German Language Wikipedia Accessibility Test According to WCAG 2.0

Test Report

Petra Ritter
Foundation „Access for All“

Markus Riesch
Foundation „Access for All“

Anton Bolfing
Foundation “Access for All”

Translated from German by Carol Lang

Version 1.0
July 7th, 2011
Accessibility Test acc. to WCAG 2.0
Test Report

Tested Websites: http://de.wikipedia.org/

Basic Techniques: (X)HTML, CSS, JavaScript, DOM Scripting, GIF, JPEG, PNG

Further Techniques: PDF (incl. simple test)

Test Period: 08.02.2011 to 24.06.2011

Testers: Petra Ritter, multiply handicapped Accessibility Specialist, ZFA
         René Jaun, Accessibility Specialist, blind, ZFA
         Daniele Corciulo, Accessibility Specialist, blind, ZFA
         Markus Riesch, Accessibility Specialist, ZFA
         Anton Bolfing, Accessibility Specialist, ZFA

Client: The Review of Conformance with WCAG 2.0 Requirements (Web Content Accessibility Guidelines) of the German Wikipedia is carried out within the framework of the Third Age Online (TAO) project.

Testing Organisation: Foundation «Access for all» (ZFA)
                      Seefeldstrasse 65, CH-8008 Zürich
                      T +41 (0)44 383 44 16
                      info@access-for-all.ch www.access-for-all.ch
                      Credit Suisse Zürich, Acct. 969545-11

Place, date: Zürich, 7.7.2011

Report: Petra Ritter, multiply handicapped Accessibility Specialist, ZFA
        Markus Riesch, Accessibility Specialist, ZFA
        Anton Bolfing, Accessibility Specialist, ZFA
I. Table of Contents

1. Perceivable ........................................................................................................................................... 8
   1.1. 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................................................................. 8
   1.2. Time-based Media: Provide alternatives for time-based media......................................................... 12
   1.3. Create content that can be presented in different ways (for example simpler layout) without losing information or structure.............................................................................................................. 13
   1.4. Make it easier for users to see and hear content including separating foreground from background. 27

2. Operable .................................................................................................................................................. 31
   2.1. Make all functionality available from a keyboard. ............................................................................ 31
   2.2. Provide users enough time to read and use content ........................................................................... 33
   2.3. Do not design content in a way that is known to cause seizures. ....................................................... 34
   2.4. Provide ways to help users navigate, find content, and determine where they are ......................... 34

3. Understandable ....................................................................................................................................... 44
   3.1. Make text content readable and understandable. .............................................................................. 44
   3.2. Make Web pages appear and operate in predictable ways............................................................... 46
   3.3. Help users avoid and correct mistakes ............................................................................................. 47

4. Robust .................................................................................................................................................... 50
   4.1. Maximize compatibility with current and future user agents, including assistive technologies........ 50

5. Further Techniques ................................................................................................................................ 51
   5.1. Semantic markup ............................................................................................................................. 51
   5.2. PDF documents ............................................................................................................................. 54

Declaration of conformance with accessibility ............................................................................................. 57
Important terminology in the WCAG 2.0 .................................................................................................... 58
II. Summary

Using numerous tests, the accessibility of the very extensive website was reviewed by several Accessibility Specialists with and without disabilities, and the tests recorded and documented according to the (POUR) principles and guidelines of the WCAG 2.0.

This report is a summary of these test records and reflects the current state of the website. Problems were analyzed and specific recommendations for improvement are herewith submitted.

General Impression

The German version of the free encyclopedia Wikipedia http://de.wikipedia.org is for many users with disabilities, to an acceptable degree, a useful and operable website. With respect to the large range of existing disabilities and the associated limitations, there still remain, however, a large number of barriers which significantly impede some of these users when using the portal.

Thus, Wikipedia still has considerable potential to optimize the accessibility of its website. Most barriers concern visual impairment / blindness. “Access for all” is a source of vast experience in the area of ICT accessibility. The tests were conducted by disabled users with respective limitations.

The optimization potential of http://de.wikipedia.org in summary:

**TOP 10 Recommendations for improved accessibility:**

- Semantic structuring:
  - Structural headings
  - WAI-ARIA landmarks
  - HTML 5
- Correct use of lists
- Accessible CAPTCHAs
- Skip links with access keys
- Graphic links (graphics) should be provided with alternative texts
- Keyboard operability
  - Order of focus
  - Focus visibility
  - Operation of dropdown menus (WAI-ARIA)
- Correct markup for data tables
- No use of layout tables
- Accessible display of error messages and error recognition
- Easily accessible accessibility skin / reduction of complexity

Revision is necessary and can lead to a very good and exemplary website.

Possible further measures

The system behind the WCAG 2.0 does not distinguish between technical and editorially related (or content-related) accessibility deficiencies. However, most accessibility deficiencies trace back to one of these factors.

Therefore, measures to eliminate accessibility deficiencies can focus on these points. On the one hand, the technical or technological basis of Wikipedia, MediaWiki can be updated to be technically accessible. For example using HTML5 or WAI-ARIA, and on the other hand, authors and editors can be trained to create accessible content and / or supported in these efforts by assistive accessibility tools.
III. Accessibility Evaluation (Conformance Level)

Level A

Conformance Level A not attained
To attain Level A conformance (the minimal conformance level) the website must meet all success criteria for Level A.

Level AA

Conformance Level AA not attained.
To attain Level AA conformance the website must meet all success criteria for Levels A and AA.

Level AA+

Conformance Level AA+ not attained.
In addition to the criteria for Conformance Levels A and AA, all the minimal criteria of the Conformance Level AAA must be met, see also additional recommendations to the P028:

Level AAA

Not evaluated recommendations
For conformance on Level AAA the website must meet all success criteria for Levels A, AA and all relevant criteria of Level AAA. Assessment and evaluation are optional. The checkpoints listed in the report are useful references.
IV. Test Method

The test procedure of the Foundation “Access for all” is based on the internationally recognized “WebContent Accessibility Guidelines (WCAG) 2.0”. Original: http://www.w3.org/Translations/WCAG20-de/

Conformance claims of the WCAG 2.0

For conformance with either Level A (lowest), AA (recommended) or AAA (highest), the entire website must meet all the success criteria of the relevant Level/s or an alternative version must be made available which meets the requirements of one of the levels. The conformance logo on the website must be accompanied by a short explanation, http://www.w3.org/TR/WCAG/#conformance_claims.

Partial conformance acc. to WCAG 2.0

If the website meets all criteria, yet some content is inaccessible due to content which is not determinable by the provider (eg. integrated stock market indices from an external supplier), this can be noted in a “declaration of partial conformance“. The requirements are:

a. The content in question is not subject to control by the author.
b. All components (pages and areas) are marked and listed in detail.

Conformance requirements of the Schweizer Gleichstellungsgesetz (Swiss Gender Equality Act)

The “Federal Guidelines for the Design of Accessible Web Content” P028 meet the requirements for Conformance Levels A and AA of the WCAG 2.0 as per 26 Januar 2010.

Conformance regulation Access for all AA+ (AA Plus)

For evaluation, all WCAG 2.0 A and AA criteria are expected, reasonable AAA criteria are recommended, and accessible PDF expected. Examples of reasonable AAA criteria are as follows:

- 1.2.8 Media Alternative (prerecorded) AAA
- 2.4.9. Link Purpose (link only) (Level AAA)
- 3.1.4. Abbreviations (Level AAA)
- 3.1.5. Reading Level (Level AAA)

Conformance regulation Access for all for Adobe PDF

- If website content is accessible and additionally offered as PDF, the PDF files must not necessarily be accessible.
- If PDF content is not accessible and not available in an alternative format, the website does not comply.
- If PDF is not optimally accessible, the contents are, however, available using the described test environment, but this is not offered alternatively, an A Level or AA Level conformance is possible, but not AA+ or AAA.
- If PDF content is optimized for accessibility and meets the success criteria (see Section 5), an A or AA, or AA+, or AAA conformance is possible.

Basic techniques and extended techniques acc. to WCAG 2.0

Basic and extended techniques (listed on page 1) should guarantee accessibility support. Further applied techniques must not impede accessibility. A test environment for this test procedure is defined on page 4.
V. Test Procedure

Each success criterion has defined steps for testing to be performed as follows:

1. with automatic testing tools,
2. by users with representative, assistive technologies,
3. using HTML and CSS and script-code analysis.

