

Accessibility of Government Websites in India: A Report

Accessibility of Government Websites in India: A Report

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Executive Summary

Website inaccessibility is the largest and most common barrier to implementing effective e-governance. In a country like India, where a very large percentage of the population is disabled, elderly, illiterate, rural, having limited bandwidth, speaks only a vernacular language or uses alternative platforms like mobile phones, having accessible websites becomes all the more important to ensure that government information and services which are available online are accessible and usable by these groups. This report summarises the key findings of a test conducted to measure the accessibility of 7800 websites of the Government of India and its affiliated agencies against the Web Content Accessibility Guidelines (WCAG) 2.0, which is the universally accepted standard for web accessibility. It uses a combination of automated and manual testing to derive key findings. While the automated tool identified errors such as images without textual descriptions and HTML and CSS errors, manual testing was used wherever human decision was required, for instance, to judge whether a description of a link or image was indeed accurate, or to check for accessibility of forms.

Highlights

- 7800 websites were tested
- 1985 websites failed to open
- Most of the remaining 5815 websites have some accessibility barriers
- An average of 63 errors per home page, with a few pages crossing 1000 errors
- 6% of homepages with a cumulative count of errors in excess of 500
- 33% of websites on which non-text objects have no alternate text
- 58% of the websites with no navigation markup
- Only 52 websites with colour change option
- Around 42% of the web pages have form links
- Only 21 websites had inaccessible forms

The report gives details of the errors in various categories and recommends adoption of WCAG 2.0, making easy fixes to websites which can instantly increase their accessibility, developing an online accessibility score card, developing an accessibility reporting mechanism and setting up a dedicated accessibility centre of excellence to promote and maintain accessibility. Examples of actual errors found on the website are given in Appendix 1.

Introduction

We live in an age where all social transactions, ranging from administration to business and recreation are carried on over the internet, often without any need or opportunity for human interaction. The Government of India (GoI) through its various policies like the draft Electronic Delivery of Services Bill, 2011¹ is taking steps to ensure the complete transition from manual to electronic delivery of services by all government agencies to its citizens. This transition from physical to electronic communication however, is not without its difficulties, especially for certain subsets of users such as persons with disabilities. The lack of infrastructure, training and accessible technologies and content are the primary barriers hindering universal access. While some of these problems such as development of technology and content in different languages are fairly complex and require special effort, this report focuses on the lowest hanging fruit to increase universal access to electronic information and services — website accessibility. Since websites are an interface between the government and its citizens, it is imperative that government websites should be accessible in order to facilitate effective governance. Websites which are not developed in accordance with the Web Content Accessibility Guidelines (WCAG)² 2.0 will remain inaccessible to over 50 per cent of India's population comprising persons with disabilities, elderly and illiterate persons, linguistic minorities and persons using alternate platforms like mobile phones. The 'Guidelines for Indian Government websites'³ was formulated by the National Informatics Centre with a view to improving the quality of information and services through electronic media and to enhance government-citizen interaction. Unfortunately, only a miniscule percentage of government departments and agencies have implemented these guidelines, thus leaving the majority of government presence on the internet still unavailable to the larger section of the Indian population.

What is Accessibility

The e-Accessibility Toolkit for Policy Makers defines accessibility as a measure of the extent to which a product or service can be used by a person with a disability as effectively as it can be used by a person without that disability.⁴ Depending upon the extent to which a product or service can be used by a person with a disability; it may be classified as 'completely inaccessible', 'partially accessible' or 'fully accessible'. Persons with different disabilities have different needs for accessing a technology. Keeping these different needs in mind, accessibility guidelines or standards have been formulated for different technologies to ensure that the product or service is accessible to all persons in one way or another. In the case of websites, the Web Content Accessibility Guidelines (WCAG)⁵ 2.0 formulated by the World Wide Web Consortium (W3C) is the universally accepted standard. Governments around the world, including India have based their accessibility policies on this standard. Key accessibility principles of WCAG 2.0⁶ are given below:

- **Perceivable:** All content, including information in text, multimedia, video and audio must be presented to users in ways they can perceive. This includes giving textual

1. http://mit.gov.in/sites/upload_files/dit/files/Electronic_Delivery_of_Services_Bill_2011_16thNov_Legal_17112011.pdf

2. <http://www.w3c.org/wai>

3. <http://www.trigma.com/GoI-web-guidelines.html>

4. http://www.e-accessibilitytoolkit.org/toolkit/eaccessibility_basics/accessibility_and_the_purposes_of_icts

5. <http://www.w3.org/TR/WCAG/>

6. <http://www.w3.org/WAI/WCAG20/glance/>

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description for non-text objects (image, audio, etc), separating structure and information from presentation, ensuring that there is sufficient colour contrast between foreground and background and having synchronized alternatives (such as captions for videos) for multimedia.

- **Operable:** User interface components and navigation must be operable, i.e., all functionality must be accessible with the mouse as well as the keyboard and there must be standard mechanisms in place such as marking various subsections with HTML headings (h1...h6) to aid users to find and work with content.
- **Understandable:** Information and the operation of user interface must be understandable. i.e., pages should be simple and predictable, with help for clarification.
- **Robustness:** Content must be robust enough to enable it to be interpreted reliably by a wide variety of user agents, including assistive technologies. i.e., web content should be properly marked up and there should be no HTML and CSS validation errors.

Methodology

The list of websites to be tested has been obtained from the directory of government websites.⁷ The test was carried out using a combination of automated tools and preliminary manual evaluation. Automated tools generally reveal around 25 per cent of the accessibility issues on a website and are useful to obtain a good quantitative view about the state of its accessibility. Preliminary manual evaluation is necessary to supplement the results of the automated test and provide a more qualitative analysis of the accessibility and usability issues encountered. In the present case, the automated tool was used to test the home pages of all the websites and was followed up by manual evaluation to test for issues like form accessibility.

The tool used for the automated testing was an open source web accessibility evaluation tool called AChecker,⁸ which offers the facility to review accessibility of web pages based on a variety of international accessibility guidelines.

Manual testing was done wherever human intervention was required to make decisions on potential problems which could not be identified by automated tools. For example, any check to determine whether linked text correctly describes the purpose of a link, or the textual description of an image is accurate required human decision. The purpose of this test was to check for basic accessibility of these websites and the testers involved in this endeavour were all persons with disabilities having different levels of experience in the use of computers, demonstrating also that inaccessible websites affect both beginners as well as advanced computer users alike.

Two datasets have been considered to evaluate the websites. The first dataset comprises the errors identified by the automated tool. These errors are known errors, likely errors, probable errors, HTML validation errors and CSS validation errors.

The second dataset was arrived at through manual evaluation. This includes alternate text for non-text objects, colour change option, navigation markup and form accessibility.

