

T-Base Communications presents

# Accessible PDF by Design

LEAVING NO CONTENT BEHIND

Includes  
online launch  
page to Web  
resources

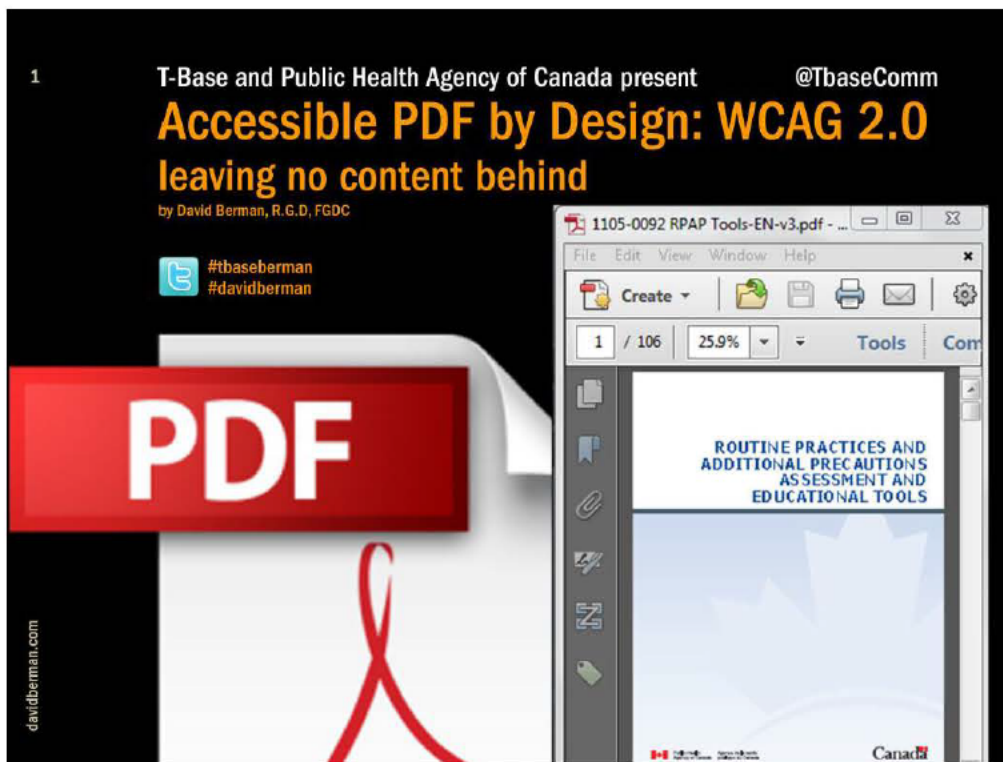
“Really enjoyed your session.”

– Jim Dixon, Accessibility Directorate of Ontario (AODA)



PROFESSIONAL SEMINAR SERIES  
BY DAVID BERMAN R.G.D., FGDC

\$99



For your convenience, find a list of hypertext links and books cited in this learning guide at:

<http://www.davidberman.com/courses/web-accessibility#links> .

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Canadian Association of Professional Speakers  
International Federation for Professional Speakers

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Printed in Canada. Certified carbon offsets purchased for the production of this document.

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## Expert Speaker

### David Berman, R.G.D., FGDC

**Topics (available publicly or at your location)**

- Perfecting Your Web Strategy 2.0
- Management of Web Projects + Accessible PDF
- Effective Web Interface Design
- Design and Social Responsibility

**Links and books:**  
<http://www.davidberman.com/courses/web-accessibility#links>

 David Berman | David Berman  
 [linkedin.com/in/bermandavid](http://linkedin.com/in/bermandavid)  
 [twitter.com/davidberman](http://twitter.com/davidberman)

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David Berman was recently named a high-level advisor to the United Nations on how design and information technology can combine to help fulfill the Millennium Development Goals. He has over 25 years of experience in design and communication strategy. David brings both graphic design and information technology expertise to his strategy and communications projects. While training at the University of Waterloo in computer science and at Carleton University in psychology and typography, he became deeply involved with the student press, introducing microcomputers to the production of student newspapers in Canada. David worked in the federal government as a computer systems analyst before turning his hobby of graphic design into his career.

David is a consultant on common look and feel implementation for large Web sites and products, and has worked on CLF projects for many large organizations including Statistics Canada, the National Research Council, and IBM. He has been the project manager of numerous accessible Web projects and has developed strategy and design for CRA, Health Canada, Canadian Heritage, Industry Canada, CMHC, and the International Space Station ...as well as for many private sector and non-profit organizations. He has worked extensively in adapting the printed word for electronic distribution, including software interface development. David has advised governments in Australia, Canada, India, and Norway on accessibility issues.

He served as the first elected president of the Association of Registered Graphic Designers of Ontario, the world's first accredited graphic design organization, from 1997 to 1999. He drafted the association's constitution and *Rules of Professional Conduct* and authored Ontario's accreditation examination on ethics and professional responsibility. In 1999, David was named a Fellow to the Society of Graphic Designers of Canada. In 2001 he was elected national vice-president. In 2009, he was elected to a third consecutive term to the executive board of the world body for communication design, Icoграда.

David is an expert speaker and a national professional member of the Canadian Association of Public Speakers, bringing him to over 25 countries within the past decade. Presently, he is Ethics Chair for the graphic design profession in Canada and is a frequent international keynote speaker on the role of communications professionals in creating a more socially responsible world. His recent book, *Do Good Design* (Pearson/Peachpit/AIGA), published in four languages, puts accessibility in the framework of how designers can create a world where no one is left behind.

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## WCAG 2.0 Conformance requirements

*Conformance Requirement 1: conformance level A, AA, AAA*

*Conformance Requirement 2: full pages*

*Conformance Requirement 3: complete processes*

*Conformance Requirement 4: only accessible-supported  
ways of using technologies*

*Conformance Requirement 5: non-interference*

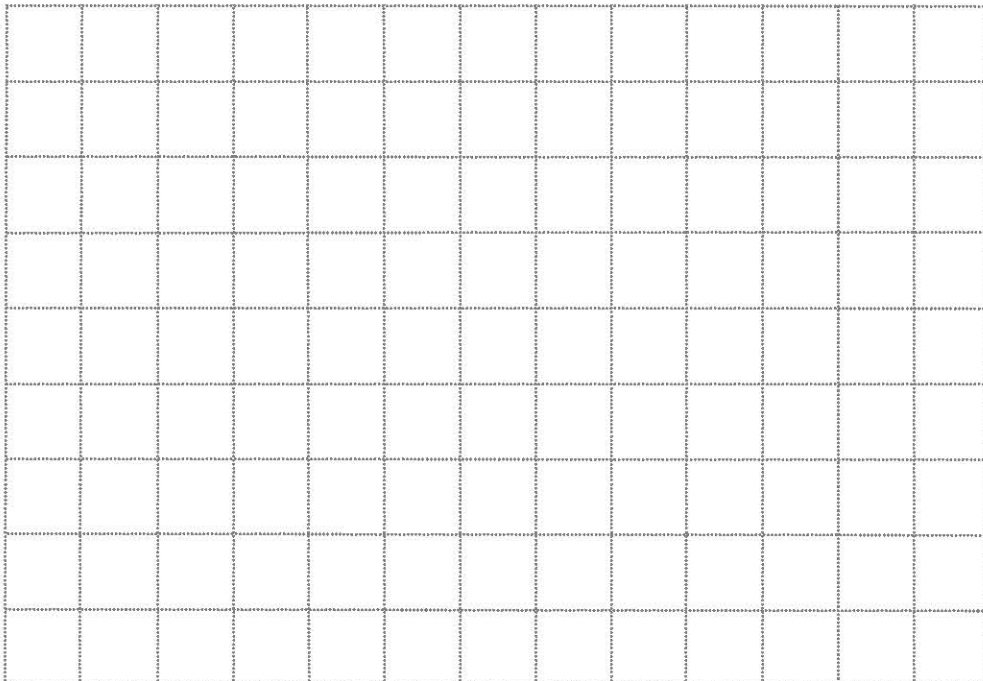
**conformance requirement 1 of 5**

**Conformance level**

*Conform to your stated level.*

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WCAG 2 Conformance Levels: <http://www.w3.org/TR/WCAG/#conformance>



