CRAWFORD TECHNOLOGIES

WHITE PAPER

Understanding Accessible PDF

Sustainable Strategies for Customer Communications

What's going on: eAccessibility for high volume publishers and business communications providers

Whether your goal is to increase customer satisfaction, drive down costs, fulfill CSR commitments, or reduce regulatory risk, recent evolutions in both legislation and technology deserve your attention.

In the U.S., the January 2018 deadline for complying with U.S. Access Board's Section 508 "upgrade" or ICT Refresh is now behind us. Meanwhile, the White House directed the Department of Justice to put their long-expected clarifications regarding how the Americans with Disabilities Act (ADA) applies online for private sector firms on ice. This means that the confusing and litigious period we've been living through where decisions on whether the ADA applies to digital content will continue to get decided by expensive legal battles.

Globally, the EU has also aligned its accessibility mandates to the United States Section 508 ICT Refresh which includes EN 301:549 that includes the requirements for electronic documents to comply to WCAG 2.0 Level AA.

Meanwhile in Canada, the bar continues to be both raised and straightened. Ontario's world-leading AODA regulations precisely identify deadlines for both private sector and government documents to comply with WCAG 2.0 Level AA. Canada's federal government has promised to release similar federal legislation this year which will make similar compliance required for large organizations across all provinces.

In many countries, the expectations of the communities of people living with disabilities continues to rise, as inclusion and diversity continue to become mainstream while technology improves.

This environment is spawning remarkable innovation that is driving down the cost and driving up the quality of accessible publishing. There have been perhaps 7,500 generations of humanity, and we find ourselves living in the first generation where it is truly possible to include everyone in our communications. Leading organizations strive to be able to proudly declare that they are ahead of that curve, gaining the benefits of the "accessibility dividend" while carefully mitigating associated risks.

Tagging and Accessible PDF

With the growth of electronic documents, through eDelivery, web access or ePresentation, there is a need to make digital documents accessible. PDFs have long been one of the leading formats to store digital documents. These need to be made accessible.

PDF files have the option of being "tagged". Aside from the visual presentation of content that we find in every PDF, the content is optionally repeated again in an invisible layer which uses a programming language Adobe named "tagging" to represent the words, structure, and semantics (such as tables, charts, lists, hierarchic headings, reading order, and emphasis) as well as text alternatives to images (such as your logo). Assistive technologies, search engines, and AI bots can use this information to present this information to people (and machines) who don't share the abilities of typical humans.

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However, just because a PDF file is "tagged" doesn't mean it is accessible. To be an accessible PDF, the tagging has to be structured according to international accessibility standards such as those published by the W3C or ISO — just like the HTML5 that makes up a webpage has to be structured according to international accessibility standards for the webpage to be considered accessible.

Of the millions of PDF documents in existence, only a fraction of them are "tagged" , and of those "tagged" files only a fraction of those are accessible PDF.

In order for a PDF file to be declared an accessible PDF file, it must pass an automated checker that tests it against the WCAG 2.0 Level A and Level AA recommendations or ISO 14289-1 for PDF/UA (PDF Universal Accessibility) as well as human checking for the properties which automated checking cannot validate (meaningful reading order, minimum color contrast context, and editorial issues.

Transactional vs. static documents

Your organization's business communication documents can likely be grouped into two categories:

- Transactional documents (or "dynamic" documents): these are the monthly bills, invoices, account statements, and trade confirmations that are automatically system generated for clients, either triggered by an event such as an overdue account or by the calendar (e.g., monthly, quarterly, or annually). Content is unique to each client and is personal and confidential in nature.

- Static documents contain the same content for all recipients. Like this white paper, they don't generally include any customized or personalized data. Examples include the mass distribution or self-served retrieval of books, education materials, notices, information circulars, notices, service brochures, product brochures, and user guides.

Both document categories include information which must be deployed in an accessible presentation to all customers, including those whose abilities are not typical. So, for each document, an organization has two choices:

- Produce the document in one format that already meets or exceeds accessibility standards, or can be easily converted to a format that does; or

- Produce alternative versions of specific documents, either proactively or in reaction to accommodation requests from specific audience members, that meet or exceed accessibility standards.