A brief explanation of these errors is given below:

7. <http://india.gov.in/outerwin.php?id=http://goidirectory.nic.in/>

8. <http://achecker.ca/checker/index.php>

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1. Known problems: These are problems which AChecker knows with certainty are accessibility barriers.
2. Likely problems: These are problems which AChecker has identified as probably barriers, but cannot be sure and require human decision.
3. Potential problems: These are problems that AChecker cannot identify and require human decision.
4. Hypertext Markup Language (HTML) Validation: Conformance to HTML standards is important to enable assistive technology to process the pages and present them to the end user.
5. Cascading Style Sheet (CSS) Validation: CSS is the most popular programming language used in website development for the presentation / formatting of content, especially on dynamic pages. It is used to control the text / web object colour, size, attributes, etc., and is necessary to ensure that a webpage appears similar across browsers and devices.
6. Alternate text for non-text objects: All objects such as images, audio and video should have alternate means of access such as through text, captions, etc., to enable persons with different disabilities to access them.
7. Colour change option: This option allows users with low vision or colour blindness to change text colour or text size and optimise the website to suit their vision requirements.
8. Navigation markup: Persons with blindness or persons with motor difficulties need a way to navigate a page in a structured manner. If a webpage doesn't have navigation mechanisms such as different heading levels or skip links, etc., keyboard users have to use repeated keystrokes to reach the desired place in the webpage. Such repeated keystrokes can be difficult for persons with motor disabilities as they are unable to use the mouse and can also cause repetitive stress injury for others.
9. Form accessibility: In order for a form to be accessible, each input field such as text entry box, selection and other input fields should be properly labelled in a way so that the label can be programmatically determined. In the absence of this, a screen reader will be unable to specify the input required in an edit/combo box or other fields to the end user.

Findings and Interpretation

A total of 7,800 government websites were identified from the Gol Directory for the accessibility audit. However, results have been given only for 5,815 of them, since the remaining 1,985 websites did not open and hence, could not be tested. The non-availability of government websites on such a large scale (around 25 per cent) seems to imply that either the list is not being updated or the websites are not being maintained.⁹

An overall observation is that most of the government websites have accessibility issues. The following section goes into more specificity about the type and extent of accessibility found across websites.

9. The detailed test results for all the websites can viewed at <http://cis-india.org/accessibility/accessibility-audit-of-govt-websites>

Known, Likely and Potential Problems

The table below outlines the results of testing for known, likely and potential problems. Known problems are existing barriers to access and need to be corrected. Since the accessibility test tool is built on artificial intelligence, the identification of certain problems is not possible and therefore, some common errors are classified as likely problems. They may or may not be problems but these require manual investigation by the developer of the website to compare context of use and then correct if needed. In the case of potential problems again, modification of pages may or may not be required, depending upon whether the manual check determines a problem as such.

Particulars	Known Problems	Likely Problems	Potential Problems
Average errors per website	56.8	2.9	176.3
Number of websites that have 0 errors under this category	172	3181	143
Minimum error count	0	0	0
Maximum error count	1398	351	3056

Thus, we see that the known errors vary in number from 0 to 1398. The number of websites with no known errors is a minuscule 3 per cent. This is a grave situation as it means that 97 per cent of websites have at least one known accessibility issue and hence, can be said to be inaccessible.

The situation is better when it comes to likely problems, as around 54 per cent of the websites surveyed have no likely problems and another 44 per cent have fewer than 25 likely problems each. However, the number of likely problems per website ranges from 0 to 351. The average number of likely problems per website is around 3. This is acceptable as long as these do not pose any major accessibility challenges.

In the case of potential problems however, 57 per cent of the websites surveyed have 101-500 potential problems and less than 3 per cent have no potential problems. Thus again, similar to the situation with known errors, around 97 per cent of the websites have potential accessibility problems and a manual check is necessary to decide whether or not they need to be corrected. The number of potential problems per website ranges from 0 to 3056.

On an average, websites have 56.8 known accessibility issues per page and 176.3 potential accessibility issues per page. There is a large variation in the errors for these websites and it is indicated by the fact that standard deviation¹⁰ for known errors is 75.65 and standard deviation for potential errors is 177.36. The situation with likely accessibility issues appears less bleak, with an average of 2.9 errors per page (6.39 errors excluding the websites that had zero errors). 3172 of 5815 websites had no likely errors, which is almost 54 per cent of

10. Standard deviation is an indicator of variation. A large standard deviation indicates that the result varies a lot. Hence, the average alone does not explain the nature of results, and it is necessary to consider standard deviation along with average.

the websites. However, this could be due to the fact that the tool was unable to identify many of these errors.

HTML and CSS Validation

The test revealed that these websites not only have core accessibility issues but also have HTML and CSS validation errors. HTML is the simplest programming language used for website development and is accessible on all browsers — desktop browser or a mobile browser. AChecker identifies HTML markup errors against the W3C HTML standards. These are identified as problems of the use of HTML syntax or incomplete syntax / code. For instance, an image tag not having a quotation mark for alternate text is a syntax error and that must be corrected in conformity with the HTML standard.

Content presented with CSS errors may lead to serious problems such as overlapping of content, making it almost impossible to read. CSS errors may also prevent some users from successfully carrying out custom CSS processing to set the preference of colour and size of text and object to suit their vision requirement. For example, some people can see black text on white background or blue text on red background but if web pages do not conform to CSS standards, customising such settings will be difficult or nearly impossible. The CSS validation by AChecker includes count of identified inline styles, styles defined in the head area of the HTML, and linked external style sheets on the page or its associated CSS file.

The table below outlines the results of testing for HTML and CSS Validation.

Particulars	HTML Validation	CSS Validation
Average errors per website	65.3	13.8
Number of Websites that have 0 errors under this category	311	2232
Minimum error count	0	0
Maximum error count	2623	2949

The test results reveal serious shortcomings in HTML validation with only 5 per cent of websites having no issues. Ninety-five per cent of the websites have anywhere from 1 to 500 errors highlighting the ignorance of HTML standards in general. Non-conformance to these standards results in large scale inaccessibility on most web browsers for persons using assistive technology such as screen readers.

The situation with CSS validation is better, with 38 per cent websites having no CSS validation errors and another 52 per cent with less than 25 CSS validation errors per site. In terms of errors, on an average, there are 65.3 HTML validation errors and 13.8 CSS validation errors per page. However, the standard deviation is very large with 105.68 for HTML validation and 70.1 for CSS validation.

Alternate Text for Non-text Objects

The table below outlines the availability of alternate text for non-text objects in the websites tested.

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Particulars	Count
Number of web pages on which non-text objects have no alternate text	1921
Number of web pages on which most non-text objects have alternate text	664
Number of web pages on which all non-text objects have alternate text	1117
Number of web pages on which a few non-text objects have alternate text	2113

Thirty three per cent of the websites have no alternate text available for any of the images while around 19 per cent of the websites have alternate text for all the images. The remaining websites have alternate text available partially.

Manual evaluation has not been as rigorous as automated evaluation. The websites were checked for a few accessibility requirements, such as whether content can be perceived with multiple senses, whether information is not dependent on colour alone, whether labels for input fields can be identified programmatically and whether navigation mechanisms are available on the pages.