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## conformance requirement 2 of 5

### Full pages

*Make the entire page accessible, not just part of it.*



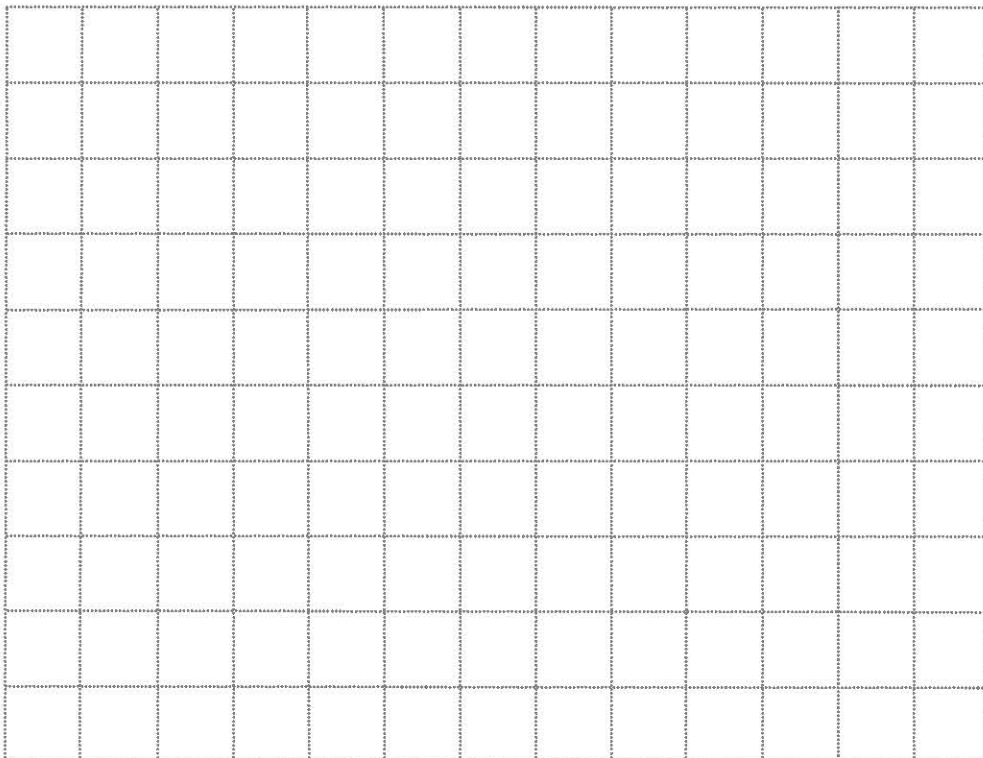
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## conformance requirement 3 of 5

### Complete processes

*A page is not considered conformant if it part of a series of pages making up a process in which any of the pages falls short of conformance.*

WCAG 2 Conformance Levels: <http://www.w3.org/TR/WCAG/#conformance>



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## conformance requirement 4 of 5

### Only accessibility-supported ways

*Unlike WCAG 1.0 which was all about HTML, WCAG 2.0 allows for formats not previously considered accessible alone, such as Flash, Silverlight, or PDF...*

*...but you need to be just as careful to make these formats accessible enough to comply.*

For example, if PDF is the only way you are publishing a given piece of content, it must conform to WCAG 2.0, preferably using the draft guidelines for publishing in PDF.

*Which brings us to **accessible PDF**.*

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Free online PDF conversion tools:

[http://www.adobe.com/products/acrobat/access\\_onlinetools.html](http://www.adobe.com/products/acrobat/access_onlinetools.html)

PDF and accessibility: <http://www.adobe.com/enterprise/accessibility/main.html>

*Creating Accessible Adobe PDF Files:*

[http://www.adobe.com/enterprise/accessibility/pdfs/acro6\\_pg\\_ue.pdf](http://www.adobe.com/enterprise/accessibility/pdfs/acro6_pg_ue.pdf)

aDesigner (Flash and Flex accessibility checker):

[http://blogs.adobe.com/accessibility/2009/06/evaluating\\_flash\\_and\\_flex\\_cont.html](http://blogs.adobe.com/accessibility/2009/06/evaluating_flash_and_flex_cont.html)

Sample Accessibility Notice (<http://www.tbs-sct.gc.ca/clf2-nsi2/tb-bo/an-aa-eng.asp>):

*If the following [information, content, document, application, form, interactive questionnaire, animation, multimedia presentation, etc.] is not accessible to you, please contact [name, email, telephone number, facsimile number, teletype number, mailing address or other appropriate contact information] for [assistance, explanations, to obtain other formats such as regular print, large print, Braille, audio cassette or other appropriate format*

Sample Accessibility Notice on the "Help" Page (<http://www.tbs-sct.gc.ca/clf2-nsi2/tb-bo/hpan-paaa-eng.asp>):

*While every reasonable effort has been made to ensure the accessibility of this site, some content or services found here might be inaccessible to some visitors. In those circumstances, the contact information for someone who can assist you has been provided.*

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# "Each PDF page is a painting"

- Duff Johnson, chair PDF/UA committee



How will we get to a workflow and quality assurance regimen will bridges the gap between the **WCAG 2.0** ideal and the history that brought PDF to be the world's preferred portable document format for **eyes** to read and make it also the favorite for **machines** to read?



