

Everyone Deserves to Know.

The ins-and-outs of meaningful accessibility in pdfs.



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Section 1:

Basic Overview [Why]

What are Accessible PDFs?

A PDF is accessible if it can be efficiently used by people with disabilities—such as mobility impairments, blindness, and low vision. The underlying document structure makes it possible for a screen reader to read the PDF out loud. It will also make it possible for a mobile device to correctly reflow and display the document on a small screen.

Why Should We Make Them?

We are fortunate to live in an era when, for the first time in human history, we have the power to connect every person on the planet to each other and vast amounts of information in the public domain. Internet technology and design have made this unprecedented access possible for all people, regardless of their physical abilities.

More than 20 years of innovation has resulted in remarkable growth of the internet as well as PDF use. In recent years, the concepts of accessible content have evolved to include PDFs. Today the rights of the disabled to fully-access PDF content are established in law in Ontario within the Accessibility for Ontarians with Disabilities Act (AODA) as well as through other legislation across Canada.

At any given time, roughly 22% of the population¹ has some form of disability—permanent or temporary—and requires accessible content. There are many reasons why accessible content is in everyone's interest. Some of the more obvious reasons include:

- Leaving out 22% of a potential audience isn't good business. In the Canadian context, this represents ignoring roughly 6 million people!
- Including accessible content in your recruiting strategies increases your talent pool by 22%.

- PDFs are searchable by search engines.
 If your content is not fully accessible, it's missing the key architecture that makes it
 SEO (Search Engine Optimization) friendly.
- The Province of Ontario, the Government of Canada, and others require content to meet the WCAG 2.0 and 2.1 criteria. This is no longer just for government. Ontario organizations and businesses of 50+ employees will be required to be compliant in the near future.

The main thing to remember about an accessible PDF is that it's not hard to create, nor does it need to be ugly.

¹ https://www.essentialaccessibility.com/blog/canadian-accessibility-laws/



Who Needs Accessible Content?

It's a common misconception that accessible documents are only created for blind people. Many sighted and physically impaired people also require accessible content.

Programmers have been applying the concepts of accessibility to web pages for over a decade. However, accessibility for PDFs is a newer concept. Changes in law, such as AODA, require communicators and graphic designers to apply the same concepts to PDF content.

Accurate's team of accessibility experts regularly create PDFs that meet the requirements of AODA for people with common disabilities including:

- Visual (low vision, blindness, colour blindness)
- Dexterity (chronic pain, amputation, motor) functions or paralysis, temporary injury)

- Hearing (slight or complete loss of hearing)
- Language or speech (language comprehension, delayed speech, illiteracy)
- Cognitive (Dyslexia, ADD, search engines/ non-human technologies)

We are also well-versed in the requirements of "assistive technologies". These exist to help users overcome disabilities while accessing content. Technologies include:

- Screen readers
- Magnification tools
- Touch devices
- Alternative keyboards (voice activated, point nose and blink "mouse", sip/puff)

AODA and the Principles of WCAG 2.0 and 2.1

The Web Content Accessibility Guidelines (WCAG) were first published by the World Wide Web Consortium (W3C) in 1999 (version 1.0). WCAG 2.0 was published in 2008, followed by WCAG 2.1 in 2018, which is the current standard use within AODA. It's comprised of 4 principles of accessibility, 13 guidelines, and 50 Success Criteria. Accurate applies each of these to measure compliance and to meet AODA standards.

There are no hard and fast rules that state that every document must be measured to the same standard. Some organizations require a lower minimum standard while others require higher. Understanding the rules and meeting compliance can be a daunting task for the inexperienced. Accurate's team of accessibility experts are fully versed in the standards and can help your organization achieve compliance.

WCAG 2.1 Conformance Levels

Conformance levels indicate how accessible your content will be to the disabled user. The minimum standard associated with WCAG 2.1 compliant content is level "A". But not every organization has to meet the same requirement level.

Without level A

Some people will find access impossible

Level A

Some people will find access difficult

Level AA

Most people will experience full impact

Level AAA All people will experience full impact



Conformance Timetable

The requirement for full WCAG 2.0 compliance has already arrived for many organizations. AODA requires all Ontario organizations to achieve level "AA" compliance.