In case of doubt, the Foundation “Acess for all” gives more weight to the evaluation of the test results from users of representative assistive technologies.

Test environment
- Operating systems: Microsoft Windows XP Professional, SP 3 (Swiss German), Windows 7
- Java Runtime Environment Version 6.0 (In the standard test no Java applications are tested, however the usability within the website)
- Flash Plugin version: 10, language: German (in the standard test no Flash applications are tested but the usability within the website)
- Screen resolution: 1024 x 768 pixel, 32 bit color (all content available without horizontal scrolling)
- Browser: Internet Explorer 7, Internet Explorer 8, Firefox 3.x
- Activated in the Browser: JavaScript, Java, Flash Plugin, Cookies
- Standard QWERTZ keyboard

Assistive technologies
- Screen reader JAWS, Versions: 8.x, 9.x, 10.x, 11.x, 12.x: http://www.freedomsci.de/prod01.htm

User settings
The tests are additionally accomplished using the following user-specific settings:
- Magnify view: Internet Explorer 7, 8 and Firefox Zoom function: 200%.
- Magnify script only: Internet Explorer 7, 8: „largest script size“ and Firefox: 2 levels.
- In the Browser: own colors (black background, white script, blue links, ignore color indications on websites).
- View without CSS.
- View with screen setting in the system settings 800×600 pixel (if necessary all content is also available with horizontal and vertical scrolling).

The following test tools are used:
- To test the contrast ratios of the colors according to the W3C algorithm, the Color-Contrast Analyzer is used: http://www.juicystudio.com/services/colourcontrast.asp.
- To test the validity of the HTML documents the W3C Validator is used as standard: http://validator.w3.org/

Scope of test
The basic techniques listed on page 1 are tested.
Important: The problems in and examples from the website listed in the following are not exhaustive. When correcting accessibility deficiencies, please ensure that all problems of this type are eliminated, and not only the example pages given.

All webpages within the website should provide equal accessibility.

VI. Evaluation and Symbols

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>[✓] [✗] [ℹ️]</td>
<td>When a success criterion is met, all cases found were to correctly transpose the requirements when tested. No further measures are required.</td>
</tr>
<tr>
<td>[✓] [✗] [ℹ️]</td>
<td>When a success criterion is not met, cases were found which did not transpose the requirements in the way required. Examples of problems are listed. Required measures are listed or further information referred to.</td>
</tr>
<tr>
<td>[✓] [✗] [ℹ️]</td>
<td>If a success criterion is not applicable, no cases occur to which the criterion can be applied.</td>
</tr>
<tr>
<td>[✓] [✗] [ℹ️]</td>
<td>Some criteria are accompanied by information on optional ways to optimize or general remarks are given.</td>
</tr>
</tbody>
</table>

Further symbols:

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>[✓] [✗] [ℹ️]</td>
<td>Success criterion not met, see further information.</td>
</tr>
<tr>
<td>[✓] [✗] [ℹ️]</td>
<td>Success criterion met, see further information.</td>
</tr>
<tr>
<td>[✓] [✗] [ℹ️]</td>
<td>Success criterion not applicable, see further information.</td>
</tr>
</tbody>
</table>
1. **Perceivable**

Information and user interface components must be presentable to users in ways they can perceive.

1.1. **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.**

1.1.1. **Non-text Content (Level A)**

Success criteria not met, see further information.

**Problem 1:**

The symbols for various portals on the main page (homepage) of Wikipedia do not offer alternative text. Linked graphics should always be accompanied by alternative text, which describes the link target.

**Illustration 1: Missing alternative text to the portal symbols.**

**Measure 1:**

Principally, all linked graphics must be integrated in the link target in attribute alt. To avoid unnecessary repetition of the alternative text and the accompanying text links, we recommend implementing the symbols and the text links together in one link.

**Problem 2:**

Many graphic links have only an empty alt attribute (alt = """). Empty alt attributes, not those missing, make sense for decorational graphics which do not convey content significance. Graphic links, linked graphics, must always contain the link target, otherwise the path of the image is read out.


The graphic link "QEMU with the free operating system ReactOS has only an empty alt attribute" and is read by the Screen-Reader as "Link graphic Qemu_linux.png/220px-Qemu_linux". The link links to a larger version of the same image, which is not clear to a screen-reader user.
Illustration 2: The graphic link "QEMU mit dem freien Betriebssystem ReactOS besitzt nur ein leeres alt-Attribut" is read by the Screen reader as "Link graphic Qemu_linux.png/220px-Qemu_linux". In order for the Screen reader to make sense of the graphic link, this must be accompanied by a meaningful alternative text.

Further examples:
- http://de.wikipedia.org/wiki/Poker

Measure 2:
Ensure that MediaWiki no longer accepts empty alt attributes for graphic links. In the upload dialogue for the graphics provide help/explanations for the authors of the respective articles.

The alternative texts must describe the link targets. Ideally, short descriptions of the graphics must be provided, followed by the text "click here for media file".

Simultaneously, the often separate link "enlarge" could be integrated into the graphic link, to avoid repetition of graphic and text links.

Problem 3:
Further graphic links provide alternative texts which describe the graphics, but offer no information about the link target (mostly file information with an enlarged image).

Pages: e.g. very often in the article of the day on the homepage.

Measure 3:
A reference to the link target (for example “to media file”) should be added to the existing alt text. Ensure that the CMS automatically does this for each alternative text.

Problem 4:
Many graphics are accompanied by alternative texts with little meaning. Often, only the file names are given.


In general, for article symbols, the alternative texts « excellen”, „recommended reading” and „informative” or „excellent article” etc. instead of „Qsicon Excellent.svg” etc.
Measure 4:

Ensure that Wikipedia authors provide the inserted graphics with short and concise but informative alternative texts. The linked media files accompanying the images are suitable for longer descriptions of complex graphics.

For example, in the upload dialogue for graphics, provide an explanation or suggestion on the topic of alternative texts for authors. Encourage the authors to write detailed descriptions of complex graphics and to integrate them in the media files.

Problem 5:

Page: "Create user account"  

On the page "create user account" there is a Captcha with no accessible alternative. Blind and visually impaired persons are not able to independently create a user account.

Illustration 3: The Captcha on the page "create user account", with no accessible alternative. Blind and visually impaired persons are not able to independently create a user account.

Measure 5:

Provide an accessible alternative for the graphic Captcha (e.g. audio Captcha or a Captcha in the form of a simple mathematical test or a simple puzzle)

Problem 6:

Pages:  http://de.wikipedia.org/wiki/Poker#Kombinationen

This is a very specific problem. In the column „example“ in the large table (see 1.3.1) there are card symbols which cannot be interpreted by JAWS ScreenReader. The only symbol, that the Screen-Reader recognizes, is diamond, whereby JAWS reads the red diamond as “black diamond”.

Test Report Accessibility WCAG 2.0
Illustration 4: The card symbols used in this table are either not read or read incorrectly by ScreenReaders.

Measure 6:
The symbols could be inserted as images with correct alternative texts. Optionally, the card names could be described as hidden paragraphs in the respective cells. Since the pronunciation of the card names would be interesting even for seeing users, an additional column with the names written out could be integrated into the table.

Graphics and images: General recommendations

Graphics should be provided with an alt attribute, respectively. Here some guidelines:

- If it is an informative graphic, a photo or a symbol (e.g.: printing, PDF), the content displayed must be described in the alternative text.

- Decorative graphics and layout graphics (e.g. spacer) should not contain text, as long as no useful information is on the image. In such cases the alt attribute remains empty: alt="".

- An alt attribute should always be present, as, otherwise, some ScreenReaders read the path and the file name of the respective graphic, which is very irritating.

- If the image is a graphic control element (linked graphic), the alternative text must give information about the target of the link or about the action which is triggered by clicking the graphic control element, e.g. “to the main text”, “print page”, etc.

- Alternative texts should be as short and precise as possible. Formulate so as to avoid redundancy. For example, Screen readers announce an existing graphic; therefore in most cases it is not necessary to write “graphic…””, “image…” in the alternative text. Exceptions to this could be photos or cartoons, for example.

- If it is an informative graphic regarding a diagram or an organigram, the description in the alternative text will often not suffice. It should be provided with an additional long description,
1.2. Time-based Media: Provide alternatives for time-based media.