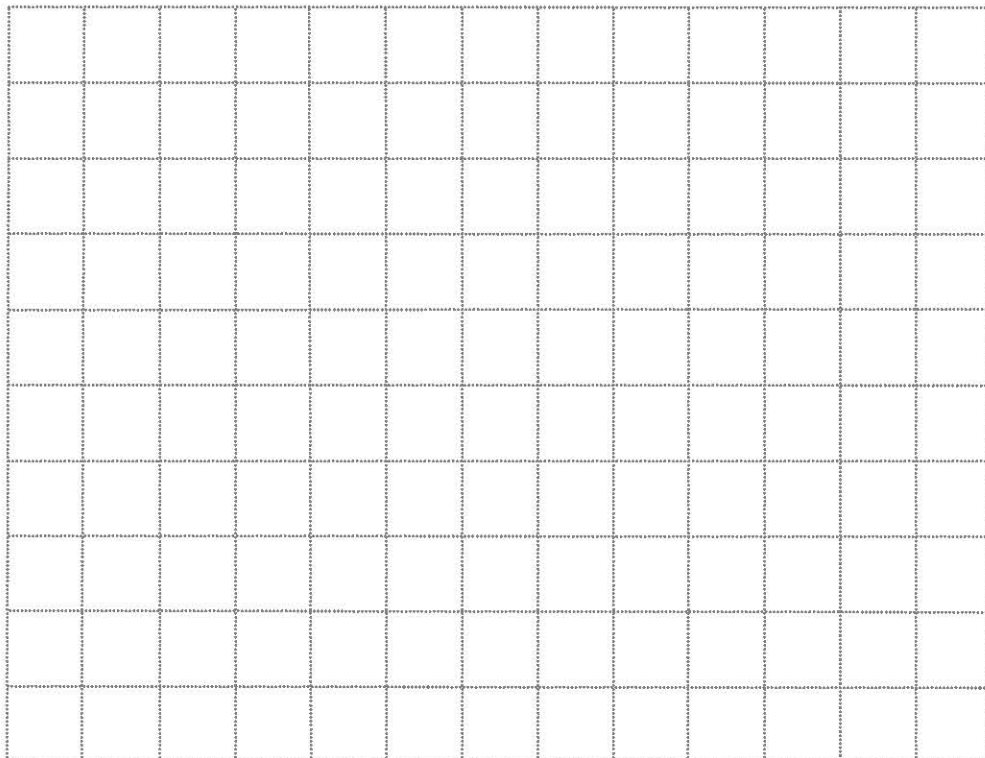
The Lady of Shalott by JW Waterhouse (1849-1917)



"Camelot" by John Warnock, 1991

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Photo of John Warnock by self, GNU license



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# A brief history of PDF

- **"PDF"** is a PostScript-based file format
  - free since 2001
  - PDF 1.7: open, published ISO standard
- **"Adobe Reader"**
  - a free application and plug-in
  - called "Acrobat Reader" up to v. 5
- **"Acrobat"** is an application
  - "Acrobat Standard" or "Acrobat Professional"
- **"Distiller"** is a program (was printer driver)
- **"Adobe PDF"** is a printer driver (formerly "PDFWriter")



International Organization for Standardization

Products > ISO Standards > By TC > TC 171 Document management

ISO 32000-1:2008

Document management - Portal

Block and price:

Language: English PDF

Format: PDF

General information

Number of Pages: 747

Edition: 1 (Monolingual)

Status: Published

TC/SC: TC 171/SC 2

Abstract

ISO 32000-1:2008 specifies a standard for exchange and use of PDF documents in which the user is allowed to print the document (conforming with the software controls for access and usage).

Research Reports for BMO

Research reports provide an array of fund and an in-depth synopsis of this company and outlook.

Source	Report
S&P	<a href="#">View report (html)</a>
Ford Equity Research	<a href="#">View report</a>
Morningstar Equity Research	<a href="#">View report</a>

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**PDF versions:**

- 1993: Acrobat 1.0 makes PDF 1.0
- 1994: Acrobat 2.0 makes PDF 1.1 or below
- 1996: Acrobat 3.x makes PDF 1.2 (the minimum WCAG-recognized) or below
- 2000: Acrobat 4.x makes PDF 1.3 (PDF/X) (the first PDF with logical structure features) or below
- 2001: Acrobat 5.x makes PDF 1.4 (Tagged PDF) or below
- 2003: Acrobat 6.x makes PDF 1.5 or below (first inclusion of XFA and usage rights signatures)
- 2005: Acrobat 7.x makes PDF 1.6 or below (first support for interactive 3D documents)
- 2006: Acrobat 8.x makes PDF 1.7
- 2008: Acrobat 9.0 makes PDF 1.7, Adobe Extension Level 3 (and PDF 1.7 is published as ISO-32001)
- 2009: Acrobat 9.1 makes PDF 1.7, Adobe Extension Level 5
- Today: Acrobat X (10) makes PDF 1.7 or below
- Future: PDF 2.0 (ISO 32000-2)

**PDF subsets:**

- 2001: PDF/X: PDF for Exchange
- 2005: PDF/A: PDF for Archive
- 2008: PDF/E: PDF for Engineering
- 2008: PDF/H: PDF for Healthcare (not a standard or proposed standard)
- 2010: PDF/VT: PDF for exchange of variable data and transactional (VT) printing
- 2011: PDF/UA: PDF for Universal Access

## Accessible PDF



Current PDF format supports accessibility, *but it takes special effort to get it right, as most Export commands unfortunately still fall short of yielding accessible PDF.*

- PDF can have accessibility features similar to HTML tags, text equivalents, captions, audio descriptions

**“Tagged” PDF** files include info for a tagged “view” as well as the physical view (typical display, printout)

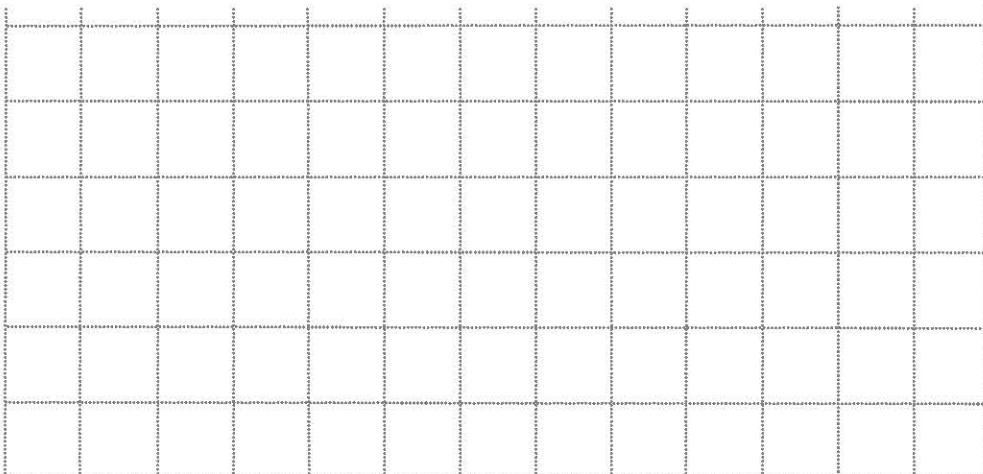
- screen readers can read tagged PDF, thus delivering content as intended, non-visually, in the correct order
- tagged PDF can be re-flowed and magnified

PDF/UA: a PDF spec specifically for access (ISO 14289)

For more expertise on truly accessible PDF: T-Base Communications, Ottawa

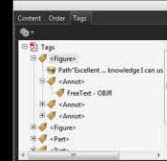
PDF Accessibility Checker (PAC): <http://www.access-for-all.ch/en/pdf-werkstatt/pdf-accessibility-checker-pac.html>

Service you can plug into your CMS to live Web site monitoring by a third-party that will ensure all your PDFs are 100% WCAG2 Level AA-compliant: APP