The following table indicates the phase-in approach adopted by the Province of Ontario and private businesses in Ontario:

Legislation: Province of Ontario - Ontarians with Disabilities Act (AODA)

WCAG Compliance	Date and Requirement
WCAG 2.0 AA compliance (government departments)	As of Jan 2012 - All new internet sites
	Jan 2016 - All internet, web content
	Jan 2020 - All internet and intranet, all web content
WCAG 2.0 A compliance (Designated public sector orgs, businesses with 50+ employees)	Jan 2014 - New internet sites and content
WCAG 2.1 A and AA regulation was released	June 2018
WCAG 2.1 AA compliance (Designated public sector orgs, businesses with 50+ employees)	Jan 2021

Note: The United States currently conforms to *Section 508* legislation. It complies with the WCAG 2.0 AA. Accurate does not refer to or apply *Section 508* for Canadian content. We adhere to *AODA* and the *Standard* on *Web Accessibility* requirements and schedules.

AODA Exclusions

Some content is virtually impossible for Accurate to make compliant. Technology will only assist the user when it can understand logical sequences of information. The province of Ontario has defined exclusions to the compliance rules for the following content:

- Complex maps (transit maps, topographic/ geographic maps, wayfinding maps, etc.)
- Captions for non-live content (recorded)
 10 day grace
- Captions for live video
- Audio description for live video except for health and safety content



Alternative Content

The guidelines for compliance are meant to be **reasonable and achievable**. In the context of providing accessible content, there are a few simple factors to consider:

- You are only required to publish content in one accessible format
- If parallel accessible HTML is available, there is no requirement for the equivalent PDF content to be made accessible
- If it is not feasible to update old PDF documents, they can be designated as archived content. A good rule of thumb is to publish the reasons why the content is inaccessible with an archived content notice explaining your policy.

Testing Tools Suggested by W3C

Some testing for compliance can be done using available software tools. However, software checks by machine and manual checks by able-bodied designers will not be enough to guarantee absolute compliance. In an ideal world, disabled users will perform PDF compliance testing to determine if the document is logical, meaningful and functional.

The W3C suggests the following methods for testing web pages or PDF documents:

- W3C CSS Validation service (free service that confirms CSS conforms to W3C recommendations)
- W3C Markup Validation service (confirms HTML and XHTML conform to W3C and other standards)

- W3C Link Checker (confirms that public links work)
- Colour Contrast Analyzer (free colour compliance checking tool)
- HTML Tidy cleanup utility
- CommonLook Office for MS Word: supports Section 508 plus style mapping, headings, font substitution, list boundaries, overlapping objects, etc.
- PAC (PDF Accessibility Checker): 14 WCAG 2.0 checks, preview as blind
- Real-world testing: critical to accessibility and usability, disabled users should test documents to ensure design works for real users.

Testing Best Practices

Accurate tests every accessible PDF against the WCAG 2.0 principles, guidelines, and Success Criteria. To quote the W3C, *Understanding Conformance*, "Success Criteria can be tested by a combination of machine and human evaluation as long as it is possible to determine whether a Success Criterion has been satisfied with a **high level of confidence**."

W3C recognizes that reaching ideal compliance means that every document would require testing using software, manual checks by the designer, and full usability testing by a wide range of disabled users—a tall order. Understanding Conformance concedes that achieving compliance "requires skills that could reasonably be achieved by the content creators" which includes writers, programmers, and graphic designers.



Accurate's Testing Methodology

The standards Accurate applies are based on significant research, training and consultation with industry professionals and accessibility-focused organizations.

Our compliance test depends on at least two stages of validation: a programmatic test, which can be performed by software, and an interactive test carried out by a human. The validation tools help us perform the programmatic test. They test and show the extent to which the PDF document meets the standard's unnecessary technical requirements (including tag-based content structuring, alternative text for images and a document title) and uses the correct syntax to implement them. The semantic aspects of PDF/UA, however, cannot be tested in the same way. For example, is the reading order logical? Does the alternative text adequately represent the same information as the attached images? Do the header tags reflect their corresponding header levels? These and other questions can only be answered after evaluation and testing by a human user.