1. Alternate text for non-text objects: The test revealed that 80 per cent of the web pages have either no image labels or images labelled incorrectly.
2. Colour change option: Only 52 out of 5815 web pages have the option to change the colour for text or background.
3. Navigation markup: About 3375 of 5815 web pages do not have any navigation markup. Even out of these, only 1006 web pages have proper markup i.e., 922 with headings and 84 with skip links. About 866 web pages used the site map as a navigation markup. However, this alone cannot be relied on for proper navigation within the webpage.
4. Form accessibility: Forms were found to be fairly accessible. The details are as follows:
 - Number of websites that had a form to enter data: 2455
 - i) Number of forms that were found fairly accessible: 2131
 - ii) Number of forms that were midway accessible: 272
 - iii) Number of forms that were accessible but difficult due to non-labelled objects: 31
 - iv) Number of forms that were completely inaccessible: 21

Recommendations

Given below are some generic recommendations to improve accessibility of the websites based on the findings from the accessibility test:

- **Adapt/ adopt and implement Web Content Accessibility Guidelines 2.0 (WCAG 2.0):** Make it mandatory for all government websites to comply at least with the WCAG level of AA. With an action plan for upgrade to level AAA (wherever possible) within the next five years.
- **Carry out easy fixes:** In many cases, there are errors such as giving alternative text for non-text objects and link descriptions which can easily and immediately be corrected.

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This will render the website instantly more accessible, even before the entire website is retrofitted with accessibility features.

- **Set up a dedicated Accessibility Cell/ Centre of Excellence:** Set up an accessibility centre of excellence to develop policies and facilitate adoption of relevant accessibility standards at a national level, as well as create a separate wing in the departments responsible for Information Technology in each state and union territory to oversee implementation of web accessibility and carry out capacity building activities.
- **Setup an internet accessibility observatory along the lines of the European Internet Accessibility Observatory (EIAO):**¹¹ The EIAO is an accessibility evaluator which uses automated web crawlers to continuously evaluate websites which are stored in their repository. Automated evaluation has been found to be useful to indicate need areas for attention to make websites accessible.
- **Develop an online Accessibility Scorecard which is open to public scrutiny:** This will allow administrators to understand the status of accessibility of government websites at a glance, continuously monitor progress and take informed decisions for remedial action in cases of non-compliance. It will also serve as an incentive to government agencies to maintain accessible websites.
- The Unified Web Evaluation Methodology (UWEM1.2)¹² developed by the EU Web Accessibility Benchmarking Cluster (WAB Cluster) is an excellent example of a framework which can provide a score for accessibility of a page, as well as aggregation of scores for a web application or collection of web applications. It provides the facility to carry out accessibility checks in multiple ways even where the checks are based on the same guidelines. UWEM has been developed to ensure compatibility and coherence of large scale monitoring and local evaluation with the WCAG. Since the UWEM methodology has already incorporated support for the migration from WCAG 1.0 to WCAG 2.0, it is ideal to support evaluation, (self) certification, and benchmarking of web content in Europe and beyond.
- **Accessibility Reporting Mechanism:** Develop a template for periodic voluntary reporting by government agencies on the state of accessibility of their websites. A successful example of this can be found in the United States where many organizations have adapted the Voluntary Product Accessibility Template®, or VPAT® to communicate the accessibility status of their products to their users. VPAT® is used to document the conformance of products with the accessibility standards under section 508 of the Rehabilitation Act. Section 1194.22 of VPAT® deals with web accessibility.





11. <http://www.cerlim.ac.uk/projects/eiao/index.php>

12. <http://www.wabcluster.org/uwem1/>


Appendices

Appendix 1 - Examples of errors

The table below gives examples of errors found in the websites. These examples have been chosen at random and references to the identity of websites are merely incidental and not intended to adversely target any entity.

Problem Type	Code	Description/ Problem posed to accessibility
<p>Known Problem (Example 1)</p>	<p>Success Criteria 1.1.1 Non-text Content (A)</p> <p>Check 1: <u>img element missing alt attribute.</u> Repair: Add an alt attribute to your img element.</p> <p>✖ <u>Line 15, Column 3:</u> <code></code></p>  <p>✖ <u>Line 147, Column 9:</u> <code></code></p>  <p>✖ <u>Line 164, Column 9:</u> <code></code></p>  <p>Check 7: <u>Image used as anchor is missing valid Alt text</u> Repair: Add Alt text that identifies the purpose or function of the image.</p> <p>✖ <u>Line 20, Column 3:</u> <code><img alt="" src="hindi.gif" align="left" border="0" width="91" height="2</code></p> 	<p>Text Alternatives: Provide a text alternative for any non-text content so that it can be processed by a screen reader and conveyed to the user.</p> <p>In case of missing information the screen reader will only pronounce it as image, leaving the user clueless about its identity.</p>
<p>Known Problem (Example 2)</p>	<p>1.4 Distinguishable: Make it easier for users to see and hear content including separating foreground from background.</p> <p>Success Criteria 1.4.3 Contrast (Minimum) (AA)</p> <p>Check 301: <u>The contrast between the colour of text and its background for the element is not sufficient to meet WCAG2.0 Level AA.</u> Repair: Use a colour contrast evaluator to determine if text and background colours provide a contrast ratio of 4.5:1 for standard text, or 3:1 for larger text. Change colour codes to produce sufficient contrast. http://www.w3.org/TR/UNDERSTANDING-WCAG20/visual-</p>	<p>The colour of the text should be in contrast to its background to make it easy to read by persons with low vision or old age. This is also a usability aspect and if not followed properly, people without any disability would also find it difficult to read. For instance, yellow text on green would make no contrast and pose problem for reading, people</p>

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	audio-contrast-contrast.html#visual-audio-contrast-contrast-resources-head	with sight would find it very difficult and people with low vision would find it impossible.
Likely Problems (Example 1)	<p>Adaptable: Create content that can be presented in different ways (for example simpler layout) without losing information or structure.</p> <p>Success Criteria 1.3.1 Info and Relationships (A)</p> <p>Check 82: <u>p element may be misused (could be a header).</u></p> <p>⚠ <i>Line 249, Column 2:</i> <code><p style="margin-left: 10px; margin-right: 10px" align="center"> ...</code></p>	When a paragraph is marked with a strong attribute to make it look like a heading, rather than as a heading itself, a screen reader is unable to recognise that it is supposed to convey a heading and treats it merely as a paragraph, since the heading has not been defined programmatically, but stylistically
Likely Problem (Example 2)	<p>2.4 Navigable: Provide ways to help users navigate, find content, and determine where they are.</p> <p>Success Criteria 2.4.4 Link Purpose (In Context) (A)</p> <p>Check 173: <u>Suspicious link text (contains placeholder text).</u></p> <p>⚠ <i>Line 175, Column 66:</i> <code>Click Here</code></p>	An anchor element is used to place a link in the HTML document. Marking the anchor with correct attributes is fairly easy. However, a common mistake is to place the link as “click here” which does not convey anything to a person using assistive technology.
Potential Problem (Example 1)	<p>Text Alternatives: Provide text alternatives for any non-text content</p> <p>Success Criteria 1.1.1 Non-text Content (A)</p> <p>Check 8: <u>img element may require a long description.</u></p> <p>⬇ <i>Line 126, Column 38:</i> <code><img src="images_files/phyiitm.jpg" alt="Physics Dept IIT Madras" width="... align=" ...</code></p> 	Sometimes the size of an image is a lot bigger than the equivalent text given. Although the alt text is present here, the tool nevertheless identifies it as a potential issue because of its excessively lengthy textual description. A manual check is hence required to determine the appropriateness of the text.
Potential Problem (Example 2)	<p>Check 178: <u>Alt text does not convey the same information as the image.</u></p> <p>⬇ <i>Line 104, Column 58:</i> <code><img src="images_files/dept.jpg" alt="" width="590" height="96" style="width: 590px; height: 96px;" ...</code></p>	Where the textual description does not match the image accurately, The tool recognises this as a potential problem and a