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# Tagged PDF: Tags pane



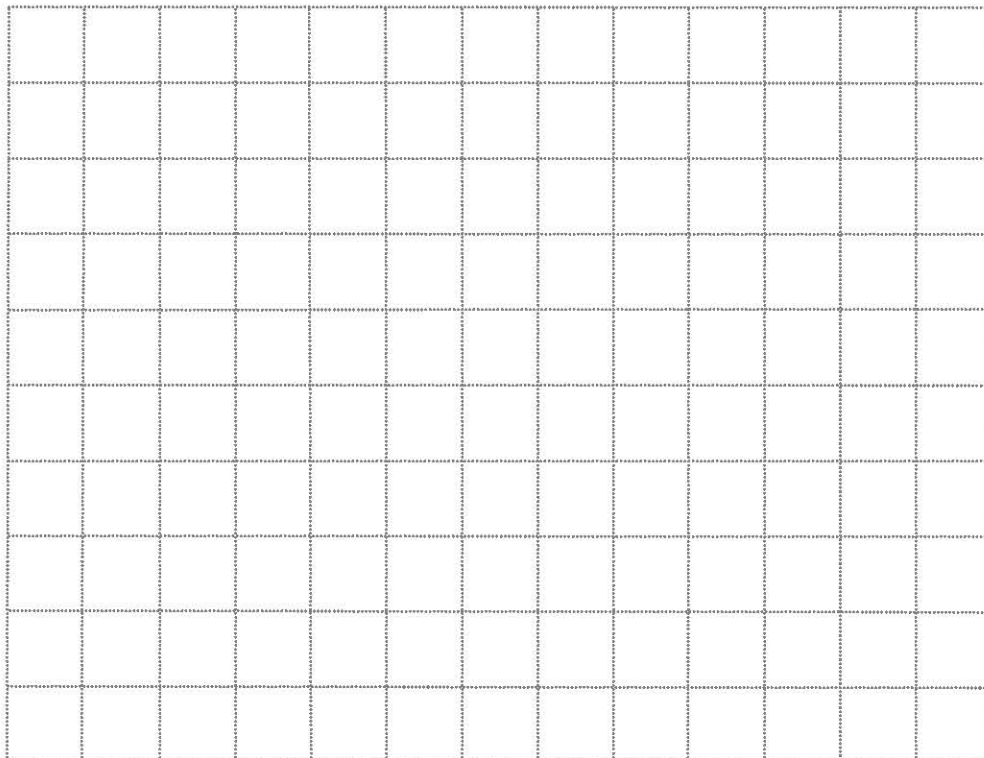
**View > Show/Hide> Navigation Panes> Tags**

Construct	HTML	PDF tag
Heading	<h1> to <h6>	<H1> to <H6>
Paragraph	<p>	<P>
List	<ul>, <ol>	<L>
Table, table cells	<table>, <th>, <tr>, <td>	<Table>, <TH>, <TR>, <TD>
Images	<img>	<Figure>, Artifact

## Acrobat Tips

- turn on Highlight Content (and use its sibling, the Find Tag From Selection command)
- Accessibility> Add Tags To Document

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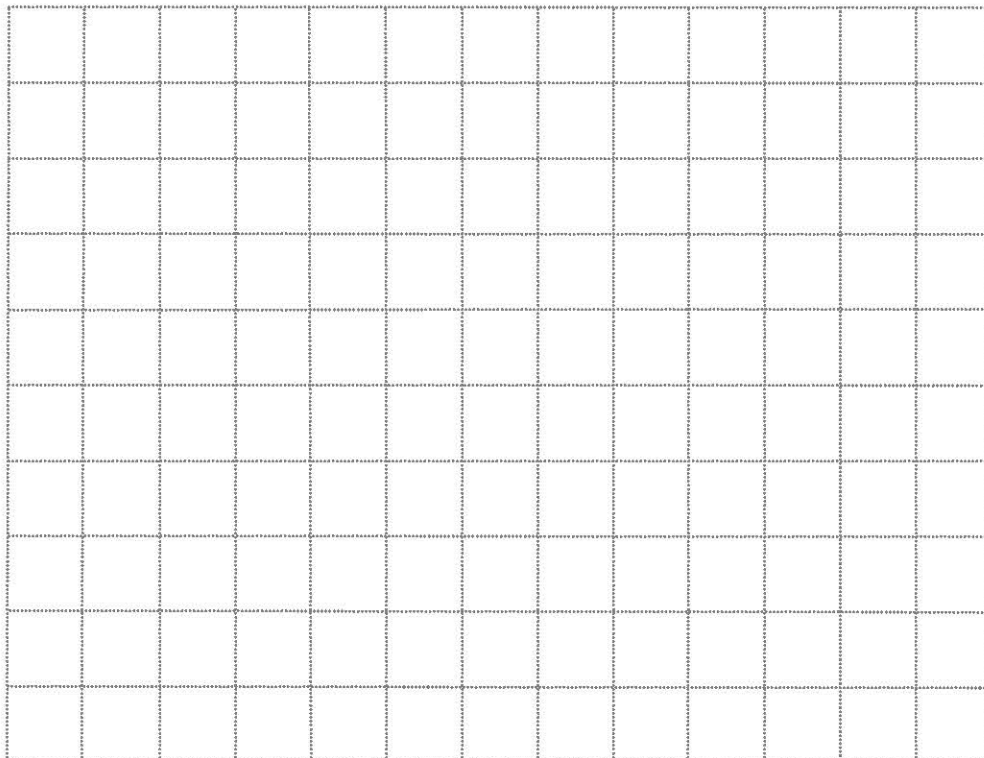
# We need excellently tagged PDF



Tour:

- untagged file
- generate tagged file from InDesign
- tagged file:
  - Orders tab
  - Tags tab
  - Full Check
  - look at structure samples
- In InDesign show the Structures tab
  - Add Untagged Items (right click)
  - Map Styles to Tag (right click)
  - Show the Show Text Snippets (on Structures pull-down)
- Edit | Edit in Story Editor and show the P tags you mapped
  - Show changing a Figure to an Artifact
  - Show adding a new alt attribute to a Figure

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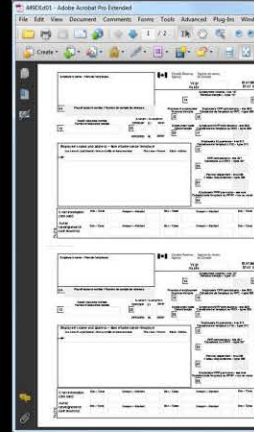
# 23 techniques to Accessible PDF



The WCAG 2.0 rules apply equally to PDF

For simple documents, fewer concerns:

- Alt attributes
- Hide decorative images
- Bookmarks (multiple ways)
- Reading order (meaningful sequence)
- Machine-readable text
- Metadata (e.g. Page Title)

