>96.25</td>
<td>109.00</td>
<td>36.00</td>
<td> </td>
</tr>

<tr>
<td scope="row" headers="t1-r1-l2"> 28 Aug 97</td>
<td>35.00</td>
<td>109.00</td>
<td>36.00</td>
<td> </td>
</tr>

<tr>
<td scope="row">Subtotal</td>
<td>131.25</td>
<td>218.00</td>
```

```
<td>72.00</td>
<td>421.25</td>
</tr>
</tbody>

<tbody>
<tr>
<th scope="row">Totals</th>
<td>196.27</td>
<td>442.00</td>
<td>162.00</td>
<td>800.27</td>
</tr>
</tbody>
</table>
```

Today, most users of screen-readers would hear this table read as:

TraveL Expenses (Actual Cost, US$)
trip,
Meals Room Trans Total
Date
San Jose
25 Aug 97 37.74 112.00 45.00
26 Aug 97 27.28 112.00 45.00
Subtotal 65.02 224.00 90.00 379.02
Seattle
27 Aug 97 96.25 109.00 36.00
28 Aug 97 35.00 109.00 36.00
Subtotal 131.25 218.00 72.00 421.25
Totals 196.27 442.00 162.00 800.27

TIP: Try reading this out loud and when you get to the 11th line, try to guess what the meaning of the fourth value is supposed to be... without looking back at the header information.

In the future: Smart browsers or screen-readers will use additional HTML 4.0 markup (tbody, thead, scope, headers, etc.) to "intelligently" decode a table for speech or alternative output. This table might be read as follows:

TraveL Expenses (Actual Cost, US$)
Trip: San Jose, Date: 25 Aug 97, Meals: 37.74, Room: 112.00, Trans. 45.00
Trip: San Jose, Date: 26 Aug 97, Meals: 27.28, Room: 112.00, Trans. 45.00
Trip: San Jose, Subtotal, Meals: 65.02, Room: 224.00, Trans. 90.00, Total: 379.02
Trip: Seattle, Date: 27 Aug 97, Meals: 96.25, Room: 109.00, Trans. 36.00
Trip: Seattle, Date: 28 Aug 97, Meals: 35.00 Room: 109.00, Trans. 36.00
Trip: Seattle, Subtotal, Meals: 131.25, Room: 218.00, Trans. 72.00, Total: 421.25
Trip: Totals: Meals: 196.27, Room: 442.00, Trans: 162.00, Total: 800.27

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Frames shall be titled with text that facilitates frame identification and navigation.

Each frame is shall be given a title that helps the user understand the frame's purpose.

```
<html>
<head>
<title>A Frameset Document</title>
</head>
<frameset cols="10%, 90%" title="University Book Store">
<frame src="nav.html" title="Navigational Links">
<frame src="doc.html" title="Main Content of Page">
<noframes>
```

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Pages shall be designed to avoid causing the screen to flicker with a frequency greater than 2 Hz and lower than 55 Hz

People with photosensitive epilepsy can have seizures triggered by flickering or flashing in the 4 to 59 flashes per second (Hertz) range with a peak sensitivity at 20 flashes per second. Use care when design animated gif images or other refreshing content.

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A text-only page, with equivalent information or functionality, shall be provided to make a web site comply with the provisions of this part, when compliance cannot be accomplished in any other way. The content of the text only page shall be updated whenever the primary page changes.

Sites must do their best to provide equivalent experience for all users. All efforts must be made to make pages accessible in other ways first.

This method should be used for components (e.g. plug-ins, scripts) that are not directly accessible.

Ensure text pages are updated with the main content.

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When pages utilize scripting languages to display content, or to create interface elements, the information provided by the script shall be identified with functional text that can be read by assistive technology.

At this time, many elements of Dynamic HTML (client-side scripted HTML, which is usually accomplished through Javascript) cannot be made directly accessible especially when onMouseover (or similar) commands are used.

If an onMouseover (or similar) element does not contain any important information (e.g. the script causes a button to "glow"), then there is no consequence for accessibility.

However, if this scripted event reveals important information, then a keyboard-accessible alternative is required.

Include <noscript> tags to display content not accessible to readers.

```
<script type="text/tcl"> ...some Tcl script to show a billboard of sports scores... </script>

<noscript>
<p>Results from yesterday's games:</p>
<dl>
<dt>Bulls 91, Sonics 80.
<dd><a href="bullsonic.html">Bulls vs. Sonics game highlights</a> ...more scores...
</dlgt;
</noscript>
```

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When a web page requires that an applet, plug-in or other application be present on the client system to interpret page content, the page must provide a link to a plug-in or applet that complies with § 1194.21, "Software applications and operating systems," (a) through (l)

A link must be provided to a disability-accessible page where the plug-in can be downloaded.

For Adobe Acrobat PDF files, provide a link to http://www.adobe.com/products/acrobat/alternate.html.

NOTE: Documents that have been scanned to pdf files are NOT accessible. However, alternative text may be added to pdf files using Acrobat 5.0 (available through the Managed Software Program).

All Java applets, scripts and plugins (including Acrobat PDF files and PowerPointfiles, etc.) and the content within them should be accessible to assistive technologies, or else an alternative means of accessing equivalent content is provided.

For example:

Reference Page with Lists of PDFs - Include a statement at the beginning of the page or PDF section:

Some of the following documents are available as Adobe Acrobat PDFs. Download Acrobat Reader.

(or, if all are pdfs)

The following documents are available as Adobe Acrobat PDFs. Download Acrobat Reader.

One or More PDFs Listed in Context of Text - Add a link to Adobe following each link directly.

Abernethy CS, Amidan BG and Cada GF. 2001. "Laboratory Studies of the Effects of Pressure and Dissolved Gas Supersaturation on Turbine-Passed Fish". PNNL-13470. (PDF 135KB) Download Acrobat Reader.

or

Abernethy CS, Amidan BG and Cada GF. 2001. "Laboratory Studies of the Effects of Pressure and Dissolved Gas Supersaturation on Turbine-Passed Fish". PNNL-13470. (PDF 135KB) Download Acrobat Reader.

TIP: Try to word references to PDFs so that they fall at the end of sentences.

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When electronic forms are designed to be completed on-line, the form shall allow people using assistive technology to access the information, field elements, and functionality required for completion and submission of the form, including all directions.

All form controls should have text labels adjacent to them (using the *id* and *for* elements).

Example 1:

```
<label for="SSN">Social Security Number:</label>
<input type=text name="SocSecNum" id="SSN">
<label>Date of birth: <input type=text name="DofB"></label>
```

Example 2:

```
<FORM action="FMPro" method="post">
<fieldset>
<legend>Personal information </legend>
<label for="firstname">First name: </label>
<INPUT id="firstname" type="text" tabindex="1">
<label for="lastname">Last name: </label>
<INPUT id="lastname" type="text" tabindex="2"> ...etc...
</fieldset>
<fieldset>
<legend>Medical History</legend><p>
<label for="grantees">Grantees:</label><p>
<input id="grantees" type="text" tabindex="3">
</fieldset>
</FORM>
```

Terms to Know:

- **fieldset** - encapsulates a section of form contents, thereby relating a group of related form fields.

- **legend** - label for a fieldset

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A method shall be provided that permits users to skip repetitive navigation links.

Skip navigational links . . .
. . .

TIP: To maintain the integrity of design, use a spacer.gif instead of a text link.

<img scr="images/spacer.gif" alt="Skip to main content"> . . .
. . .

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When a timed response is required, the user shall be alerted and given sufficient time to indicate more time is required.

Currently no applications of this type in the Lab.