1.2.1. Audio-only and Video-only (Prerecorded) (Level A)

Success criterion met

Note:
The audio files in the „spoken Wikipedia" are an alternative to the texts in Wikipedia.

1.2.2. Captions (Prerecorded) (Level A)

Success criterion not applicable, no videos with spoken content.

1.2.3. Audio Description or Media Alternative (Prerecorded) (Level A)

Success criterion not applicable, no multimedia presentations.

1.2.4. Captions (Live) (Level AA)

Success criterion not applicable, no live videos.

1.2.5. Audio Description (Prerecorded) (Level AA)

Success criterion met

Note:
The audio files in the „spoken Wikipedia" are an alternative to the texts in Wikipedia.
1.2.6. **Sign language (Prerecorded) (Level AAA)**

Success criterion not met, see information.

**Problem**

Non-hearing persons cannot read the complex articles on Wikipedia.

The native tongue of many non-hearing persons is the sign language; written language is their second language. Handling information in written form is difficult for the non-hearing and for many even impossible. Only sign language can convey the entire content of information to the non-hearing and thus ensure the same degree of knowledge and information. For the non-hearing, the unimpeded use of their native and first tongue, the sign language, is an important factor in the equal ability to access information.

Examples for sign-language videos can be found on: [www.access-for-all.ch](http://www.access-for-all.ch)

**Measure**

Provide sign-language videos. Sign-language videos are the equivalent to text for the non-hearing. For complex content, sign-language videos should be provided as alternative or as moderated summaries.

1.2.7. **Extended Audio Description (Prerecorded) (Level AAA)**

Success criterion not applicable, no live videos found.

1.2.8. **Media Alternative (Prerecorded) (Level AAA)**

Success criterion met

**Note:**

The audio files in the “spoken Wikipedia" are an alternative to the texts in Wikipedia.

1.2.9. **Audio-only (Live) (Level AAA)**

Success criterion not applicable, no live audio content found

1.3. **Create content that can be presented in different ways (for example simpler layout) without losing information or structure.**

In this regard, please also refer to the remarks on semantic markup using new technologies such as HTML5 and WAI-ARIA in Chapter 5.1.
1.3.1. **Info and Relationships (Level A)**

Success criteria not met, refer to information.

The following was tested:

A) Headings structure:
   - Headings convey the structure of the document.
   - [Meaningful headings -> EK 2.4.6]

B) Tabulations are in list format (UL, OL, DL)
   - Tabulations are correctly nested, no one-point lists.

C) Formula relationships:
   - Complex formulas are grouped using the FIELDSET element.
   - LABEL elements are used for linking of headings with input fields.

D) Semantically correct markup:
   - Separation of Information with structure (content and HTML) and presentation (CSS).
   - Quotations are characterized by the cite attribute and the BLOCKQUOTE-element, but Q, EM and STRONG, SUP, SUB are also used.
   - When script variations have content significance, this must be perceptible to all (for example, italics has no meaning for Screen readers.).
   - No empty spaces for layout purposes, do not use PRE-element for layout.
   - Do not use markup (e.g. header) for layout and presentation only.
   - Headings are formatted as Hx formatiert not only with CSS boldface and large.
   - If information requires a tabular presentation, data tables with correct table markup are used, (TH elements for columns and line headings, and, for complex tables, also scope attribute or headers and ID)
   - In the case of extensive or complex data tables, these include a CAPTION element or summary attribute or both.
   - No markup in layout tables.
   - No layout tables that do not correctly linearize.

A) **Heading Structure:**

**Problem A1:**

Many content pages but also, for example, special pages such as “register/ create user account” contain headings which are not designated as such.
Illustration 5: The marked heading is not defined as H3 but as <b>.

Measure A1:
Always define a heading as a correctly structured heading.
Do not use the <b> element to distinguish a heading.
Use the <strong> element to distinguish within paragraphs.

Problem A2:
In the same way, the contents in the content area of the portals are not provided with headings. Obvious article headings are not correctly defined.

Page: e.g.: [http://de.wikipedia.org/wiki/Portal:Geographie](http://de.wikipedia.org/wiki/Portal:Geographie): The heading structure is limited to “participation and contact” (H3), and contain subheadings (H5) from the navigation column (see Problem A1).
Measure A2:

Similar to Measure A1, the headings are to be set out in a logical structure. Additionally, all headings, which have not received H tags, are to be provided with them. This applies, e.g. to the headings “Geography in Wikipedia”, “Quick Start and Overviews”, “Article of the Day”, “Picture of the Month”, to “Famous Geographers” and to all others, including those with subheadings.

Problem A3:

The hierarchy of the headings is not correct. This is again a heading structure problem.

Pages: Typical article pages are, for example

Illustration 7: According to the heading structure, for example, the entire navigation is part of "sister projects". This, however, does not correspond to the setup of the page.

Measure A3:

The entire site should be structured using headings.

Also article pages should exhibit a correct heading structure. For article content and text this point seems to have been fulfilled. Significant need for action is manifest with regard to the heading structures outside of the articles. In the article on Bill Bryson this concerns, for example, the sections on norm data and category links, but also the sidebar content. Thus, there seems to be a problem in the article template.

Illustration 8: The entire page consists of three main sections: Service and Navigation, Content and Footer.
Community & Collaboration

This structure should also be illustrated using headings.

The structure could, for example, appear as follows:

- H1: [Individual name of the article]
  - H2: ...
  - H3: ...

H1: Navigation and Service links
- H2: Service links
  - H3: Login
  - H3: Namespaces
  - H3: Variants
  - H3: Views
  - H3: Search

H2: Navigation
  - H3: Main Navigation
  - H3: Participation
  - H3: Print
  - H3: Tools
  - H3: In other Languages

H1: Footer

**Problem A4:**

The same problem also appears on the main page.

**Page:** e.g.: [http://de.wikipedia.org/wiki/Wikipedia:Hauptseite](http://de.wikipedia.org/wiki/Wikipedia:Hauptseite): The heading structure consists initially of H2 headings, followed by headings on Level 5 (H5). Thus the impression arises that the headings “Tools”, “Participation”, or “Print” are all part of section “Sister Projects”.

Illustration 9: The Mozilla Add-On “HeadingsMap” (left) illustrates the heading structure and indicates violations of the structural hierarchy.

Measure A4:

The heading structure should reflect the structural setup of the page. The gaps (skipped heading levels) should be closed. For example, on the homepage up to three H1 headings can be inserted, to which the corresponding subsections could be hierarchically assigned, respectively. Possible H1 headings, possibly also invisible headings, could be “Navigation” (with “Main page”, “Theme Portals”, possibly „In other Languages, etc.”), “Wikipedia today” (with “Article of the Day”, “What Happened”, “In the News”, etc.), “Wikipedia Active” (with links to “Participation”, “Sister Projects”, etc.) and “Wikipedia Administration” (with all tools and further links).

Again, the problem is a heading structure problem.


Information about headings:

Headings (H1, H2, H3, etc.) must introduce each block of content and reflect the structure and significance of the content blocks of the website. A website must not necessarily begin with a heading 1 (H1). However, blind Screen reader users consider it good style for headings to be set up in a hierarchically correct way (H1, then H2, H3, etc.) and to organise heading levels without gaps.

Invisible headings:

Headings can also be displayed invisibly by means of CSS classes, by being pushed out of the Viewport. This class can generally be used for invisible notes for screen-reader users only.

```
.hidden {
  display: inline;
  left: -1000px;
  overflow: hidden;
  width: 0px;
```
B) Tabulations and Lists:

**Problem B1:**

On most of the pages with numerous links, such as the homepage or the theme portals, a collection of links is not presented as a list. For Screen-Reader users this manifests as confusingly long sentences, very difficult to unravel and make sense of.

Sequential arrangements of content are not yet defined as lists.

**Illustration 10:** Any sequential arrangement of content should be defined as a list.

**Measure B1:**

Denote collections of links as link lists. Include correct list tags in html.

**Problem B2:**

The link „Anmelden / Benutzerkonto erstellen“ (register / create user account) is defined as list throughout the entire Wikipedia, and consists of only one element. A list consisting of only one element is unnecessary and, for Screen-Reader users, confusing.

**Measure B2:**

In this case, the list tags should be removed.

**General information on the management of lists:**

Lists are important constituents of a semantic group and structure. They assist Screen-Reader users in recognizing listed information or which links are joined and where a new group of links begins.