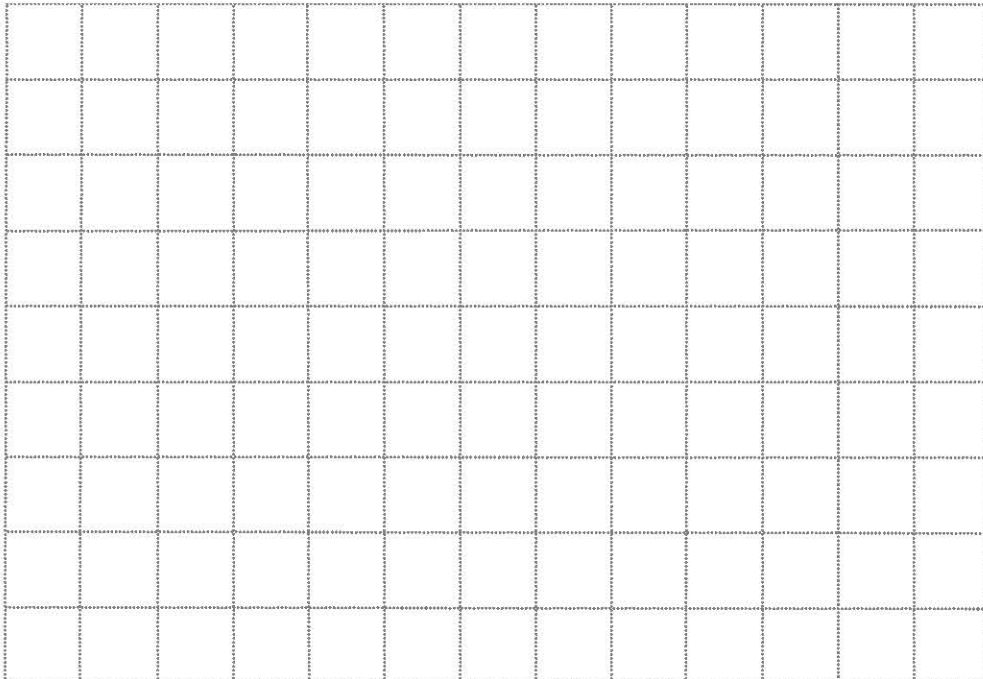


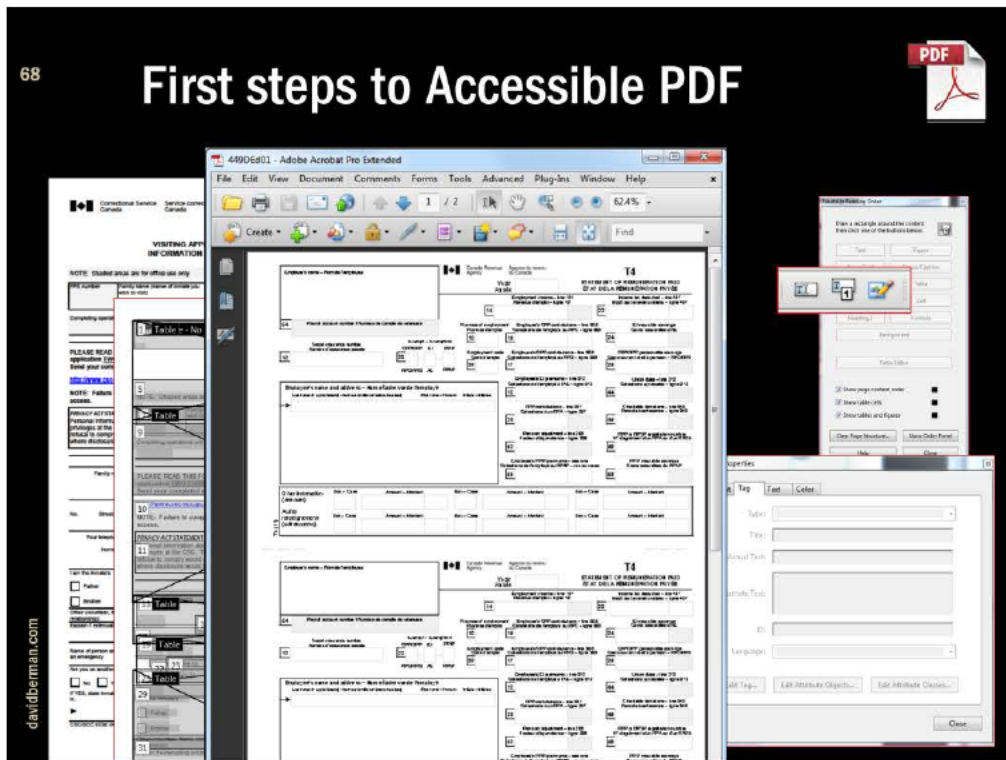
... it gets trickier when you have forms, tables, heading levels, lists, labels, headers, footers, page numbers, abbreviations, and language changes.

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W3C's *PDF Techniques for WCAG 2.0*:

<http://www.w3.org/WAI/GL/WCAG20-TECHS/pdf.html>





Assessing PDF files for accessibility:

[http://www.adobe.com/enterprise/accessibility/popup\\_assess\\_pdfs.html](http://www.adobe.com/enterprise/accessibility/popup_assess_pdfs.html)

Creating accessible PDF files:

[http://www.adobe.com/enterprise/accessibility/popup\\_create\\_pdfs.html](http://www.adobe.com/enterprise/accessibility/popup_create_pdfs.html)

Guide to the essentials of creating accessible PDFs with Microsoft Word and Acrobat Professional 8:

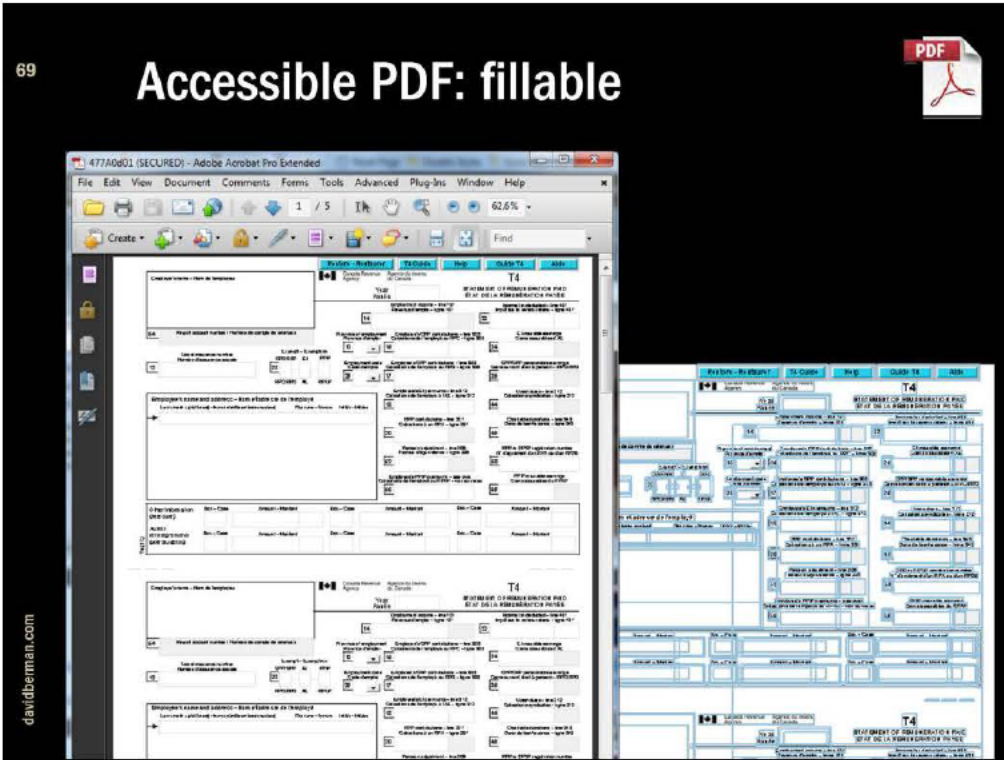
[http://www.bbc.co.uk/guidelines/futuremedia/accessibility/bbc\\_accessible\\_pdf\\_master17.pdf](http://www.bbc.co.uk/guidelines/futuremedia/accessibility/bbc_accessible_pdf_master17.pdf)