The standards that Accurate follows are the WCAG.20 Techniques for Accessibility, PDF/UA criteria, a manual inspection (human knowledge, experience and judgment) and automated test checks. Specifically, our current methodology includes:

Preparing the files for export in InDesign. InDesign provides a particularly high level of support for the technical requirements behind the PDF/UA standard, which means little extra work is required in Acrobat to create universally accessible PDF/ UA-compliant documents.

2 Testing using Acrobat X.

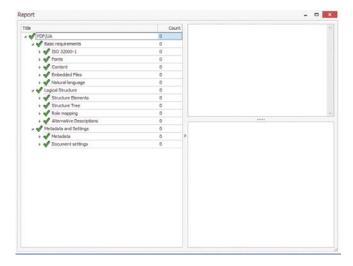
This high level pass checks that alternative descriptions are provided, text language is specified, reliable character encoding is provided, all content is contained in the document structure, all form fields have descriptions, tab order is consistent with the structure order, and the list and table structure is correct.

- 3 Validation through PAC 3.0. Passing a PDF only through Acrobat alone will not give you a fully validated file. PAC (PDF Accessibility Checker) is currently the only program which fully supports all automatically-testable PDF/UA criteria.
- 4 Supplying a technical validation report.
 We supply our clients with a validation report from Acrobat and PAC verifying that the file has passed all accessibility criteria.



Validation reports from PAC 3.0







Ten Step Accessible Publishing Process

Accurate's aim is to produce high-quality products that help you reach your organizational goals. But much of achieving *AODA* compliance rests in your hands as the content creators.

AODA compliant accessible publishing requires a shift in thinking. It requires forethought and preparation as well as a shift in organizational culture. It requires the understanding that design and document creation are relatively late steps in the accessibility process.

Accurate's accessible publishing process is based on the following ten step model:

- Process orientation: Help everyone understand the requirements. Encourage and create cultural change within the organization with the goal of promoting an understanding of the need for process geared toward accessibility—from start to finish.
- 2 Strategy: How will the project achieve AODA compliance? What resources, both personnel and costs, are required to complete the process? What products and mediums are relevant for distribution?
- 3 Technical discovery: What media and software will be used for the creation, testing, publishing and distribution of the product? What AODA/WCAG 2.0 and 2.1 compliance level is required?
- 4 Content outline: Create a content outline that will determine the document's key goals, overall message, and expected outcomes.

- 5 Information architecture design: Determine the document structure, considering logical flow, ease of use, and understanding.
- 6 Content creation: Write the document based on the information architecture.

 Apply accessibility best practices to content creation. This includes preparation of graphic/photographic files including alt text, meta data (descriptive text about documents or pictures), and text files with proper headline structures, etc.
- 7 Estimating: Assign resources to the project. Review the current scope and costs against the budget and delivery schedule determined at the outset of the project.
- 8 Graphic design: This is the stage where Accurate takes over as we implement your compliant content. The design of the document and elements will conform with the information architecture, content and accessibility guidelines.
- 9 Production/testing: Accurate will layout the entire document and test for compliance against agreed upon criteria.
- 10 Evaluation: Did the process fully meet AODA accessibility standards? How could the entire process be improved for future publishing projects? Solicit feedback from the overall audience, not just persons with disabilities, to determine if the document meets their expectations.



Five Tips to Improve the Publishing Process

Applying WCAG 2.0 concepts from day one will greatly reduce the time and difficulty of meeting AODA compliance. Accurate's success creating accessible PDFs is built on the following five tried-and-true tips:

- 1 Whenever possible, build from scratch:
 AODA accessibility requirements, particularly for PDF, are fairly recent. Attempting to convert legacy, non-compliant PDFs to accessible PDFs is a very difficult and time-consuming process. It's not always possible for Accurate to make these PDFs fully compliant because the documents were not created with accessibility in mind. Meeting compliance is less problematic if the original source files used to create the PDF are available. If the source files are not available, it is often more feasible economically and technically to rebuild the document from scratch.
- Whenever possible, build accessibility into source files: At the ontset of the project, provide Accurate with alt text for all images; convert scanned text to Optical Character Recognition (OCR) text; supply data for charts and graphs in table-text format, and a summary or trend description of charts and graphs. This content will be imported during the layout and will greatly speed up the accessibility process. If you need support preparing this content, Accurate will be glad to assist you at any step.