The first option, when carefully planned, can avoid many of the costs and overhead involved in producing alternative versions, can speed business processes, and potentially increase satisfaction for your customers. The biggest downside of this approach is that there are many

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accessible formats, and different customers will have different preferences. If you settle on a single format, you might not be meeting the needs of all your customers

The second option potentially provides a better customer experience, since each customer will receive communications in their preferred format. However, you will need to take advantage of tools and services that are capable of creating and delivering accessible documents in a timely manner.

Organizations who don't do either of the above, or don't do it correctly, face multiple risks. Not only do they risk costly legal action and fines, but they are not servicing their customers properly — an ineffective strategy when considering public image and competition.

Why PDF makes sense for your entire audience

Accessible PDF is arguably the most popular electronic accessible format for providing communications in a format usable and supportable by everyone, including those who live with substantial disabilities (including sight-impaired, blind, mobility challenges, cognitive and language challenges). Accessible PDF document can be downloaded and used in conjunction with desktop or mobile assistive technology devices, applications, and processes, including:

- Braille tactile keyboards and refreshable braille displays
- Screen reader technology that reads documents out loud
- Large print / magnification apps and devices
- Voice control software for computer and document navigation
- Screen magnifying or physical document magnifiers
- Conversion to other formats of the user's preference (such as printing on a large-format printer, braille printer or converting to other file types such as DAISY or EPUB)

We tend to focus on visual challenges when speaking about eAccessibility because the eye is typically the largest bandwidth pipe into the human brain. However, whether an audience member is using assistive technologies or not, an accessibly structured PDF can also help other functional challenges such as mobility or cognitive challenges.

How does Accessible PDF work?

The properties of an Accessible PDF file allow an assistive technology to present the information in a way that is equivalent to what the typical customer would receive.

Like a sighted person, many documents are not necessarily read left to right or top to bottom. Information can be better navigated or read in a certain order. Imagine a blind person using an assistive technology called a "screen reader" on an invoice or statement. The screen reader is software that reads the page out loud for someone who either cannot see or don't know how to read. Using the screen reader's command structure, the blind user can search and navigate the document logically, and hear everything that matters, in proper context and sequence. Instead of seeing images, such as your logo, they will hear an editorial description of the image.

The properties of an Accessible PDF file allow assistive technology to present the information in a way that is equivalent to what the typical customer would receive.

When there is a table of information, the blind user will know which columns and rows exists, and be able to "look up" what data is a given cell at the intersection of a given row and column they are interested in. For example, in a section of the document announced with the heading "Deposits", the user could locate a transaction by the date of the row announced as "November 30, 2017", then request the heading column called "Amount", and be told that the amount deposited was "One thousand dollars and fifty cents". If the natural language of the document or, alternatively, had been identified as French rather than English, then the voice would automatically pronounce the words in French and announce the numbers appropriately too.

If they prefer to read braille rather than a screen reader, they can use software (such as the Adobe Reader or tools like Duxbury) to print the PDF file to a braille embosser, or use a piece of assistive technology hardware connected to their computer or mobile phone called a refreshable braille display, to read the content with their fingertips. As the blind customer moves through the document, information that is trivial to them, such as repeated headers and footers, is ignored, while information that matters is announced in a logical order, which may often differ from the order that a fully sighted person would encounter the information.

Even fillable PDF forms can be completely understood, filled, submitted, and digitally signed by a screen reader user.

So, having all our PDF files as fully accessible PDF files may be ideal. Workflows also exist for naturally generating accessible PDF (rather than just PDF) for both static and transactional documents.