PDF and WCAG 2.0 Webinar:

[https://admin.adobe.acrobat.com/\\_a295153/p89681357/](https://admin.adobe.acrobat.com/_a295153/p89681357/)

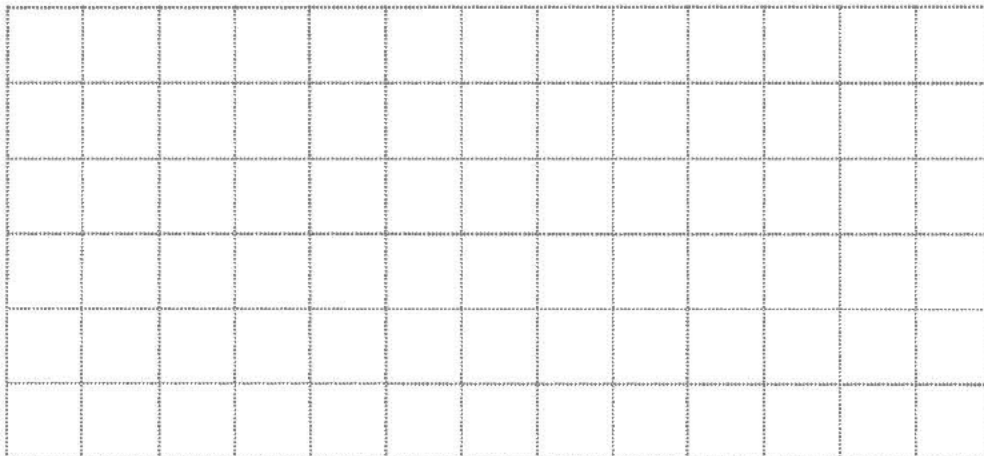
Using accessibility features with Acrobat:

[http://www.adobe.com/enterprise/accessibility/popup\\_acr8\\_accessibility.html](http://www.adobe.com/enterprise/accessibility/popup_acr8_accessibility.html)



Adobe's WCAG2 techniques for PDF:  
<http://blogs.adobe.com/accessibility/2012/01/wcag-2-0-techniques-for-pdf.html>

Adobe's PDF Reference (fifth edition, for Version 1.6):  
<http://partners.adobe.com/public/developer/en/pdf/PDFReference16.pdf>  
[Warning! 1236 pages!]







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## Adobe InDesign/ Acrobat workflow

CS5.5 ID

**In InDesign CS5.5** (including tags subset)...


- assign Alt text to images
- Map Styles to Tags
- anchor images in text flow
- define content order in Articles panel
- use Bookmarks/TOC/Hyperlinks/Cross-references
- add file metadata
- export (Interactive, Create Tagged PDF, Buttons & Media: Include All)

**...leaving only an Action wizard to run in Acrobat Pro:**

- Pages tab> Page Properties> Tab Order=Use Doc. Structure
- File> Document Properties> Advanced> Language
- run Accessibility Check

PDF

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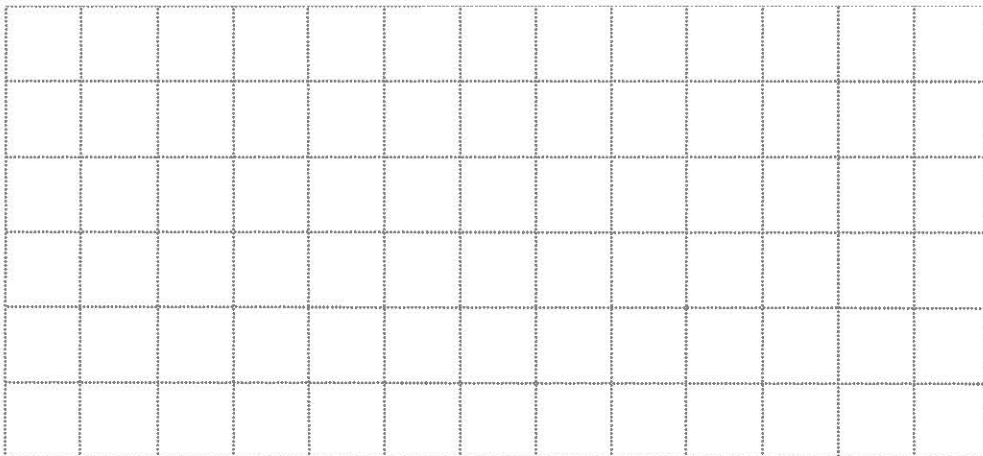


“Preparing InDesign Files for Accessibility”:

<http://tv.adobe.com/watch/accessibility-adobe/preparing-indesign-files-for-accessibility/>

Adobe Acrobat X Action Wizard for Accessible PDF:

<http://www.adobe.com/accessibility/products/indesign/AcrobatXActionWizardforPDFsCreatedwithInDesignCS5.5.html>



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## conformance requirement 5 of 5

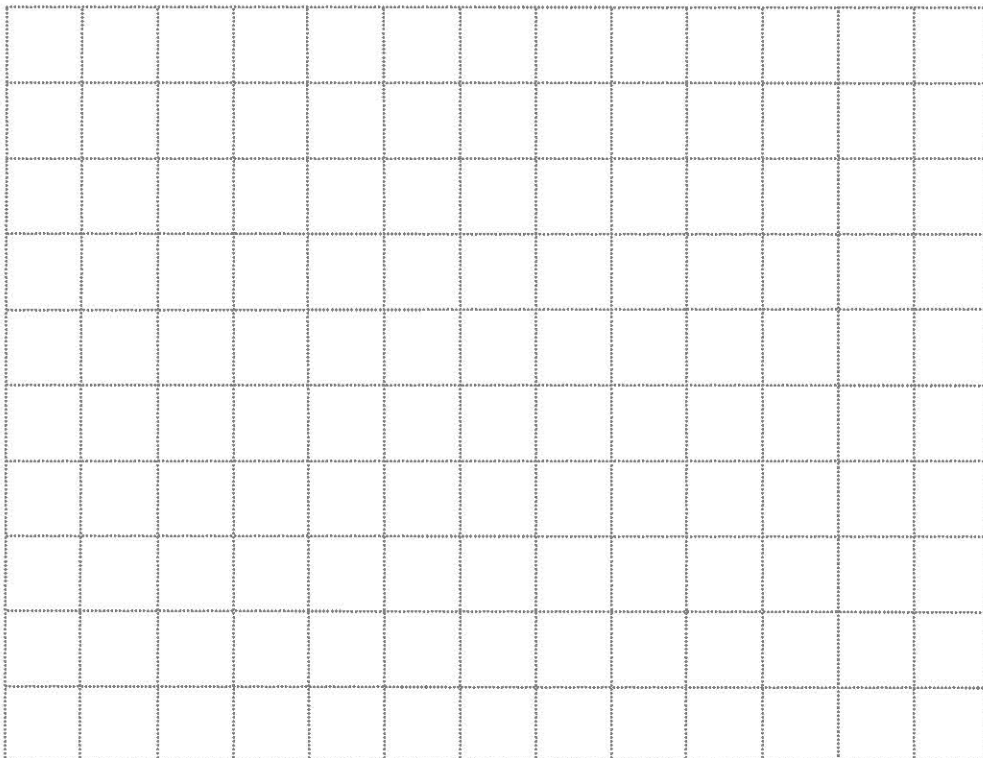
### Non-interference

*If technologies are present that are not accessibility supported, then must not block the ability of the users to access the technologies on the page that supply the content accessibly. The page overall has to work:*