Sequences which have not been formatted are simply confusing lengths of text for Screen-Reader users, who are unable to recognize when the end has been reached. In contrast, a list is announced by Screen reader as follows: “List with 12 entries”

- Arrays of content, for example, product lists, should not only be presented as lists, but formatted as lists.
Navigation areas should always be formatted as lists – even in the case of horizontal navigation.

- Summarize links into logical units. For example several main category groups in one group each (UL or OL) and subcategories in another list again.

- In the case of glossaries or link lists with Notes and similar arrays of content, definition lists (DL) can be used, see code example.

- Ensure correctly nested lists, see code example.

**Code examples:**

```html
<ul id="menue">
  <li><a href="#">Oberpunkt 01</a>
    <ul class="submenue" id="active">
      <li><a href="#">Untermenü 1.a</a></li>
      <li><a href="#">Untermenü 1.b</a></li>
      <li><a href="#">Untermenü 1.c</a></li>
    </ul>
  </li>
  ... 
</ul>

<dl><dt><a href="website.htm">Website</a></dt><dd>Beschreibung oder Kommentar des im DT-Element enthaltenen Links</dd><dd>Auch mit mehreren Definitions-Daten-Zellen möglich</dd></dl>
```

**C) Web form relationships:**

**Problem C1:**

The input field for the CAPTCHA has not been allocated a field label (label). For Screen-Reader users the purpose of the field is therefore not clear.
Illustration 11: Provide all web formula fields with corresponding labels.

**Measure C1:**

Provide form fields with field labels, without exception. For layout purposes these can also be invisibly implemented.

**D) Semantically correct markup**

**Problem D1:**

Tables are used for layout purposes.
Illustration 12: The areas framed in red are tables used for layout design.

Illustration 13: The table of contents is positioned using a layout table.
Measure D1:
Instead of using layout tables, use CSS to position the content elements.

Problem D2:
Tables are used to present forms.

Illustration 14: Layout tables in forms

Measure D2:
Use CSS to present forms.

Problem D3:
Data tables contain partially incorrect markup or are not correctly set up.

Illustration 15: The first row is sometimes used as a heading.
Measure D3:

Use correct table markup. Always define, if existing, row and column headings as TH. Define table heading as `<caption>` and not in the first row.

Problem D4:

Pages: e.g.: [http://de.wikipedia.org/wiki/Poker#Kombinationen](http://de.wikipedia.org/wiki/Poker#Kombinationen)

Some larger and more complex tables are not accompanied by descriptions which give the Screen-Reader user information on the table content without having to navigate with effort into the table. Large and complex tables should therefore always be provided with captions or summaries.

Measure D4:

Ensure that Wikipedia authors provide tables with captions or summary attributes and accompany these by short and precise yet meaningful information and inform the authors of the sense and purpose of these actions.

References for the implementation of the planned table markup:

Depending on the complexity of data tables, it is possible to prepare the content for linear presentation.

Techniques H43, H51 (and others), table markup for the tabular display of information:

[http://www.w3.org/TR/2008/NOTE-WCAG20-TECHS-20081211/H43.html](http://www.w3.org/TR/2008/NOTE-WCAG20-TECHS-20081211/H43.html)
[http://www.w3.org/TR/2008/NOTE-WCAG20-TECHS-20081211/H51](http://www.w3.org/TR/2008/NOTE-WCAG20-TECHS-20081211/H51)

The page einfach-für-alle.de ("easy for everyone") within the campaign „Mensch für ein barrierefreies Internet" ("People for a barrier-free Internet") publicized on its website „Benimmregeln für Datentabellen" ("rules of etiquette for data tables") with code listings: [http://www.einfach-fuer-alle.de/artikel/barrierefreie-datentabellen/](http://www.einfach-fuer-alle.de/artikel/barrierefreie-datentabellen/)
The following was tested:

- Following deactivation of the CSS, and for screen readers, the logical order is retained.
- Content in tables is correctly linearized, no empty cells for letter spacing.
- No space characters for letter spacing.
- No content confusion because of content positioned using CSS.

**Problem 1:**

**Pages:** All except main page

Links are implemented using CSS and are marked in the HTML code as Level 5 heading. The screen reader reads these “links” as headings, and thus the screen-reader user does not know that the headings are actually links.

**Measure 1:**

Links should not be implemented using CSS but marked as links in the HTML code.

**Note:** For drop-down navigation areas use WAI ARIA and Ajax methods.

**Problem 2:**

In many Wikipedia articles, screen readers such as JAWS arbitrarily insert empty lines in the middle of a sentence (often/always before a link)

**Pages:** e.g. [http://de.wikipedia.org/wiki/Glücksklee](http://de.wikipedia.org/wiki/Glücksklee): At the following passage in the text: "...Die behaarten Blütenstiele besitzen eine Länge von 8 bis 28 Millimeter. Die zwittrigen, ...then the empty line appears... radiärsymmetrischen, fünffächigen... ".

**Measure 2:**

The HTML code should be examined to determine why an empty line was inserted here. Possible reason: The link directly after the empty line is assigned to another HTML class. If possible, the code should be changed so that empty lines are only inserted at logical points (at the end of a P section).
1.3.3. Sensory Characteristics (Level A)

Success criterion met

The following was tested:

- No instructions which are only visually perceptible, or acoustic instructions, e.g. “activate the lever on the left”.

1.4. Make it easier for users to see and hear content including separating foreground from background.

1.4.1. Use of Color (Level A)

Success criterion met

The following was tested:

- Information is not conveyed by color only, but also using text.
- If only colors are used for differentiation, e.g. for links in a text, the links exhibit a contrast ratio to the text of at least 3:1.

Problem:

Pages: All pages on Wikipedia and audio Wikipedia.

The links in both portals do not appear underlined until the mouse cursor is over them (mouse over), and the contrast ratio of the links (blue) to the normal text (black) is only 2.5:1. This makes it difficult for visually impaired users to distinguish the links from the surrounding text.

Illustration 18: The links do not appear underlined until the mouse cursor is over them. The contrast ratio is only 2.5:1 instead of 3:1.
Measure:

Ensure that the ability to differentiate between normal text and text links is increased by higher contrast ratios (> 3:1) and that, in order to differentiate the links from the surrounding text, apart from the color factor, a further feature is implemented (e.g. permanent underlining or bold text).

1.4.2. Audio Control (Level A)

Success criterion not applicable, no automatic audio element exists.

1.4.3. Contrast (Minimum) (Level AA)

Success criterion met

All texts in the navigation areas and in the content, including headings, are to be tested. Of equal importance are the field lines of the input fields of formulas. Passive and active navigation elements (focus and hover) are also relevant. In the case of elements with different states of color, both states are to be measured. In the case of small fonts, the color is measured on the screen, which can possibly be weakened by anti-aliasing, and not the definition.

Required minimum contrast:

Text: Contrast ratio of at least 4.5:1
Large font (from 18 Pt or 14 Pt + bold): Contrast ratio of at least 3:1 (also applies to texts in informative graphics, but not to logos and lettering).

Test tools to measure contrast ratios:

The WCAG 2-Formel test program (Freeware Win, Mac): Color-Contrast-Analyzer

1.4.4. Resize text (Level AA)

Success criterion met

The following was tested:

Magnify the view in the browser:

- Zoom magnification of the entire window content: 200%.
  - Internet Explorer 7, 8 zoom function: 200%.
  - Firefox: zoom function: 200%; press "Ctrl" + "++" 6 times (with inactivated “only text" magnification)

- Text magnification 150% (without layout superimposition):
  - In Internet Explorer 7, 8: Text size "largest" (or very large)
  - In Firefox: Text magnification: press "Ctrl" + "++" twice (with activated “only text" magnification).
1.4.5. **Images of Text (Level AA)**

SUCCESS CRITERION MET

The following was tested:

In general, text rather than font graphics are used for content, with the following exceptions:
- Adjustable, meaning scalable in the presentation and readable without CSS.
- Out of necessity, such as logos and brand names (can be adequately replaced or augmented using “alt” and title attribute).

1.4.6. **Contrast (Enhanced) (Level AAA)**

SUCCESS CRITERION MET

*Heightened minimal contrast:*

Text: Contrast ratio of at least 7:1
Large text (beginning at 8 Pt, or 14 Pt + bold) Contrast ratio of at least 4.5:1
(also applies to text in informative graphics, but not to logos and lettering).