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	<h3 style="color: blue;">Department of Physics</h3> <p style="color: blue;"><i>Indian Institute of Technology Madras, Chennai</i></p>	manual check is required to verify and supplement the finding.
HTML Validation (Example 1)	<p>✖ <i>Line 173, Column 49:</i> there is no attribute "BEHAVIOR" ...rtical-align: top;"><marquee behavior="scroll" OnMouseOver="this.stop()" OnMou...</p>	The element used is not supported in the type of document in which it is used to mark the page header. This failure to follow web document standards results in problems such as Broken format or layout of tables / frames for a browser when it decodes the page after download and during the presentation of the page at the user end.
HTML Validation (Example 2)	<p>✖ <i>Line 173, Column 70:</i> there is no attribute "ONMOUSEOVER" ...<marquee behavior="scroll" OnMouseOver="this.stop()" OnMouseOut="this.start()"></p>	Here the on mouse over attribute has been used on the page even though it is not supported by the document type which is mentioned in the header. The on mouse over element refers to the action which the element has to perform (for instance to grow larger or to shrink a bit) when a mouse pointer hovers over the element.
CSS Validation (Example 1)	LineElementError 18 Value Error : <u>margin</u> Property margin doesn't exist in CSS level 3 but exists in [css1, css2, css21] : 0.79in	The CSS type mentioned in the header does not use the margin element but in the website it has been used to put the margins. This is a presentation problem. The web browser may not process this correctly while presenting content on the screen.
CSS validation (Example 2)	50 h1 Property font-color doesn't exist : #800000 58 h2 Property font-colour doesn't exist : #800000 66 h3 Property font-colour doesn't exist : #800000 73 table Value Error : <u>width</u> Too many values or values are not recognized : 100% border 77 table Parse Error : 0 bordercolorlight: #FFFFFF bgcolor : #F7F7F7 bordercolordark : #FFFFFF } 93 td Property font-colour doesn't exist : blue 111 td1 Property font-colour doesn't exist : white 131 th Value Error : <u>colour</u> Too many values or values are not recognized : white text-decoration 131 th Parse Error : none; 132 th Parse Error } 153 a:hover Value Error : <u>colour</u> attempt to find a semi-colon before the property name. Add it.	Font colour and table value errors are a few examples of invalid CSS markup which may not be detectable upon appearance, but would be instantly recognised by assistive technology.

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Given below are a few examples to illustrate how inaccessibility affects key areas of daily living.

Education

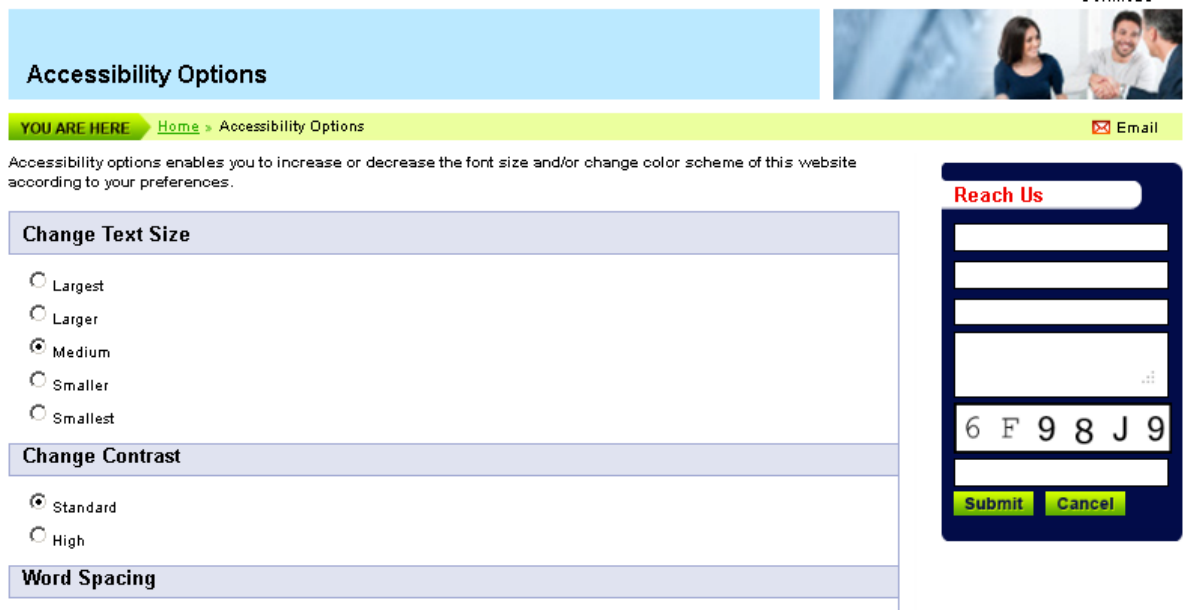
- Accessibility issue: missing alternate text for non-text objects



Given above is a screen shot image of a website which has no alternate text for non-text objects

The above picture has no description and hence does not convey anything to a person using a screen reader. In this particular example, the address of the institute is given, a sighted user can view the address on first visit to the page but a screen reader user will have to search in the 'contact us' page to find it. Similarly many pages contain information only in an image format.