- 3 Add meta data to graphs and pictures in advance: Similar to step 2, if possible, provide Accurate with meta data already inserted in the image files. Adding this information before design will speed up the production process because meta data can be automatically imported into the layout files when the picture or graph is imported. If you are unaware of how to add meta data to content, Accurate will be happy to advise you on the process.
- 4 Create Microsoft Word documents that meet accessible content standards: If possible, supply content to Accurate from compliant text files. Creating pre-tested Microsoft Word templates will speed up the production process, reduce costs, and go a long way to ensuring the PDF can be made compliant. Many of the features required in the PDF can be imported into the layout from a compliant Word document.
- 5 Assess Word files for pre-accessibility:
 Microsoft Word 2010 for Windows (2011 for
 Mac) has an Accessibility checking tool that is
 like a spell check but checks many accessibility issues. This can be found at File/Info/Check
 for Issues/Check Accessibility. Using this tool
 will assist you at step 4 to determine if your
 Word file is well prepared.



Designing for Accessibility

Accurate has a long history of creating a wide range of creative for an equally broad range of target audiences. We consider designing for disabled audiences as an extension of our capabilities.

Beyond the obvious assistance it offers to people with disabilities, accessible design helps everyone. Some of the principles that apply to accessibility such as clean, elegant, spacious and easy-to-read layouts are not new to design. Concepts that help disabled users easily navigate the document also help the able-bodied individual.

Accessible design does require subtle shifts in the creative approach. Advising Accurate of your need for AODA compliance at the beginning of the project will ensure improved efficiency of the design, production and testing process. We, in turn, will help you fully understand any creative implications that accessibility may present.





Accessibility for Communications [How]







Quick Checklist

A few things to keep in mind as you write and/or lay out content for an accessible PDF

- o make sure your content is clear, logical and easy to follow
- avoid mathematical symbols and formulae, minimize abbreviations and use footnotes sparingly
- format your text using styles in MS Word
- O create separate PDFs for different languages
- keep **tables** simple and provide table summaries
- O use alt-text for graphics, links and figures as needed
- O provide **metadata** to make the document easily searchable
- include clear instructions with interactive forms so users know exactly how to fill them out.



Write for accessibility



Accessible PDFs and print PDFs may differ...

- hyperlinks may be underlined in an accessible pdf, while underlining in a print pdf can be confusing.
- the placement of images may need to change to improve the flow and order of information in an accessible PDF.
- pull quotes may be made an artifact (not read in an e-reader) this would decrease repetition.
- colours may be darkened to achieve better contrast.

Writing Style

Use plain text

 Be sure the tone, language and organization of content is easy to understand for your audience. Avoid jargon and buzzwords like "cutting-edge" or "leverage." Consider how you would communicate with someone standing in front of you.

Be concise

Use the simplest sentence forms consistent with the purpose of the content. The writing should be clear and direct. Keep sentences short. Remove words or descriptions that don't add value to the content. Use sentences no longer than 25 words (the typical length for a university-educated audience).

Limit paragraphs to 70 words

A 70-word limit is practical and effective in most cases.
 This helps keep the reader from losing focus.

Write meaningful headers

 Readers rely on headers to navigate on-page content. Choose words for headers and subheaders that clearly describe the content they introduce. Simple, clear and useful words are more effective than clever, obscure ones.

Use bulleted or numbered lists

Bulleted lists are easier to scan and read than full paragraphs. If you are listing three or more items, consider using a bulleted list. For instructions or long lists, consider using numbered lists for easy reference.

Write neutral, non-sensory descriptions

 Instead of saying "see the red figure on the left for more information", say "figure 1 has more information".
 Remember, some readers can not differentiate colour, shapes and/or orientation.

Footnotes

Avoid all footnotes if possible. They present poorly, especially on mobile devices, and can confuse readers.

Footnotes in tables should be made more user-friendly with the use of an asterisk or obelisk.

Acronyms

Give the full form of any acronyms when they first appear (e.g., ...the Royal Canadian Mounted Police (RCMP)) and then use the short form thereafter.

Some acronyms spell common words but are used in different ways. For example, "JAWS" is an acronym for a screen reader full name is "Job Access with Speech." It is also a common English word referring to the part of the mouth that holds the teeth. The acronym is used differently than the common word.