1.4.7. **Low or No Background Audio (Level AAA)**

SUCCESS CRITERION MET

1.4.8. **Visual Presentation (Level AAA)**

SUCCESS CRITERION MET

The following was tested:

For the visual presentation of text blocks there is a mechanism available to achieve the following:
- Foreground and background colors can be selected by the user.
- The width does not exceed more than 80 characters or glyphs (40 in the case of Chinese, Japanese or Korean).
- Text is not justified (neither left nor right aligned).
- Line spacing (interlinear space) is at least 1.5 times within paragraphs and paragraph spacing is at least 1.5 times the line spacing.
- The text size can be scaled to 200% without assistive techniques, such that the reader does not have to scroll horizontally to read a line of text in a screen-filling window.
1.4.9. **Images of Text (No Exception) (Level AAA)**

Success criterion met
2. Operable

User interface components and navigation must be operable.

2.1. Make all functionality available from a keyboard.

2.1.1. Keyboard (Level A)

Success criterion not met

The following was tested:

- Each page is operable using the keyboard. All links and elements can be operated (e.g. formula checks, buttons and switches)
- Keyboard-triggered event-handler.

Problem 1:

Pages: All except main page

The links are implemented using CSS and marked in the HTML code as Level 5 header. With keyboard operation collapsed link "lists" are skipped. Screen-Reader users are not aware of its existence when navigating.

![Illustration 18: The links “Mitmachen” (participation), "Drucken/exportieren” (print/export), "Werkzeuge” (tools) and "In anderen Sprachen" (in other languages) were implemented using CSS and for Screen-Reader users not recognizable as links.]

Measure 1:

Do not implement the links using CSS but designate them as links in the HTML code.

Note: For the open-up navigation areas use WAI ARIA and Ajax methods. (Section 5.1)
Problem 2:


None of the available audio players can be operated on the keyboard. It is only possible to start the audio files once. It is, however, not possible to interrupt and continue or to stop the activated file.

Measure 2:

Ensure that HTML-based alternatives are available for the operating elements of the audio player.

For an example, see http://www.access-for-all.ch/ch/publikationen/medienspiegel.html:

Illustration 19: Control elements of flash components can be stored in HTML elements using java script.

Problem 3:

The input mask which is used to collect or actively discuss articles is only partially accessible. Some formats (such as the symbol for boldface, etc.) can only be selected by using the mouse, next to the Wikipedia syntax.

Illustration 20: The formatting functions boldface, italics, etc. cannot be selected using the keyboard.
Measure 3:

Ensure that all objects are operable using the keyboard and the screen reader. We recommending enabling direct HTML as entry option for formatting.

2.1.2. No Keyboard Trap (Level A)

Success criterion met.

The following was tested:

- No element of the website blocks the keyboard focus.
- The user can navigate to, use and leave all elements using the keyboard.

2.1.3. Keyboard (No Exception) (Level AAA)

Success criterion not met

The following was tested:

All functionalities of the content are operable using a keyboard interface, without requiring certain timing for single key strokes.

See point 2.1.1.

2.2. Provide users enough time to read and use content.

2.2.1. Timing Adjustable (Level A)

Success criterion not applicable, no areas with timing exist on the website.

2.2.2. Pause, Stop, Hide (Level A)

Success criterion met, no moving elements exist.

The following was tested:

- Do moving elements exist, e.g. a news ticker?
- Is there a mechanism to interrupt or stop the movement or does the movement stop automatically after 5 seconds?
2.2.3. **No Timing (Level AAA)**

Success criterion not applicable, there are no areas on the website with timing.

2.2.4. **Interruptions (Level AAA)**

Success criterion not applicable, no interruptions on the website.

2.2.5. **Re-authenticating (Level AAA)**

Success criterion not applicable, there are no areas with authentification with time limit.

2.3. Do not design content in a way that is known to cause seizures.

2.3.1. **Three Flashes or Below Threshold (Level A)**

Success criterion met, there are no flashing or blinking elements.

2.3.2. **Three Flashes (Level AAA)**

Success criterion met, there are no flashing or blinking elements.

2.4. Provide ways to help users navigate, find content, and determine where they are.

2.4.1. **Bypass Blocks (Level A)**

Success criterion not met

The following was tested:
- At least 1 quick link “directly to content”, content blocks introduced by headings or are grouped by markup.
- Access keys are optional, but recommended.

Quick-link and access-key labeling should be short, e.g. “content”, “search”, etc. The Screen reader simply announces “link content”. This is clear information.
Problem 1:

Pages: All

The pages provide quick links to navigation and search, but none which lead directly to content.

Measure 2:

Add at least “direct-to-content” links to the quick links, and define these as lists.

Problem 2:

Pages: All

For the access keys, an arbitrary selection of letters is used (“O” for login, “J” for “links on this page”, “T” for “discussion”), which leads to keyboard conflicts in some browsers, e.g. in Internet Explorer.

Measure 2:

To avoid keyboard conflicts, use the numbers 0 to 9 for access keys. We recommend reserving the access keys for quick links.

Recommendation:

The Foundation "Access for all" recommends defining access keys as follows:

- 0 "homepage"
- 1 "navigation" (link within the webpage)
- 2 "content" (link within the webpage)
- 3 "contact"
- 4 "sitemap"
- 5 "search"
- 6-9 optional (only if necessary and meaningful)

2.4.2. Page Titled (Level A)

Success criterion met

2.4.3. Focus Order (Level A)

Success criterion not met

The following was tested:

- Logical tab sequence
  Example: www.access-for-all.ch

Pages: "Register / create user account"
(http://de.wikipedia.org/w/index.php?title=Spezial:Anmelden&returnto=Falschalarmrate) and
**Problem:**

On the page "Registration", after the last link for language selection (Chinese), the focus jumps directly to the link "information on password selection" and the actual registration formula is skipped.

The entry field for the Captcha and the form for creation of a new user account are both skipped.

On both pages, tab indices are used in part, which causes problems with the order of focus.

Illustration 21: Also on page "Create user account" the order of focus is incorrect. The entry field for the Captcha and the form for creation of a user account are skipped. The problem is caused by the tab indices which are sometimes used.

**Measure:**

Remove the tab indices. We greatly appreciate finding the keyboard focus in the first formula field when entering a page, recommend, however, using a JavaScript solution.

**Note:**

When tab indices are used, all focusable elements on a page must be provided with them. This is the only way to solve the problem of the order of focus and the tab indices. Tab indices are not being rejected on the whole, but present a potential source of increased problems.
2.4.4. **Link Purpose (In Context) (Level A)**

Success criterion not met

The following was tested:

- General link purposes.
- Link texts to files.
- No longer necessary: Information “new window” for screen readers, since this is recognized and read.
- Required information “new window” in the title attribute or directly in the link text for sighted users.

**Problem 1:**

**Pages** e.g. "Virtual Box" ([http://de.wikipedia.org/wiki/VirtualBox](http://de.wikipedia.org/wiki/VirtualBox)), "QEMU" ([http://de.wikipedia.org/wiki/QEMU](http://de.wikipedia.org/wiki/QEMU))

On some pages, e.g.: on the page "virtualbox" under the heading "list of references", there are links for cross references on the same page (origins of footers), which are given by the symbol “&uarr;” (up arrow). These links are not read out by the screen reader.

**Measure 1:**

Ensure that every appearance of the symbol “&uarr;” is accompanied by a hidden explanation of the purpose of the symbol.

With the following class, the additional explanation can be hidden for sighted users.

```css
.hidden {
    display: inline;
    left: -1000px;
    overflow: hidden;
    width: 0px;
    position: absolute;
    top: -1000px;
    height: 0px
}
```

**Problem 2:**

**Pages:** All

In the language selection, the links to languages which do not use the Latin alphabet, are read by the screen reader as “link” only. The screen-reader user does not learn the purpose of the links.

**Measure 2:**

Insert the corresponding language in Latin letters (in the English language) into the title tags of the pertinent links, e.g.: 日本語 (Japanese)

**Note:**

No such cases were found. However, it is important in this context to point out that format changes must always be announced.
For external links it is also recommended to identify these as such (e.g.: as alternative texts for the symbols for external links, if these are not identified in CSS). In Wikipedia these are often to be found under the heading web links, which strongly relativizes the importance of such a declaration.