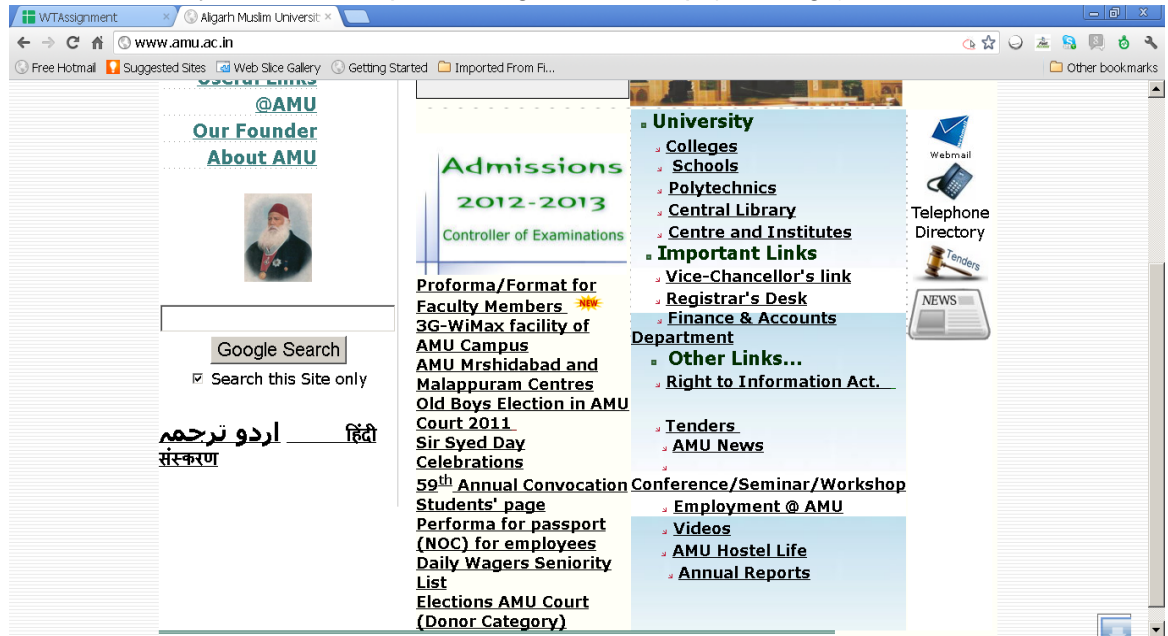
- Example for colour change option



Given above is a screen shot image of the colour change option on a website

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- Accessibility issue: Inadequate navigation markup (headings)



Given above is a screen shot of a website with inadequate navigation markup

The above page has a cluster of information but there is only one heading on the page "University". Marking other important information such as "Important Links" with heading levels would have rendered the page more accessible.

- Accessibility issue: multiple languages are used in a single website



Given above is a screen shot of a website that has multiple languages in its homepage

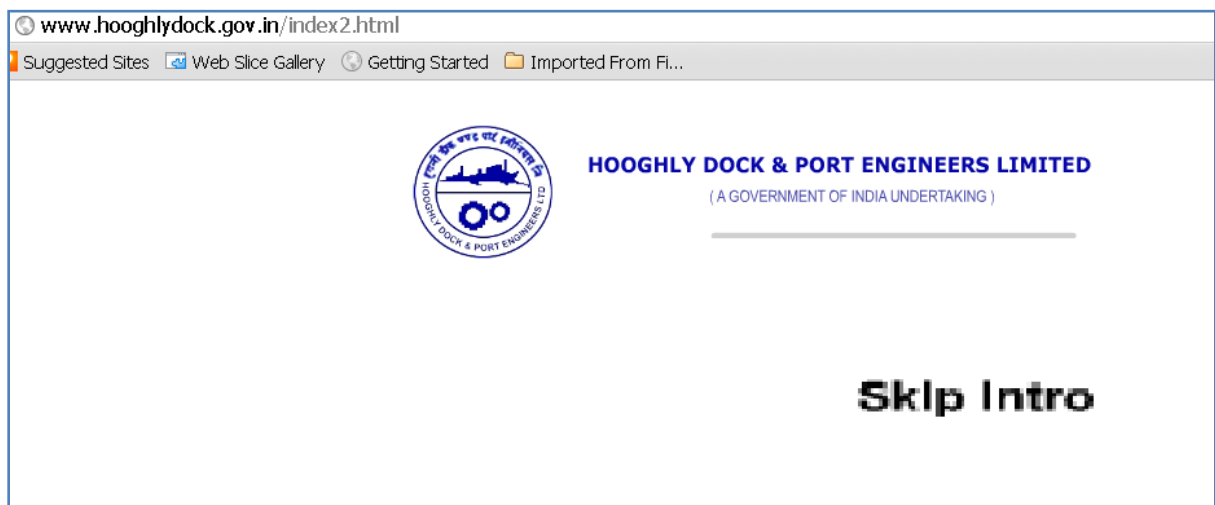
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- The content on this web page is in multiple languages (Hindi and English) and is a perfect mixture. Unfortunately, there are screen readers that can either work only with English and or need to have some switch process to be able to read Hindi. This makes it difficult for users to read and comprehend the page effectively.
- This is also a problem on the usability front since it is of no value to users who don't know Hindi and would hence be a waste of time and unnecessary complication in terms of navigability. The ideal and standard practice is to have an option to change web page language instead of having multiple language text on a single page.

Companies

- Accessibility issue: Absence of skip links

Skip links are links which make it possible for a user to skip some part of the web page and go directly to the relevant content. However on most government websites, these links have been used to skip the general information page (usually the first page) and navigate to a sub page. While this is useful, it is not the main purpose of skip links.

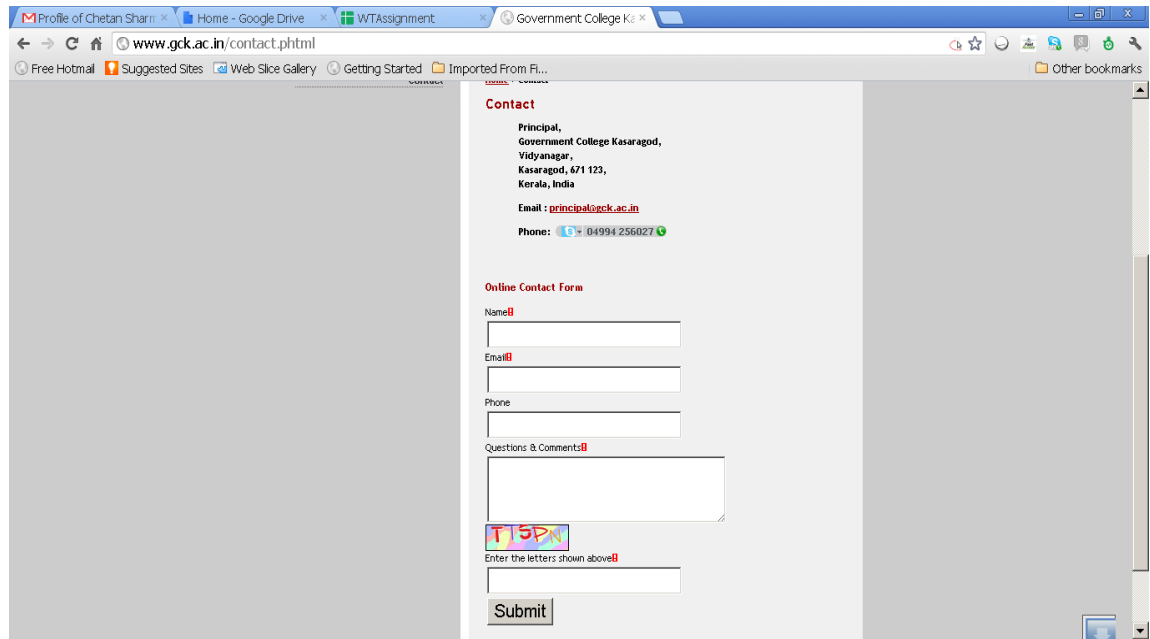


Given above is a screen shot of a website that doesn't have skip links

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- Accessibility issue: inaccessible captcha in form

Form accessibility depends on a lot of factors. However, there are some basic things which need to be in place to make a form accessible, such as giving all fields a text label and using accessible captcha.