For static documents, the accessibility features are either built into the source document workflow (i.e. the document type the PDF is made from, such as Word or InDesign) with the intention that when exported to PDF the tagging and other properties are automatically present. Alternately the PDF itself is automatically or manually remediated. Manual remediation of a PDF can be substantially time-consuming even when the work is done by a highly-experienced specialist. However, solutions and services are available that automate the process of tagging static documents. Document authors should consider technologies that make use of a tagged PDF as a vehicle to provide alternate formats such as braille, audio or even Large Print rather than having to "go back to the well" to set up documents when requests are made for physical accommodation.

For transactional documents and individual documents, these can be manually remediated on an on-demand basis. However, it is also completely feasible that accessible PDF can be 100% baked into the documents given to all customers. This is achieved by carefully planning and programing the document creation system to automatically generate nothing but accessible PDF compliant documents. Historically, the setup of such an approach has been prohibitive for small-to-medium sized organizations or for particular complex graphics, charts, layouts, and variable data-driven customizations. However, with the introduction of sophisticated tools and services that automate the setup, costs and resource requirements have rapidly become simpler.

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In practice, some authoring tools support exporting to tagged PDF, while others do not. And for those that do, the quality of embedded tagging will vary greatly. Therefore, it's imperative that the quality of the output be thoroughly tested and validated when assessing that various solutions that are available for tagging PDF files.

All assistive technologies that claim to support PDF work with tagged PDFs, including the leading screen readers such as JAWS, to the free NVDA for Windows, to the VoiceOver and TalkBack screen readers baked into MacOS/iOS and Android operating systems, respectively. This also includes assistive technologies used by people with cognitive challenges such as Kurzweil 1000 and 3000, and magnifications software such as ZoomText. Even without assistive technologies, tagged PDF can be reflowed and magnified by anyone using the free Adobe Reader.

One significant challenge with PDF accessibility is that PDF documents have three distinct views, which depending on the document's creation, can be inconsistent with each other. The three views are the physical view, the tags view, and the content view. The physical view is displayed and printed (what typical people see). The tags view is what screen readers and other assistive technologies use to deliver a high-quality navigation and reading experience to users with disabilities. The content view is based on the physical order of objects within the PDF's content stream and may be displayed by software that does not fully support the tags view, such as the Reflow feature within the Adobe Reader.

Where does WCAG fit in?

PDF/UA is all about PDF files. However, PDF/UA is also considered the best way to measure whether a PDF file complies with the world's prevailing broader standard for eAccessibility, WCAG. And WCAG is what all the legislation refers to.

WCAG is a standard published by the W3C, who is responsible for almost everyone web standard used today.

The current version of WCAG is WCAG 2.0, published in 2008 primarily for HTML5. It is the de facto global standard for measuring the accessibility of websites and documents, embraced by regulatory leaders such as the U.S. Access Board and the Government of Canada. Almost every government in the world that has regulations for eAccessibility uses WCAG 2.0 to gauge compliance.

WCAG 2.0 has three levels of compliance: A, AA, and AAA (the highest level). To reach Level A compliance, a product must comply with 25 Level A success criteria. To reach Level AA compliance, a product must comply with the Level A success criteria as well as the 13 Level AA success criteria. To reach Level AAA compliance, a product must comply with the Level A and AA success criteria as well as the 23 Level AAA success criteria. However, Level AAA sites are rare special cases: no legislation to date calls for Level AAA compliance.

There is a WCAG 2.1 also currently under construction. WCAG 2.1 will simply be WCAG 2.0 as is, but with a dozen or so additional success criteria added, mainly to address mobile and touch devices and other evolution of technology since 2008.

So then, how do we confirm that a PDF file complies with WCAG 2.0 AA? Most experts, including the U.S. Access Board, consider PDF/UA to be the measuring stick for determining that a PDF file complies with WCAG 2.0 Level AA. This is because the PDF Association, by issuing its Matterhorn Protocol in 2013, established formal validation criteria for conformance with PDF/UA, based upon the same concepts that underlie WCAG 2.0 AA. The Matterhorn Protocol lists 136 possible ways to fail the precise technical specifications provided in ISO Standard 14289, of which 89 can be determined by automated testing alone. Another 47 conditions require manual inspection and informed human judgment.