**Examples:**

*Zusammenfassung (PDF, 34 KB)*

*Bestellformular (Neues Fenster)*

**Problem 3:**

**Pages:** Homepage German Wikipedia (Deutsche Wikipedia), all pages

As discussed under “1.3.2. Meaningful order”, headings marked as H5 by the JAWS screen reader are not recognized as links. Most screen-reader users are therefore unable to recognize that the section “print/export” etc. can be dropped down.

**Measure 3:**

It is important to ensure that links and other clickable elements can be recognized as such by screen readers.

The elements must be accompanied by a clear description of the purpose (not simply “tools” but “tools – drop-down section”).

**Problem 4:**

**Pages:** Homepage German Wikipedia (Deutsche Wikipedia):

In the list of different Wikipedia portals (after the link “Gute Autoren...”) (good authors), two portals obviously appear double: “Art and culture”, as well as “Sport” are both connected by links “Portal: Art and culture”, resp. “Portal: Sport”(with and without colon).

**Measure 4:**

To avoid confusion we recommend listing each portal only once, by marking the icons and the terms within a common link.

**Problem 5:**


On this page, the respective links to spoken texts are read by JAWS screen reader with “question mark”. The link “Area 51” is read as “(LINK) AREA 51?/ (LINK)”.

A second link, called “I”, is added to these links. The purpose of these “I” links is not clear to screen-reader users.

**Measure 5:**

The “I” link – clearly a symbol – should be replaced by a descriptive text (“information about this file” or similar).
2.4.5. Multiple Ways (Level AA)

Success criterion met

The following was tested:
- Search function or
- Sitemap / Table of contents / Overview
  or both

2.4.6. Headings and Labels (Level AA)

Success criterion met, see information.

The following was tested:
- Does the website contain headings in the page content?
- Do the headings describe clearly and precisely the subsequent body of text?
- Hidden headings if necessary?
- Do LABEL names in formulas exist and are they meaningful?
- (required input fields recognizable for all -> EK 3.3.2 A)
- Does the website contain image maps or maps, are the zones and instructions/functions labeled?

Problem 1:
When searching for a word in Wikipedia, for which no article yet exists, for example “Zeitbombe” (time bomb), only a heading “search results” is displayed. But following the heading, the search field and the links “content pages, multimedia, etc.” are shown.

Measure 1:
Place the search results directly after the heading or change the tab order correspondingly.

In order to make it clear that the referenced articles do not contain the search term in their titles, formulate the heading in an alternative way, for example “search results in which the word…appears” or “search results for…. “.

Problem 2:
When starting a new discussion, the name of the content field is incorrectly read. This is then displayed as “heading”.

Measure 2:
Use a meaningful label, such as “content”, or “content section”
2.4.7. **Focus Visible (Level AA)**

Success criterion not met

The following was tested:

- Visibility of the focus when tabbing in Internet Explorer and Firefox
- Quick links become visible (necessary if more than 2 links)
  
  Example: [www.access-for-all.ch](http://www.access-for-all.ch)

**Problem 1:**

With keyboard operation, the focus is very poorly recognizable and strongly impedes usability.

![Illustration 22](image)

**Illustration 22:** Focused icons, for example the one used for search, are only recognizable by a thin, dotted frame.

![Illustration 23](image)

**Illustration 23:** Even focused links within the text are barely recognizable.
Measure 1:

We recommend improving the visibility of the focus in the case of keyboard operation. A background color should be defined using CSS in the case of focused links. (onFocus).

Illustration 24: Focused, linked images are unrecognizable.

Illustration 25: Focused text links should be accentuated by a background color and frame.

For focused entry fields, the background color should also be changed.

Illustration 26: Accentuation of focused entry fields.

Linked graphics should be highlighted by a highly visible frame.
Problem 2:

The quick links are not visible when using keyboard operation. For sighted keyboard users this means that the focus is lost depending on the number of quick links at the beginning of the pages.

Measure 2:

Ensure that the quick links (with the corresponding access keys) become visible with keyboard focus. See example at http://www.stadt-zuerich.ch/portal/de/index.html.

Illustration 27: Frame around focused graphic links.

Illustration 28: Example of temporarily visible quick links with keyboard focus.

2.4.8. Location (Level AAA)

Success criterion filled

2.4.9. Link Purpose (Link Only) (Level AAA)

Success criterion not met
**Problem 1 (Recommendation):**

On no pages is it clear to screen-reader users with older screen-reader versions, which links connect with an external page.

**Measure 1 (Recommendation):**

Variant 1: External links must be supplemented by relevant information. This information can be hidden using the CSS class for sighted users, if unwished for layout reasons.

```css
.hidden {
  display: inline;
  left: -1000px;
  overflow: hidden;
  width: 0px;
  position: absolute;
  top: -1000px;
  height: 0px
}
```

For sighted users, the reference to the external link must also be included in the title attribute, so that it becomes a tooltip, as is the reference to a new window for this user group.

Variant 2: The reference to the external link can also be made in the form of a graphic embedded in the link, whose alt attribute contains the reference to an external link.

2.4.10. **Section Headings (Level AAA)**

Success criterion met
3. **Understandable**

Information and the operation of user interface must be understandable.

3.1. **Make text content readable and understandable.**

3.1.1. **Language of Page (Level A)**

![Green check mark]  
Success criterion met

3.1.2. **Language of Parts (Level AA)**

![Green check mark]  
Success criterion not met

The following was tested:

- Indicate change of language in markup (e.g.: `<span lang="en">...`)  
- Only for longer quotes or text passages in another language  
- Only for single unclear or incomprehensible words

**Problem:**

Page: e.g. "Göte Turesson" ([http://de.wikipedia.org/wiki/G%C3%B6te_Turesson](http://de.wikipedia.org/wiki/G%C3%B6te_Turesson))

The English quote by Göte Turesson" was not marked as English text. The text is read by the screen reader using the German edition, which renders the text unintelligible.

The screen reader is able to recognize the change in language and load the corresponding language edition (if this has been installed).

**Measure:**

Make available a function in CMS with which authors of articles can indicate the language for longer texts in other languages.

3.1.3. **Unusual Words (Level AAA)**

![Green check mark]  
Success criterion not applicable, as the site is too extensive to search for these.

The benefit of Wikipedia in this regard is the fact that such words are probably linked to corresponding articles.
Community & Collaboration

3.1.4. **Abbreviations (Level AAA)**

See information (Recommendation)

The following was tested:

- Abbreviations are always explained in the continuous text, or
- Abbreviations are explained using a link to the glossary, or
- When a term is mentioned for the first time, it is written out in full and for subsequent abbreviations with the same meaning, the ABBR or ACRONYM element and the title attribute can be used, or
- Abbreviations are marked as ABBR or ACRONYM and the title attribute. The title attribute is used to support accessibility and is also accessible using the keyboard.

**Examples:**

1. "The United Nations Organisation (UNO) elected their new Secretary today."
2. `<p>The <abbr title="United Nations Organisation" lang="en">UNO</abbr> elected their new Secretary today</p>`

Frequent and generally familiar abbreviations, for example PDF, must not be explained.

3.1.5. **Reading Level (Level AAA)**

Success criterion not met

**Problem:**

**Pages:** All

The articles have to some extent a reading level which is too high for users with reading difficulties.

**Measure:**

Simple language: For Wikipedia very difficult and would possibly make little sense.

3.1.6. **Pronunciation (Level AAA)**

Success criterion met

**Note:**

**Page:** e.g.: "Libya" ([http://de.wikipedia.org/wiki/Libyen](http://de.wikipedia.org/wiki/Libyen))

On the page for Libya the IPA phonetic spelling is given and an audio file is available to listen to the Arabian pronunciation of both "Libya" and "Arabian."

3.2.1. **On Focus (Level A)**

Success criterion met

The following was tested:
- No popups, content change only with focus.

3.2.2. **On Input (Level A)**

Success criterion met

The following was tested:
- Upon user input (e.g. including selection in a pulldown menu) the context is not automatically changed without announcing this to the user.

3.2.3. **Consistent Navigation (Level AA)**

Success criterion met.

3.2.4. **Consistent Identification (Level AA)**

Success criterion met.

The following was tested:
- Recurring function elements appear consistently (e.g. search).