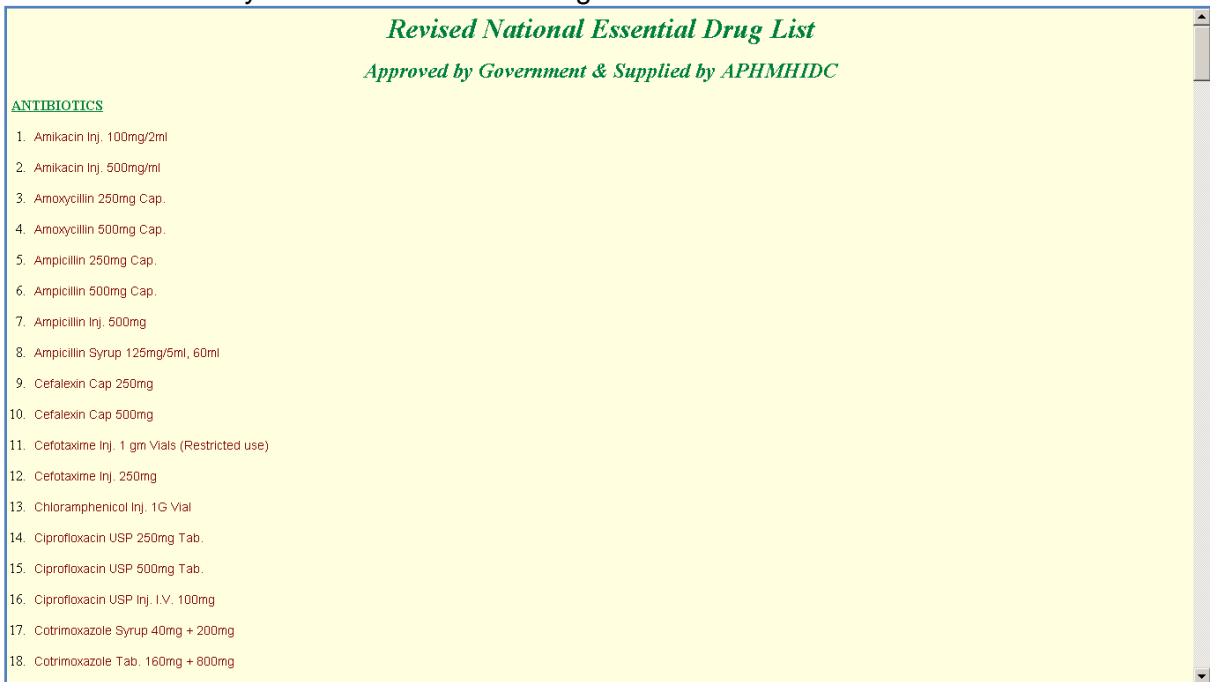


Given above is a screen shot of a website with inaccessible captcha

In the above example, the captcha used is an image and the user is expected to write the numbers. This is inaccessible for a screen reader user. An accessible captcha would include a logical question like “which is bigger 222 or 444” or “apple is of orange colour, true or false?”

Medical

- Accessibility issue: sites without navigation bar



Given above is a screen shot of a website that doesn't have navigation bar

- a. The design in this page renders it inaccessible. A page that only lists the medicine names and has no navigation bar / side navigation as in the home page leads the user with a dead end. A user will have to perform a back page command and then look for other links in order to browse more links. The ideal and standard approach in such cases is to have navigation options on every page of a web domain and just not on the home page.
- b. The links at the top (Govt. Order Search, Health Giving, Opinion Poll, List of Drugs, Hospital Directory Registration of Doctors, Head of Department) appear as navigation bar but only 2 links work to take you to an informative page.

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Environment

- Accessibility issue: sites with no alternate text



Given above is a screen shot from a website that has no alternate text

- a. The important message “बच्चा एक ...” is in picture format and this picture has no alternate text. This makes this important a miss for screen reader users / Blind users.
- b. The link “meeting Notice” has “New” as a flashing image that means this is something new on the web. Unfortunately, this is not marked with alt tag which means it could refer to every new thing on the page.

Banking

- Accessibility issue: Presence of mouse over links



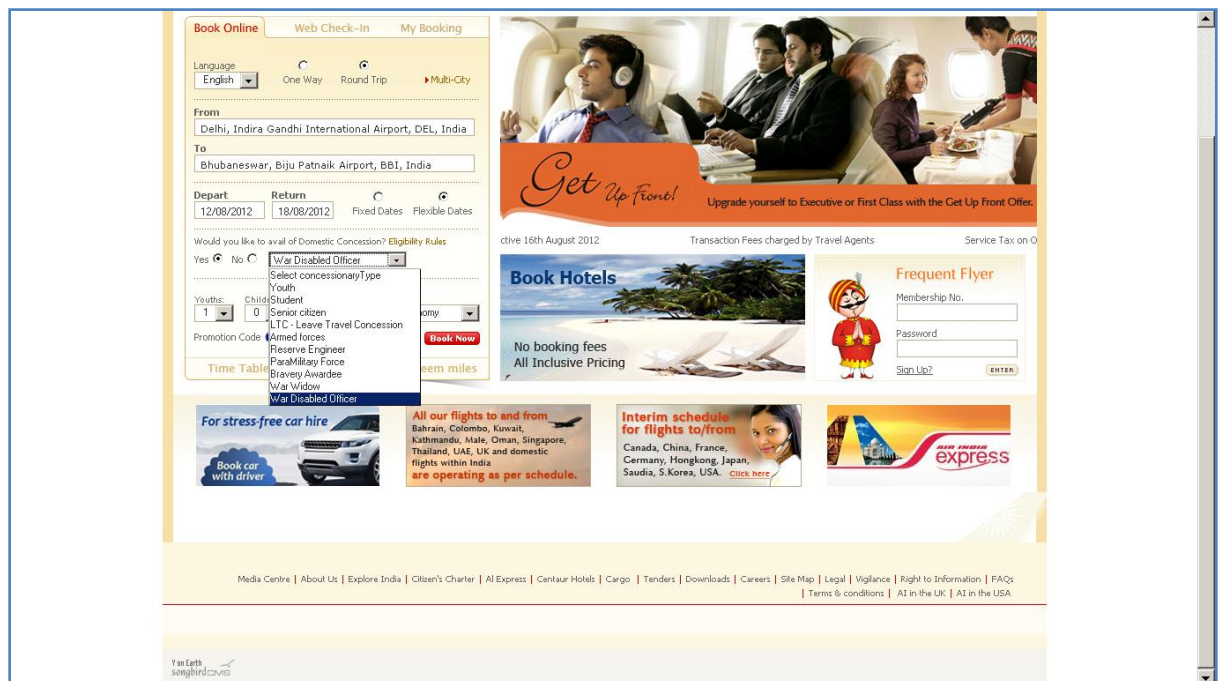
Given above is a screen shot of Allahabad Bank website