Tips

- include a period when abbreviating days of the week, e.g., "Mon. to Fri." instead of "Mon. to Fri.".
- avoid short forms like
 "Comm.",
 "Rec. Centre",
 "R.R.", "R.C.",
 "Sc.", "yrs.",
 "mths", etc.

Abbreviations

Abbreviations can be confusing for readers. Some abbreviations do not look like normal words and cannot be pronounced according to the usual rules of the language. For example, the English word "room" is abbreviated as "rm," which does not correspond to any English word. The user has to know that "rm" is an abbreviation for the word "room" in order to say it correctly.

Sometimes, the same abbreviation means different things in different contexts. For example, in the English sentence "Dr. Johnson lives on Boswell Dr.," the first "Dr." is an abbreviation for "Doctor" and the second instance is an abbreviation for the word "Drive" (a word that means "street"). Users must be able to understand the context in order to know what the abbreviations mean.

Punctuation

A sentence can be punctuated correctly but still lose clarity when spoken by screen reader. It is a matter of lack of refinement in screen reader voice interpretation. The over-use of punctuation can be a significant barrier.

E- readers do not read punctuation

While screen readers are able to read most forms of punctuation by default, not all of them choose to read the same pieces of punctuation. Some do not read asterisks. Periods, commas, and colons are usually not read out loud, but screen readers generally pause after each. Users can set their preferences so that screen readers read every punctuation mark and character.

So what is the solution?

Write simply.

- Keep your sentences short, avoid excessive parenthetical statements and avoid
- excessive subclauses. Above all, try reading the sentence without giving particular emphasis to the terms and see how easy it is to understand the statement. It is easy to write an ambiguous sentence if you have assumed it will be pronounced in a particular manner.

Avoid dashes

A dash (en-dash or em-dash) is often used to indicate a span (e.g., dates, ages, measurements). Because a screen reader will interpret any dash as a minus sign, you should use the word "to" when indicating a numerical range (e.g., write "2001 to 2002" instead of "2001-2002")



Setting Up Your Word Document

When writing for a layout, proper heading structures and paragraph/character styles are important. Heading 1 (H1) headings should be used only for document titles, followed by H2, H3, etc., for descending levels of internal headings. Documents should contain no more than six heading levels in total. Headings should decline in a linear way (e.g., H2, H3 and H4, and not jump from H2 to H5).

If using any URLs, ensure they are linked within the Word file. They SHOULD be underlined or bolded or somewhat distinguished from the rest of the text.

Font size

AODA states that font size does not have a minimum size but must have the ability to be magnified by 200%. The only requirement for font size is it must be legible for an average adult to read without aid. For some fonts this size would be 12 points, and other fonts it would be 10 points.



Tables



Content

tables cannot have empty cells or use symbols in place of content

Tables

Tables are tools for visually organizing written information, which means they are not always so easy to follow when read aloud. If your document needs to include tables, also include a table summary for screen readers that reads like this: "The following table demonstrated that enrollment has steadily increased over the last 3 years" OR "The following table shows the enrolment of each course, by month, over the last 3 years". (Not all agencies require table summaries)

There are two types of data tables: simple and complex. Simple data tables have a one-column header to one-row header ratio. Complex data tables have two or more levels of row and/or column headers that must be associated to make sense. Documents containing simple tables present few problems to make accessible. Complex tables, however, are not suited for accessible PDFs. "If you cannot use HTML, it may be best to create multiple simple tables instead of a single, complex table.

Page 7 has a table to help you write table summary text.

EXAMPLE OF A SIMPLE TABLE Single column/row structure **Province/State** Country City Canada Ottawa Ontario **United States** California Los Angeles

EXAMPLE OF A COMPLEX TABLE

in addition to

header columns

Disability	Participants	Ballots	Ballots	1	Results
Category		Completed	Incomplete/ Terminated	Accuracy	Time to complete
Blind	5	1	4	34.5%, n=1	1199 sec, n=1
Low Vision	5	1	1	98.3%, n=2 97.7%, n=3	1716 sec, n=31 1934 sec, n=2
Dexterity	5	4	1	98.3%, n=4	1672.1 sec, n=1
Mobility	3	3	9	95.4%, n=3	1416 sec, n=3
der rows	empty ce		ymbols or col		,

instead of words

Row span covers more than one column below

Tagging complex tables requires extensive manual coding of individual cells to ensure screen readers read the tables in the correct order.