3.2.5. **Change on Request (Level AAA)**

Success criterion met.

The following was tested:
- Changes in context only take place following a user request or there is a mechanism to switch off such changes.
3.3. Help users avoid and correct mistakes.

3.3.1. **Error Identification (Level A)**

Success criterion met

The following was tested:

- Automatically recognized input errors lead to a clear error message in text form indicating what the error is.

**Comment:**

As real-time error-recognition mechanism we recommend the implementation of WAI-ARIA elements with live regions which, during input, draw the attention of the user to possible errors.

Please be aware that the current solution causes the entire page to be reloaded. Screen-reader users are thus obliged to reread the entire page in order to find out why their registration did not work. Please also ensure that the features used to make the user aware of errors are not characterized solely by color.

*Illustration 29: WAI-ARIA provides methods which make available barrier-free live regions to allow real-time avoidance of errors.*
3.3.2. **Labels or Instructions (Level A)**

Success criterion not applicable, no user input is expected.

The following was tested:

- Labels or instructions are given when user input is expected.

**Problem:**

Mandatory fields cannot be distinguished from optional fields.

![Illustration 30: Provide mandatory fields with labels which screen readers can clearly recognize as being related.](image)

**Measure:**

Provide mandatory fields with labels which clearly convey that these fields are mandatory. The text instruction Optional following the input field for the E-Mail address cannot be clearly related to the field by the screen reader.

3.3.3. **Error Suggestion (Level AA)**

Success criterion met

The following was tested:

- Recommendations for corrections are given following incorrect user input.
3.3.4. **Error Prevention (Legal, Financial, Data) (Level AA)**

Success criterion not applicable, no formula input with legal and financial data is required.

The following was tested:
- Input with legal or financial consequences must be able to be reviewed, corrected or deleted and confirmed before being sent.

3.3.5. **Help (Level AAA)**

Success criterion not applicable, no formulas exist which require context-sensitive help.

The following was tested:
- Context-sensitive help is offered.

3.3.6. **Error Prevention (All) (Level AAA)**

Success criterion met

*Note*

No formulas exist apart from the formulas for creation of a user account and for registration.
4. **Robust**

Content must be robust enough that it can be interpreted reliably by a wide variety of user agents, including assistive technologies.

4.1. **Maximize compatibility with current and future user agents, including assistive technologies**

4.1.1. **Parsing (Level A)**

Success criterion met

The following was tested:

- Valid Doctype
- No significant errors

**Problem:**

On all tested pages there are two syntax errors in connection with incorrectly nested lists.

**Measure:**

Review and correct the page codes.

Elements which are implemented using markup language, possess complete start and end tags, are nested correctly according to specification, do not have multiple attributes and each ID is clear, except where the specifications permit otherwise.

**Note:**

Browsers and other user agents such as screen readers parse documents according to the given Doctype, using the Doctype Definition (DTD). The Doctype must be valid and correctly displayed. If the declaration is insufficient or incorrect, browsers go into “quirks mode”, a reduced display mode.

List of recommended Doctypes: [http://www.w3.org/QA/2002/04/valid-dtd-list.html](http://www.w3.org/QA/2002/04/valid-dtd-list.html)

Code conformity and code validity are prerequisites for the controllable and verifiable quality of web contents. XHTML documents require concordant and syntactically correct code. Screen readers and screen magnifiers depend on correctness to a much greater degree than the visual browsers and do not readily forgive as many errors.

4.1.2. **Name, Role, Value (Level A)**

Success criterion not applicable, no own programming present.

The following was tested:

- Markup is used with the purpose of supporting accessibility. Especially in the case of generated contents, which create controls such as formula elements, frame titles, page elements, etc.
5. Further Techniques

This section of the test report focuses on further basic techniques, which are not yet able to offer complete accessibility. This special evaluation augments the test report published by the Foundation “Access for all”. It will be included in the WCAG 2.0 evaluation as soon as the producers have prepared their techniques accordingly.

5.1. Semantic markup

One of the most promising approaches to facilitating navigation and operation of web content for the users of assistive tools is consistent implementation of semantic markup in the website code.

Semantic markup allows website areas to be marked up according to their semantic meaning. Typical areas are headers and footers (structuring HTML5 elements <header> and <footer>), content areas with articles (<section>, <article>), sidebars (<aside> and, in particular, navigation areas (<nav>).

Semantic markup enables screen-reader users to specifically target the areas of interest and to skip those areas not of interest. This considerably enhances the creation of styles (skins) and the possible ways of displaying the pages on different end devices, such as PDA’s or smart phones. A beneficial secondary effect of semantic markup is the positive effect on the optimization of search machines.

Currently, we recommend two approaches to the implementation of semantic markup: HTML5 and WAI-ARIA.

5.1.1. HTML5

Although HTML5 is not yet a “W3C Candidate Recommendation” and not supported by all browsers, all signs point to it becoming a new standard. It should be noted that many assistive technologies today interpret the most important HTML5 elements in a meaningful way.

In addition to structuring elements, HTML5 also offers a number of further elements for grouping of content, for text markup, for multimedia content or formulas.

The following illustration shows schematically the possible semantic structuring of an arbitrarily selected Wikipedia page. The structuring HTML5 elements used are as follows:

- <header> can relate to pages or <section>s, and mostly contain headlines, navigation areas and/or other functions, such as links to registration formulas, etc. Websites can contain several <header>s.
- <footer> mostly contains information about the page/<section>, such as imprint, copyright or further links, etc.
- <nav> contains the main navigation. <nav> is often part of the <header> elements, but not necessarily.
- <article> is used for articles complete in themselves, which can stand alone.
Illustration 31: Possible semantic structuring using HTML5.

Further frequently used structuring HTML5 elements are:

- `<section>` for content which can be thematically grouped. Each `<section>` can contain `<header>`s or `<footer>`s. Important is the cohesiveness of the content.

- `<aside>` is used for additional information which is not necessary for understanding of the content in the `<section>`s and `<article>`s. Such content (advertising links, New Ticker) is usually displayed in sidebars.

`<article>`s can be embedded in `<section>`s. For Wikipedia this does not seem to be necessary, since Wikipedia follows the motto: “Each page is an article”.

5.1.2. WAI-ARIA

The counterparts in WAI-ARIA to the structuring elements in HTML5 are the so-called **Document Landmark Roles**. In both technologies, semantic markup technologies for semantically similar areas are made available.

WAI-ARIA is, as opposed to HTML5, an existing W3C specification. As with HTML5, the possibilities in WAI-ARIA go far beyond the structuring of content. For example, WAI-ARIA is very suitable for communication of assistive technologies when updating dynamic content (Ajax) and enables consistent keyboard support for interactive interfaces.

With WAI-ARIA landmark roles, no new elements are introduced. ARIA are semantic extensions, which are written in HTML as attributes of HTML elements. These extensions communicate functions, relationships, states and roles of elements. ARIA are primarily intended to make dynamic content and complex applications more easily usable for screen readers or usable in the first place.

[http://www.vorsprungdurchwebstandards.de/]
Landmarks work as distinctive points in a city: The television tower, the victory column, the Oberbaum Bridge. They are visible from a distance and give orientation.

The following illustration shows schematically a possible semantic structuring of an arbitrarily selected page in Wikipedia. The **structuring “landmark roles”** used are as follows:

- **role=banner**: indicate regions with mainly site-oriented content as opposed to page-oriented content.
- **role=complementary**: usually contain information about the page, such as imprint, copyright or further links, etc. Roughly equivalent to `<footer>`
- **role=navigation**: contains the navigation areas of the document or the site.
- **role=main**: is used for articles which are complete in themselves, which can stand alone. Actual content area.
- **role=search**: Search fields or regions which serve to facilitate orientation on the site.

Illustration 32: Possible semantic structuring using WAI-ARIA.

Further frequently used Landmark Roles are:

- **role=application**: Web application regions as opposed to web documents.
- **role=content info**: Information about super ordinate document.
- **role=form**: for formulas.

**Expandable menus**

**Note:** In section 2.1.1., mention was made of the more difficult keyboard operability when navigating in the left page column. Among the many further roles (abstract roles, widget roles and document structure roles) offered by WAI-ARIA, some are suitable for the explicit labeling of buttons, dropdown menus, calendar functions and expandable menus (role=tree controls).
5.1.3. **HTML5 and WAI-ARIA combined**

We recommend using HTML5 for all new web offers or relaunches and, parallel to this, implementing WAI-ARIA. HTML5 is the future, is however, not yet supported by all browsers and assistive technologies. WAI-ARIA fills many of the gaps arising due to the lack of support until now. With regard to dynamic content and interactive interfaces, the accessibility support offered by WAI-ARIA goes significantly beyond structuring elements.