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- a. In the image above, the mouse pointer is on “Policies and guidelines”. There are 2 problems with this link
 - i. The link is an image and the text description of the image link is “images/policies_1k” which gives a rather hazy idea of its meaning and purpose to a screen reader user.
 - ii. This link is a mouse over link. A mouse over link is a link which when pointed to with a mouse, expands and gives several other options as also visible on the image. This is again a problem for screen reader users as they will find it difficult to access the extended list of options that appear on using the mouse pointer. As a basic accessibility guideline, mouse over links should be avoided and if it is absolutely necessary to have them, then the change to the web region should be notified programmatically.

Airlines

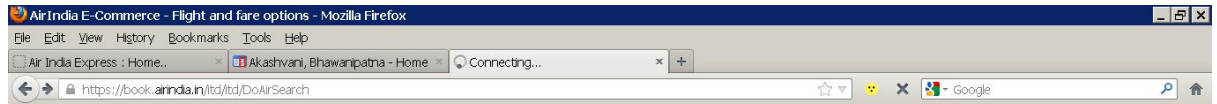
- Accessibility issue: Problems with promotion code in websites



Given above is a screen shot of the website of an airline

- a. The link promotion code has an image denoting to click for more information on promotion code; this is read by a screen reader as “void (0)”. This is a javascript function call which makes no sense to the user. The image should be labelled as “Click for more information” to help a user to get information on how to use the promotion code.

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Waiting for book.airindia.in...

Given above is another screen shot from the same website

When you search for a flight and you select one to continue booking, this is the intermediary page which appears, this page is inaccessible and there is no information available to communicate to a user that the search is in progress and he should wait for some time.

Railways

- Accessibility issue: inaccessible railway map



Given above is an image of the Indian Railway Map

This map of the Indian rail network is completely inaccessible.

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- Accessibility issue: Problems with drop-down menu

Version

PNR Status Train Between Important Stations Seat Availability Fare Enquiry Internet Reservation

CURRENT BOOKING ACCOMODATION AVAILABILITY FOR TRAINS DEPARTING IN NEXT 4 HRS AFTER CHARTING

You Queried For

SOURCE	DLI	SOURCE STN NAME	DELHI
--------	-----	-----------------	-------

Train No.	Train Name	Source	Dep. Time frm SRC	Destination	Class						
					1A	2A	FC	3A	CC	SL	2S
12414	JAMMU AII EXP	DELHI	04:25	AJMER JN	4	32	-	18	-	0	64
14556	BAREILLY EXP	DELHI	06:05	BAREILLY	-	9	-	10	-	-	-
14217	UNCHAHAHAR EXP	DELHI	04:25	CHANDIGARH	-	0	-	0	-	NE	-
18110	JAT MURI ROU EX	DELHI	04:55	ROURKELA	-	3	-	5	-	14	-
14723	KALINDI EXPRESS	DELHI	05:55	BHIWANI	-	-	-	0	-	NE	-
19105	HARIDWAR MAIL	DELHI	05:30	HARIDWAR JN	0	7	-	2	-	6	-

LEGENDS

Legend Code	Description
[NE]	NO CURRENT BOOKING, HEAVY WAITLIST

www.indianrail.gov.in/cgi_bin/net_curbkg.cgi#

Given above is a screen shot of a website that has problems with drop-down menu

In the image above, the mouse pointer is on the Rules and when pointing to this link, the mouse over action brings a menu list consisting “reservation”, “Refund” etc. This is not accessible to the user. The ideal solution to this is to have a page that lists all categories of rules so that a user can select the desired category.

Roadways

- Accessibility issue: image files

Delhi Transport Corporation
(Government of N.C.T. of Delhi
Scindia House: New Delhi.

No.TR/HQ/1/127/2011/3745 Dated: 22.8.2011

While hearing an appeal case under RTI Act by First Appellate Authority (RTI), the appellant stated that the public transport system in Delhi should be improved so as to provide the safe and reliable public transport. The drivers who are deployed on buses should be properly trained so that they could drive properly. The crew should be taught how to behave with the public and the crew must follow the provisions of Motor Transport Vehicle Act so that no violation of the law takes place.

Accordingly, all the D Ms are, therefore, requested to counsel the drivers in their respective depots that while performing their duties they should properly behave with the public and strictly follow the provision of Motor Vehicle Act so that no violation of law can take place. Besides, Dy.CGM (P/Trg.) also requested to emphasize upon the above issues during the course of imparting training to the driver in Training School.

The above instructions may be implemented in letter and spirit to improve the image of the Corporation in the eyes of public at large.

(Dr. G.K. Sharma)
Sr. Manager (Tr.-I)

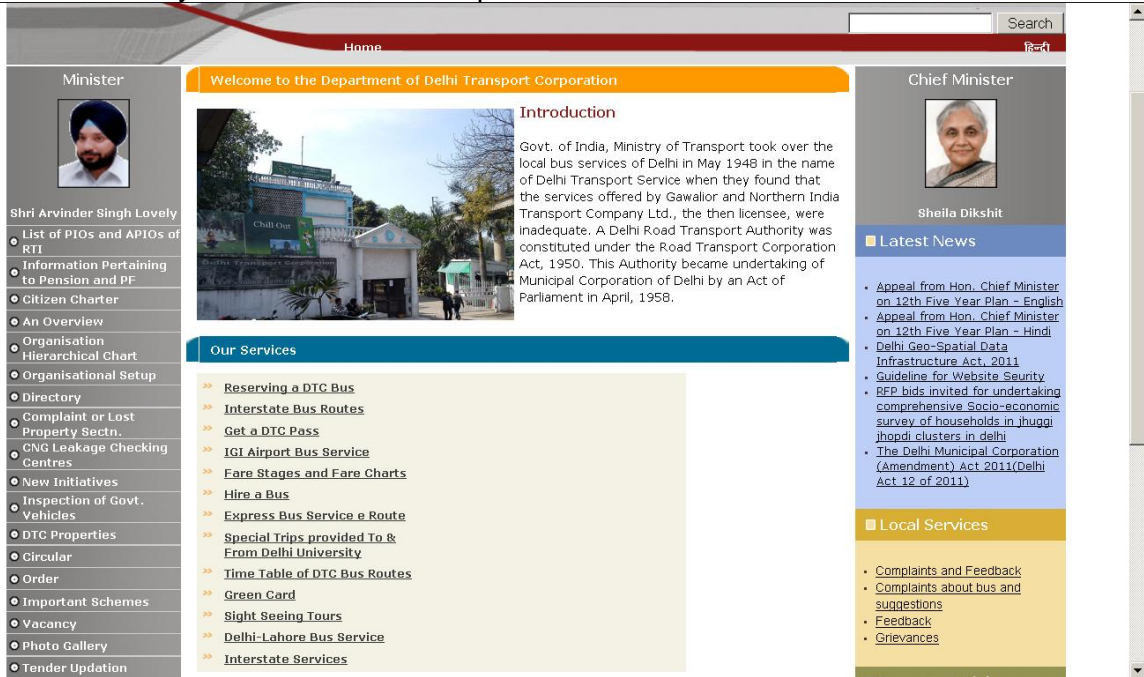
All B.M.s
All D.M.s
Dy.CGM (P/Trg.)