Therefore, a PDF file that passes an automated check for PDF/UA and also has had the human checking for the properties automated checking cannot validate (meaningful reading order, minimum color contrast context, and editorial issues) will pass WCAG 2.0.

What does the legislation say we must do?

While jurisdiction and applicable legislation influences the accessibility strategy followed by any organization, these are the dominant pieces of legislation in North America that obligated organizations must comply with:

Section 255 and Section 508 of the USA's Rehabilitation Act of 1973: Federal government agencies as well as programs funded by the federal government must publish documents in a way that meets or exceeds WCAG 2.0 Level AA. The U.S. Access Board (the governors of Sections 255 and 508) have identified PDF/UA as a method for reaching WCAG 2.0 Level AA compliance for PDF files.

Americans with Disabilities Act (ADA): This 1991 legislation fails to specify how to measure digital accessibility. Title II governs all public entities at the local level (school district, municipal, city, or county), state level, public transportation. Title III governs business and non-profits: "equal enjoyment of the goods, services, facilities, or accommodations of any place of public accommodation" including most lodging (inns and hotels), recreation, transportation, education, dining, stores, care providers, and places of public display. The Department of Justice repeatedly promised to publish a clarification, however the current administration has had them stand down on that. The result is these cases are being resolved case by case. However, the go-to risk mitigation is to follow the same standard designated by Section 508, which is WCAG 2.0 Level AA.

Accessibility for Ontarians with Disabilities Act (AODA): Ontario was the first jurisdiction on the planet to designate specific regulations for both business and government, specifying that public-facing websites must comply with WCAG 2.0 Level A or AA (depending upon who you are and what year it is) with everyone landing at Level AA by 2021. Other governments (including Norway, Israel, other Canadian provinces, and Canada's federal government) have modelled legislation using AODA as a model.

The good news is that leaders are paddling towards the same global standard: WCAG 2.0 Level AA.

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Developing a Sustainable Strategy

There is no question that other document formats compete with PDF as a universal portable document format. Many organizations, for both publishing and archiving are embracing HTML5 (and the ability to put that in an accessible EPUB container) as the long-term future.

However, a PDF has so many unique mix of abilities, including rights management, reflow, digital signatures, local save, sophisticated forms and workflow/distribution/aggregation features, familiar formats, predictable printability for branding and other communications standards, as well as so much penetration globally that the argument to continue to primarily focus on PDF remains strong in at least the short to medium term. The professional associations that focus on accessibility and on documents more broadly have shown a remarkable ability to keep PDF at the forefront for almost thirty years, with innovation not showing any sign of slowing.

Today's options for creating sustainable high-volume accessible documents

While most organizations will benefit from automated solutions, the topic is sufficiently sophisticated and in flux, that it's typically unrealistic to invent a solution in house. As such, organizations tend to either struggle with expensive and risky reactive approaches to requests for accommodation, or they may hire outside help.

Responsible organizations, eager to optimize the accessibility dividend, want to build their own competencies while not adding risks. They want to prepare for the future while not disrupting current productions. They want to gain skills to know which documents should be produced in house, and how they are to be produced, versus which should simply be sent out. They want to locate systems that must be secure behind their own firewalls, while avoiding reinventing the wheel or excluding themselves from continuous improvement occurring in similar organizations. And most important, they want scalable solutions.

Of the major players in the community of companies that get hired to develop such document systems Crawford Technologies stands alone. We are the only player who has been in on the ground floor of accessible documents with hands-on experience with polishing their output to work reliably on the most prevalent assistive technologies in the marketplace. CrawfordTech was an instrumental player in the development of the ISO standard for PDF/UA and remains active in standards boards as well as accessibility associations. Put simply, document accessibility has been part of our DNA since the company was founded. Our solutions are backed up by a team of accessibility professionals, who work closely with customers to define requirements, recommend the most effective solutions, and provide implementation and customization services, training and support. CrawfordTech secure service bureaus provide transcription, fulfillment testing, and distribution for alternate formats, including braille, audio, large print, e-text, Accessible PDF, and Accessible HTML.