For an accessible internet, we recommend combining HTML and WAI-ARIA.

**Consistent, content-related HTML labels**

Despite the new possibilities using HTML5 and WAI-ARIA, the “classic” methods must be adhered to according to WCAG 2.0. Consistent HTML is eminently important for a clean website. Some “classic” accessibility problems cannot be solved even using new technologies.

For example there are still no specific (HTML5/ARIA) ways to distinguish between several different navigation areas. Screen readers will always read `<nav>` and “role=navigation” as “navigation”. To better enable screen-reader users to distinguish between these areas, we recommend, as we have in the past, providing the specific areas with [invisible] descriptive headings.

5.1.4. **Further links**

- http://www.paciellogroup.com/
- http://dev.w3.org/html5/spec/content-models.html#wai-aria
- http://www.vorsprungdurchwebstandards.de/theory/7-gruende-wai-aria-landmarks-sofort-einzusetzen/
- http://www.w3.org/TR/wai-aria/roles

5.2. **PDF documents**

Portable Document Format (PDF), a product of Adobe Systems Incorporated, was made publicly available in 1993. Alternatives to the software “Adobe Acrobat” are available, but do not provide the scope of function necessary for the creation of accessible PDF’s. Even the use of “Adobe Acrobat” does not yet permit all success criteria of WCAG 2.0 to be met.

5.2.1. **Readable PDF documents (Level AA)**

Success criterion not applicable, no PDF documents exist

The following was tested (included in the standard test):
- All tested PDF’s are readable in the test environment with the assistive devices listed.
- If content is listed accessibly in the website and additionally listed as PDF, the PDF’s do not necessarily have to be accessible.
Community & Collaboration

A random selection of PDF’s was tested. They are all well readable, since layout and structure are kept simple and also comprehensible. The data tables are not optimized, but linearize well with the screen reader.

5.2.2. Accessible PDF documents (Level AA+)

Success criterion not applicable, no existing PDF documents

The following was tested:
- All tested PDF’s are readable in the test environment using the assistive devices listed.
- PDF’s are optimized with regard to accessibility, all mandatory criteria are met.

Mandatory criteria
[Version 1.3 Foundation «Access for all», Zurich]

<table>
<thead>
<tr>
<th>Target</th>
<th>Success criteria (mandatory)</th>
<th>Met</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2. Elements follow a logical order.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. The main language of the document is defined.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. Changes of language in the document are defined.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5. In the document, fonts are used which allow characters to be extracted to text.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5. Screen readers are not negatively affected by the safety settings.</td>
<td></td>
</tr>
<tr>
<td>2. Structural Information</td>
<td>1. Pictures and graphics with visual content are described in a meaningful alternative text. Layout graphics (graphics without informational content) are defined as background.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. For titles, the intended headings are applied with standard tags in correct hierarchical order.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Tables can be serialized in a meaningful way. If necessary, column headings and row headings are defined.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. For paragraphs, correct standard tags are used.</td>
<td></td>
</tr>
<tr>
<td>3. Presentation</td>
<td>1. The PDF document allows word wrap and magnification.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. All content must be readable in contrast mode.</td>
<td></td>
</tr>
</tbody>
</table>

5.2.1. Accessible PDF documents (Level AAA)

Success criterion not applicable, no PDF documents

The following was tested (as additional test, subject to charges):
- All tested PDFs are readable in the test environment using the assistive devices listed.

PDFs are optimized for accessibility; all mandatory and all non-mandatory criteria were met.
Non-mandatory criteria

These criteria can be met for an AA+ certification, but are not mandatory.

<table>
<thead>
<tr>
<th>Target</th>
<th>Success criteria (non-mandatory)</th>
<th>Met</th>
</tr>
</thead>
</table>
2. Links are also presented as links in the PDF document.  
3. A complete analysis in Acrobat 8.0 Professional must not show any errors. |     |
| 2. Structural Information             | 1. Enumerations are correctly defined as lists.  
2. Tables are labeled.  
3. Correct standard tags are used for footers.  
3. Abbreviations are defined. |     |

Note: Testing of PDF documents

The PDF Accessibility Checker (PAC) automatically performs 12 tests and issues a report of all errors found. PAC also enables a preview of a PDF document. This preview illustrates how the document is interpreted and read by a blind screen-reader user (screen reading program). PAC contributes to the support of tests conducted by experts and disabled users.

Illustration 33: PDF Accessibility Checker (left), accessibility preview in browser (right).

This free program from the Foundation “Access for all” can be ordered under the following link:
http://www.access-for-all.ch/ch/pdf-werkstatt/pac-pdf-accessibility-checker.html
VII. Declaration of Conformance with Accessibility

As soon as your website has met the listed criteria for a conformance level (A, AA or AA+) and the Foundation «Access for all» has confirmed this, a conformance symbol or announcement may be published in the website. The announcement must contain the following information, according to WCAG 2.0.

Please publish the following text in the website (for example, as part of the imprint):

Declaration of conformance with accessibility

Conformance with Levels A and AA of the «Web Content Accessibility Guidelines, WCAG 2.0» has been established for the whole website. The tests were performed in a defined test environment with representative, assistive technologies.

- Website: ...
- Conformance level met: ...
- Date: ...
- Web technologies supporting accessibility: XHTML, CSS, JavaScript
- WCAG 2.0 Accessibility Guidelines: [http://www.w3.org/Translations/WCAG20-de/](http://www.w3.org/Translations/WCAG20-de/)
- Testing organization: Foundation «Access for all»: [www.access-for-all.ch](http://www.access-for-all.ch)
VIII. Appendix

Important terminology in the WCAG 2.0

The WCAG 2.0 contain three important terms which are not mentioned in the WCAG 1.0. Each of these terms is described briefly below and defined in detail in the glossary.

**Website**

The term “website“ in this standard comprises much more than static HTML pages. Increasingly, the term is used to mean dynamic websites appearing in the web, including “pages“ which may open up complete virtual, interactive communities. For example, the term “website“ comprises a comprehensive, interactive, film-like experience which can be found on a single URI.

**User agent**

Any type of software which calls up and presents web content for the user. For example, web browsers, media players, plug-ins and other programs – including assistive techniques such as screen readers – which help to call up web content, render it and interact with it.

**Determined by software**

Different success criteria require that content (or certain aspects of content) can be “determined by software“. This means that content is provided in such a way that user agents, including assistive techniques, can extract this information and make it available to the user in different modalities.

**Accessibility supported**

While the WCAG 1.0 usually specifically refers to certain technologies – mostly HTML and CSS – the normative section of the WCAG 2.0 (principles, guidelines and success criteria) is formulated, as far as possible, without reference to technologies, allowing application to other formats, for example, Flash or PDF. Requisite to WCAG 2.0 conformance is, however, that the implemented technology is "accessibility supported".

In order for a technology to be "accessibility supported", support from browsers and aids must be intended. Support must be documented but the scope of support is not prescribed in detail. One single assistive tool is not normally sufficient, the incidence and availability of the tool should be considered and the environment in which the tool is implemented is also a factor – whether provided by the internet or implemented in an intranet context only.

Glossary: [http://www.w3.org/Translations/WCAG20-de/#glossary](http://www.w3.org/Translations/WCAG20-de/#glossary) (German translation)

Further information: [http://www.access-for-all.ch/richtlinien](http://www.access-for-all.ch/richtlinien)

The original: [http://www.w3.org/TR/WCAG20/](http://www.w3.org/TR/WCAG20/)

Foundation «Access for all»

Manuscript version: 18 dated 09.9.2010
The project TAO is managed by the Bern University of Applied Sciences and is co-funded under the Ambient Assisted Living (AAL) Joint Programme by the Swiss Federal Office for Professional Education and Technology, the Dutch Ministry of Health, Welfare and Sport, the German Federal Ministry of Education and Research, and the European Commission.

AAL-2009-2-084 TAO

http://www.thirdageonline.eu

This work is licensed under a Creative Commons Attribution-ShareAlike 3.0 Unported License.