- 1. when the non-accessible technology is off, and*
- 2. when the non-accessible technology is turned on, and*
- 3. when the non-accessible technology is not supported by the browser.*

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WCAG 2 Conformance Levels: <http://www.w3.org/TR/WCAG/#conformance>



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## conformance requirement 5 of 5

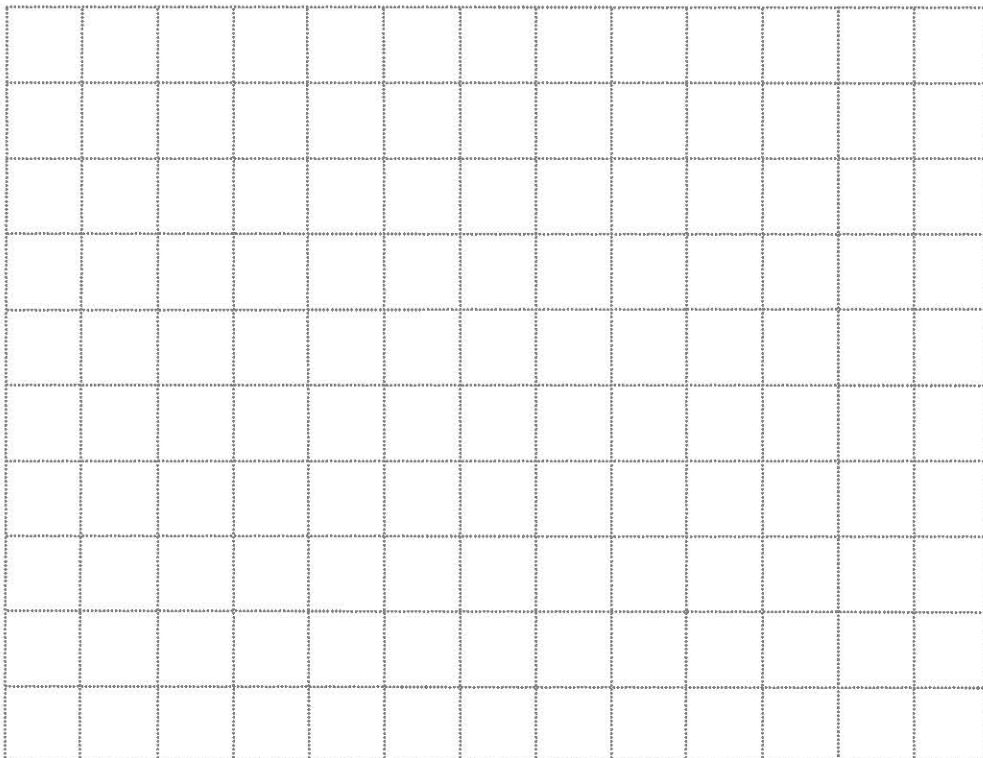
### Non-interference: specific criteria

Some success criteria apply to the page content as a whole. They therefore must apply to content that is using the non-accessible technology as well:

- 1.4.2 Audio Control
- 2.1.2 No Keyboard Trap
- 2.3.1 Three Flashes
- 2.2.2 Pause, Stop, Hide

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WCAG 2 Conformance Levels: <http://www.w3.org/TR/WCAG/#conformance>



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## Testing tools suggested by W3C

- W3C **CSS Validation** service (free service that confirms CSS conform 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)
- W3C **RSS feed checker** (confirms RSS code works)
- Colour Contrast Check (free interactive tool)
- The **HTML Tidy** cleanup utility

...and more

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W3C HTML Test Suite for WCAG 2.0:

<http://www.w3.org/WAI/GL/WCAG20/tests/>

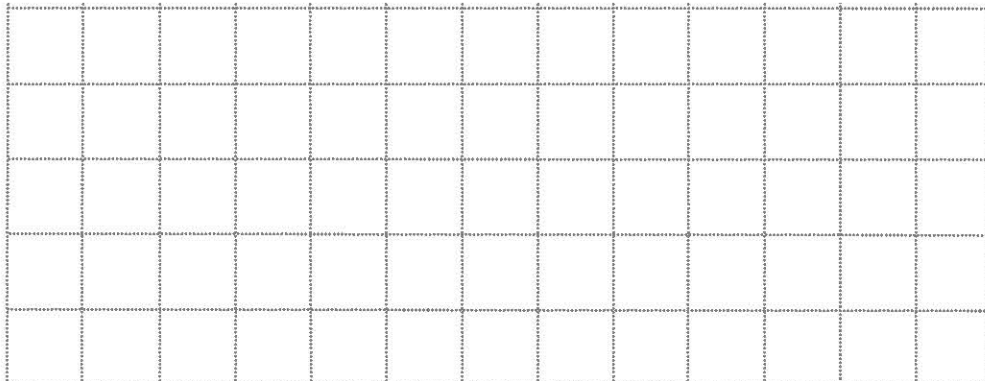
W3C CSS Validation service: <http://jigsaw.w3.org/css-validator>

W3C Markup Validation: <http://validator.w3.org>

W3C Link checker: <http://validator.w3.org/checklink>

W3C RSS feed checker: <http://validator.w3.org/feed>

HTMLTidy: <http://www.w3.org/People/Raggett/tidy>



## Favourite testing tools

- ✓ Clear Language: "Fog Index"
- ✓ Screen reader emulators
- ✓ Browser compatibility testing
- ✓ Screen size testing
- ✓ Colour deficiency simulations
- ✓ Toolbars for browsers and editors
- ✓ Accessibility analyzers
- ✓ Testing suites (e.g. HP Quality Center, QuickTest Pro)

Browser compatibility testing: <http://www.anybrowser.com/siteviewer.html>  
and Adobe Browserlab: <http://browserlab.adobe.com>

Browser emulator for really early browsers: <http://www.dejavu.org>

Fangs (Firefox extension) screen reader emulation: <https://addons.mozilla.org/en-US/firefox/addon/fangs-screen-reader-emulator>

Screen size testing: <http://www.anybrowser.com/ScreenSizeTest.html>

Colour deficiency simulator (and image corrector): <http://www.vischeck.com>

Colour deficiency simulator (iPad/iPhone):  
<http://www.brailleinstitute.org/MobileApps.aspx>

Deque Worldspace Single Page accessibility analyzer:  
<http://wsspg.dequecloud.com/worldspace/wsservice/eval/checkCompliance.jsp>