Alt-text



Artifact

 is an element that is skipped over by a screen reader.

Text Alternatives For Images (Alt-Text)

The key to writing text alternatives for images is to remember that you are writing for people who cannot see or make use of images. You need to consider the role images play on the page, what you want the images to communicate and how they relate to the surrounding content.

All informative figures, graphs and links

- When you use a figure in an accessible PDF, you need to provide a text alternative—a text version of the information or function provided by the image—except when the image is purely decorative. Text alternatives are one of the most basic requirements for accessibility.
- For all scanned documents, charts, graphs and other images, it is essential to provide a comprehensive text alternative that fully conveys all of the information contained within or communicated by the image. Example: "A line graph describing the public doses around Canadian nuclear power plants as a percentage of annual public dose limit of 1 millisievert (mSv)." OR "Access to the Accurate website."

Ads

It is key to keep alt-text short and simple. An ad would be better served if the alt-text just included the name of the company and their URL.



A good tip: if you are trying to figure out if the image requires alt-text ask yourself: does this image add information that enhances the document or does it just visualize information already described within the text?

For example, a picture of a wildflower beside text that describes the purpose of the petals in the flower does not enhance the readers' experience. Therefore, it should be made into an artifact (an element that would be skipped over by a screen reader).

Alt-text can not have lists, bolding, or italics.





Alternative Text (ALT-text)

ALT-TEXT FOR	DEFINITION	EXAMPLE
links (external)	indicates link purpose—lets user know when they are leaving the PDF and going to a website.	text in report: Visit the Agricorp website for program information, forms and other resources at www.agricorp.com.
		alt-text for link: Accesses the Agricorp website.
charts, graphs and figures	a text version of the information or function provided by the graphic.	The Others Happind This circle chart shows the revenue distribution in percentage for the Ottawa Hospital Research Institute 2014 to 2015 fiscal year: 74 percent external grants, contracts and salary awards, 11 percent the Ottawa Hospital Foundation, 10 percent indirect costs and investment income, 4 percent the Ottawa Hospital, and 1 percent the University of Ottawa. Total: \$108.8 million.

Table Summaries

TERM	DEFINITION	EXAMPLE		
table a brief description of the	a brief description of the	Top 10 sources of peer-reviews funding		
summary		sourcis	FUNDING	
Summary	table 3 il ilottilation.	Canadian Institutes of Health Research	\$19.0M	
		Ontario Research Fund	\$2.5M	
		Canada Foundation for Innovation	\$15M	
	Ontano Inditae for Cancer Research	\$2.4M		
	Natural Sciences and Engineering Research Council of Cartada	SLOM		
	Heart and Stroke Foundation	SIM		
	Heath Quality Ontario	\$0.9M		
		The Ottawa Hospital Academic Medical Organization	\$0.9M	
		Canadan Breast Cancer Foundation	\$0.8M	
	Caneda Research Chains Secretariat	SOIM		
	table summary: The following table lists in millions, from			
	highest to lowest, the top 10 sources of peer-reviewed			
	funding received by the Ottawa Hospital Research			
	Institute for the 2014	to 2015 fisc	cal year.	

Metadata



Metadata and Document Properties

Metadata and document properties are the same thing. It is advisable for client to provide this information.

TERM	DEFINITION	EXAMPLE
Title	the title of the document	NRCAN's Zoning Decision Guide for Builders
Author	the organization or the person writing or producing the report	Natural Resources Canada
Subject	a short description about the report or publication	Zoning Decision Guide for Builders
Keywords	some words in the document that can be used for keyword search in Google (around 10 words is optimal)	Zoning; Builder Decision Guide; Zoning Guide; Builder Guide; Zoned HVAC; Zoned System Design Guide; Zoning Checklist

Here a few PDFs/hyperlinks that explain accessible PDFs in more detail:

Web Content Accessibility Guidelines (WCAG) Overview
Accessibility for Ontarians with Disabilities Act
Colour Contrast Checker