The accessibility community itself also has a number of players, however none of them have the general transactional document skills that Crawford Technologies has. Consequently we are able to bring together accessibility, archiving, document management and delivery to deliver a comprehensive end-to-end solution. Each organization requires a unique balance and we can leverage our experience and expertise to help organizations put together the best solution for their environment.

As such, CrawfordTech's unique positioning across multiple vendor communities makes our offering set unique and powerful. There is no other vendor that can provide the one-stop shop for the strategic guidance, the software, the QC systems, and support services for outlier situations. Furthermore, the degree to which our solutions have been play tested by some of the largest insurance, financial, healthcare, and utility publishers in the world attests to the quality of our products, services, and staff.

Crawford Technologies released its Accessibility Express software in April 2013, enabling organizations to avoid manual tagging by automatically converting high-volume transaction and variable content print production files into PDF/UA format. This software can create WCAG-compliant, PDF/UA compliant PDF and WCAG 2.0 AA compliant HTML5 files. Accessibility Express is based on the software developed in 2008 for creating alternate accessible formats including braille, large font, e-text and audio formats.

Our solutions can be located on your server or on our servers. CrawfordTech can also train your people, or simply deliver the accessible documents you need. You can begin by sending it all out, and with ease, increasingly bring more and more in-house as you gain competencies and comfort on the journey towards fully optimizing your approach to document accessibility. Multiple APIs make it realistic to insert Crawford's technology into your existing proprietary workflows, including support for IBM CMOD or any CMIS-enabled ECM system. Flexible pricing and licensing ensures predictable costing.

Accessibility Express can be used as a hosted SaaS solution or can be deployed on premises as part of an organization's document management, online ePresentment or archiving solutions. It can provide mass conversions of both stored documents and newly created documents into accessible formats. It can also provide dynamic conversions of documents into accessible PDF when they are viewed by clients offering the most flexible and powerful accessibility solution available.

CrawfordTech document accessibility solutions are built on our ground-breaking MasterONE architecture. With MasterONE, a single set-up supports all accessible formats, saving significant time and money.

AutoTagger for Accessibility: For static documents, such as marketing material, business documents, booklets, AutoTagger for Accessibility can live on your server, ready to automatically tag both new and legacy documents at high speed, or is available via a secure e-commerce site. CrawfordTech will also integrate exception services so that the small proportion of documents that cannot be either automatically tagged or automatically validated as compliant can be remediated and validated. Tools like Auto Tagger for Accessibility can be used as a means of making documents accessible across an enterprise without the need for in-depth training or hiring a department of remediation and testing specialists.

Summary

Obligated organizations need to be poised to provide many delivery formats and distribution channels for both accessible hard copy versions and accessible electronic online versions of documents.

The demand for accessible documents, driven by both regulatory and business goals will continue to rise. Your company benefits from pro-actively anticipating and meeting these needs. By using a well-planned implementation of PDF and complimentary container types, you'll be able to reduce costs and regulatory risk, while delighting all your customers more thoroughly by crafting a clever strategy of mixing internal and external resources for automating a process that will delivery both transactional and non-transactional documents.

You'll do best by working with the outside firm that has the longest history and deepest understanding of accessibility within the context of a complete document management and archiving strategy. Choose one that can provide both strategic insight to help you organize best for the challenge, as well as a continuing service of software and related services to help you grow your competencies and strength. Together you'll be one step ahead of where you're headed.

CrawfordTech Solutions

Crawford Technologies develops software and solutions to help enterprises optimize and improve the secure and accessible delivery, storage and presentment of their customer communications.

With over 1,800 customers on six continents, CrawfordTech solutions and know-how enable the largest banks, insurers, healthcare providers, utilities and print services companies to use their existing technologies, documents and data in new ways. We help them navigate the challenges in leveraging legacy applications in the platforms and applications of the future.

CrawfordTech's products, services and domain expertise reside at the nexus of content, data, and output management and are essential components of our customers' digital transformation, output management and document accessibility strategies.

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