Given above is a screen shot of an image file in a website

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The image above is of a circular in PDF format; being an image file, it is inaccessible. All the circulars on this page are in Image PDF format.

- Accessibility issue: Absence of skip links



Given above is a screen shot of a website where skip links are absent

A user would need to read the content under “our Service” in a linear manner and pass all the links of the side navigation bar, which is more than a simple list containing over 25 items. Having a skip link at the top to this main section of the web page or marking as heading the text “Our services” would enable a user to jump the main section easily.

Appendix 2 – About the National Policy on Universal Electronic Accessibility

Recognising that access to technologies and the Internet is fundamental for ensuring democratic, effective, efficient and equitable participation in the information society, the Department of Electronics and Information Technology (DEIT) took a laudable step of initiating a multi-stakeholder process for formulating a national policy to ensure accessibility of websites and ICT products and services In August 2009 . It brought several organisations from civil society, industry and the public sector to sit together and draft a policy. The key players were the government through DIT, NIC, NCPEDP, Barrier Break Technologies, CIS, Microsoft Corporation, MAIT, Ernet, Nascom and several other organisations. A drafting committee was set up for this purpose and over the next year a draft policy was put up for public scrutiny and feedback as well as sent to other ministries and departments for comments. The draft policy, which is in its final stages of approval requires that all government web sites comply with WCAG 2.0 and internationally accepted accessibility standards in all areas of electronic information, products and services delivery. It provides for research and development and awareness and training to be undertaken to promote universal electronic accessibility. The present report underscores the dire need for such a policy in India and will serve as a reference point for policy makers in its implementation.

Appendix 3 - List of testers and authors

Testers

1. Anuj Sandal: Anuj is the lead accessibility consultant for NAB Technology Helpline at NAB, Delhi.
2. Bal Bahadur: Bal is doing his graduation from Indira Gandhi National Open University and works as an assistant trainer at the All India Confederation for the Blind.
3. Chetan Sharma: Chetan is a student of the Indira Gandhi National Open University residing in Chandigarh.
4. Gopal Saini: Gopal works as a trainer at Alwar Institute for the Blind and Hearing Impaired.
5. Madhav Chandar Das: Madhav works as a computer teacher at Captain Chadan Lal School for the Blind (managed by AICB).
6. Rakesh Negi: Rakesh works as a trainer at the National Association for the Blind (NAB), New Delhi.
7. Ranjana Rana: Ranjana is a project coordinator at NAB, Delhi.
8. Shadab Husain: Shadab is serving as a Lower Divisional Clerk with the Allahabad bank.
9. Samar Parihar: Samar works as a help desk executive at NAB Technology Helpline.

Authors

1. Nirmita Narasimhan is a Programme Manager at CIS and works on policy research and advocacy related to intellectual property reform and technology access for persons with disabilities. She was awarded the National Award for Empowerment of Persons with Disabilities by the President of India¹³ in recognition of her work in December 2010 and also the NIVH Excellence Award,¹⁴ which she received from Justice AS Anand. Nirmita has overseen several CIS- G3ict publications on ICT accessibility for persons with disabilities such as Web Accessibility Policy Making: an international perspective,¹⁵ the Universal Service for Persons with Disabilities¹⁶ and the Making Mobile Phones and Services Accessible for Persons with Disabilities.¹⁷ She also compiled and edited the e-Accessibility Policy Handbook for Persons with

13. Nirmita Narasimhan wins National Award, available at <http://cis-india.org/accessibility/blog/national-award>, last accessed on July 26, 2012.

14. Nirmita receives NIVH Award, available at <http://cis-india.org/news/nirmita-nivh-award>, last accessed on July 26, 2012.

15. Web Accessibility Policy Making: An International Perspective, published by G3ict and CIS in cooperation with the Hans Foundation, available at <http://cis-india.org/accessibility/web-accessibility-policy-making-an-international-perspective>, last accessed on July 26, 2012.

16. Universal Service for Persons with Disabilities: A Global Survey of Policy Interventions and Good Practices, published by G3ict and CIS in cooperation with the Hans Foundation, available at <http://cis-india.org/accessibility/universal-service-for-persons-with-disabilities>, last accessed on July 26, 2012.

17. Making Mobile Phones and Services Accessible for Persons with Disabilities, a joint report of G3ict and ITU, which was researched and edited by CIS, available at <http://cis-india.org/accessibility/front-page/making-mobile-phones-accessible/making-phones-accessible.pdf>, last accessed on July 26, 2012.

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Disabilities.¹⁸ All of these have been sent to policymakers around the world for their reference.

2. Mukesh Sharma is working at Code Factory as Product Manager – India. He is the test and support manager and a central executive council member of the All India Confederation of the Blind. He has served in organisations like the National Association for the Blind and All India Confederation of the Blind as an accessibility trainer and project coordinator for their IT departments and libraries. He also served at Freedom Scientific (Outsourced) as software tester for the accessibility product line which included JAWS, MAGIC, OpenBook, etc. With his experience in testing and acquired web development skills, Mukesh has in-depth understanding of web accessibility and accessibility standards.
3. Dinesh Kaushal is the technical lead for the Accessibility Initiative at Wipro. He has extensively contributed for more than nine years as assistant tool developer and accessibility consultant. He developed the initial version of the Indian screen reader known as Screen Access for All (SAFA). SAFA proved that needs of persons with disabilities could be best understood by persons with disabilities themselves and it became a catalyst for commercial screen reader companies to include Hindi support for their software. SAFA is now being maintained by the Ministry of Information Technology. Dinesh also led the Braille development for Mobile Speak (a screen reader for mobile phones) and was a key contributor for Mobile Speak to become a global leader in portable Braille access.

Dinesh has worked on this report in his personal capacity and the views expressed here are his own and Wipro does not subscribe to the substance, veracity or truthfulness of the same.

18. e-Accessibility Policy Handbook for Persons with Disabilities, published by G3ict, ITU and CIS in cooperation with the Hans Foundation, available at <http://cis-india.org/accessibility/front-page/blog/e-accessibility-handbook>, last accessed on July 26, 2012.