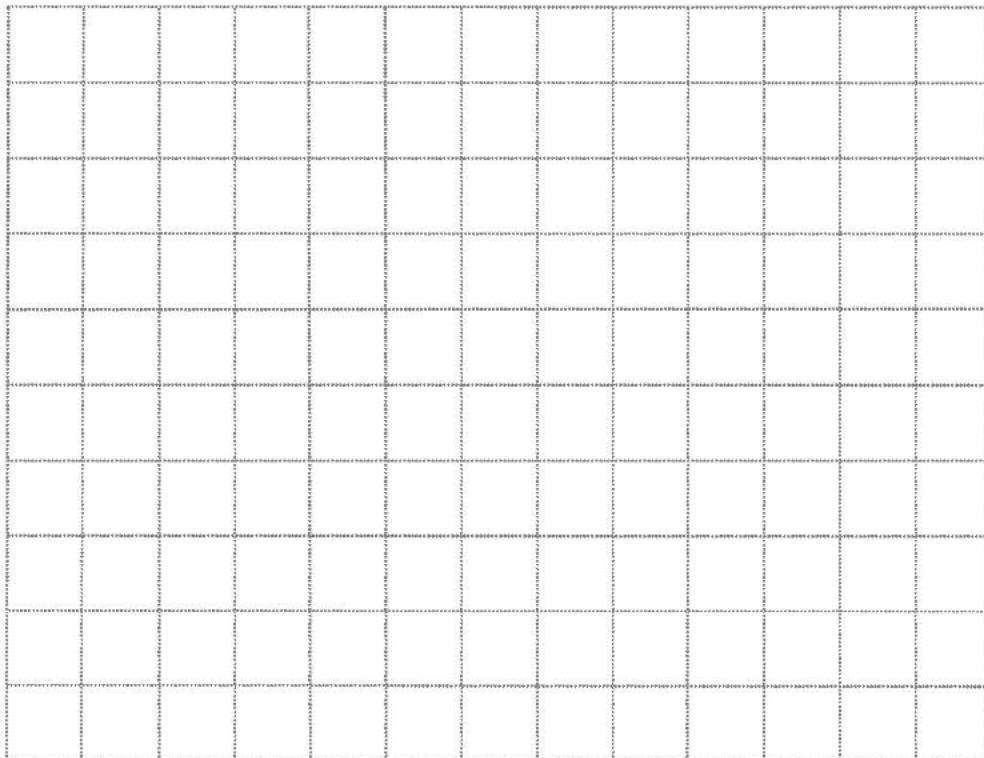
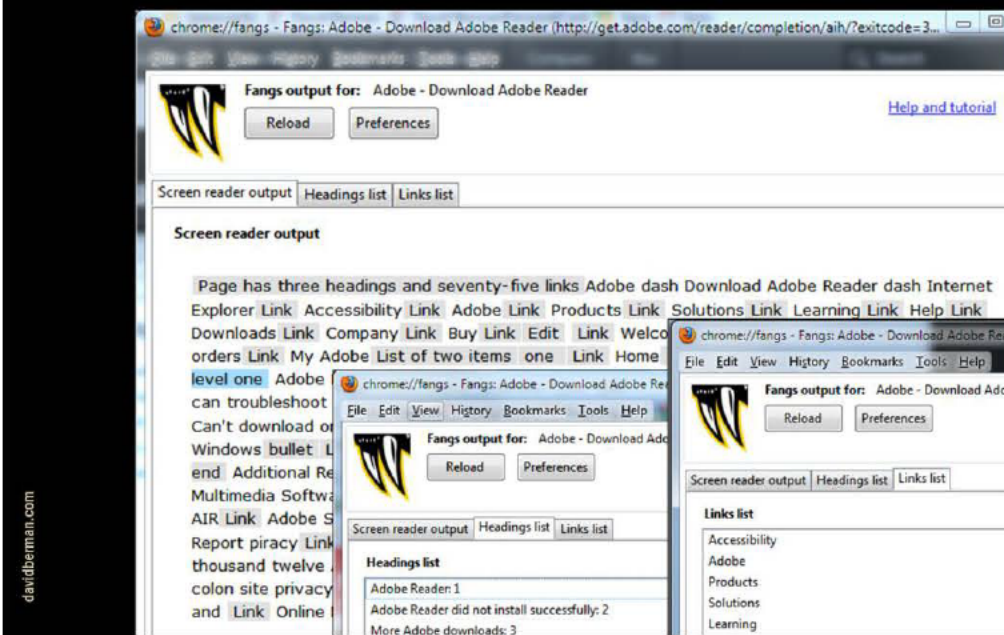
Web Accessibility Toolbar for IE: <http://www.paciellogroup.com/resources/wat-ie-about.html>

Web Developer Toolbar (Chrome and Firefox extensions):  
<http://chrispederick.com/work/web-developer>

WAVE Toolbar for Firefox: <http://wave.webaim.org/toolbar>

WAVE for Dreamweaver: <http://wave.webaim.org/blog/wave-dreamweaver-extension>

# Testing tools: Fangs (not JAWS!)



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## Testing tools: Deque

- ✓ Deque Single Page Analysis: slow, thorough, does offline pages and PDF too!
- ✓ FireEyes Worldspace Firefox plug-in (needs Firebug)

Report for Web Page: <https://www9.bmoinvestorline.com/ILClientWeb/client/home.do>

**Summary Report**

Accessibility Issues

Total Issues: 13    Accessibility Standard: WCAG 2.0 Level AA

Level	Category	# of Violations
Level A		6
<b>Total</b>		<b>6</b>

Violations: 6

- 1] Guideline 1.1: Provide text alternatives for any non-text content so that it can be changed into or removed without losing content.
- 2] Guideline 1.3: Create content that can be presented in different ways (for example simpler layout, larger font size, etc.) without losing information or functionality.
- 3] Guideline 3.1: Make text content readable and understandable.

**Potential Violations Summary**

Level	Category	# of Violations
Level A		6
Level AA		1
<b>Total</b>		<b>7</b>

Potential Violations : 7

**Developers Report**

1] <https://www9.bmoinvestorline.com/ILClientWeb/client/home.do>

#	Error / Warning
1	Missing text equivalent for Image (Success Criterion 1.1.1 - Level A)
2	Formatting images (images smaller than the specified threshold) need an alt attribute (Success Criterion 1.1.1 - Level A)
3	This page does not have enough headings marked up. (Success Criterion 1.3.1 - Level A)
4	Missing text equivalent for Image (Success Criterion 1.1.1 - Level A)
5	Formatting images (images smaller than the specified threshold) need an alt attribute (Success Criterion 1.1.1 - Level A)
6	The primary language of this document has not been set (Success Criterion 3.1.1 - Level AA)

Deque Worldspace Single Page accessibility analyser:  
<http://wsspg.dequecloud.com/worldspace/wsservice/eval/checkCompliance.jsp>

Deque FireEyes Worldspace Firefox plug-in:  
<http://worldspace.deque.com/FireEyes>

## Fog Index: (adapted courtesy tech-head.com)

This simple procedure produces a Fog Index score: a lower score indicates easier-to-read content.

1. **Count all the words in 8 typical sentences**, then divide by 8 to calculate the **average words per sentence**. (Count clearly independent clauses as separate sentences. Example: "By and by I ran; I jumped; I hid." is three sentences.)
2. **Calculate the percentage of words that are three syllables or more**. (Don't count proper names. Don't count verbs that make three syllables by adding -es or -ed.)
3. **Sum these two figures**. Example: if your average number of words a sentence is 15, and the percentage of words three syllables or more is 12%, you would add 15 and 12 to get 27.
4. **Multiply that sum by 0.4**. The resulting number is your Fog Index, a rough measure of how many years of schooling it would take to understand what you have written. In our example, multiplying 27 by 0.4 equals a Fog Index of 10.8.

Interpretation: The Bible, Shakespeare, Mark Twain, and TV Guide all have Fog Indexes of around 6. Time, Newsweek, and The Wall Street Journal average around 11. If your index is 13 or higher, you certainly risk losing most of your audience in the fog.

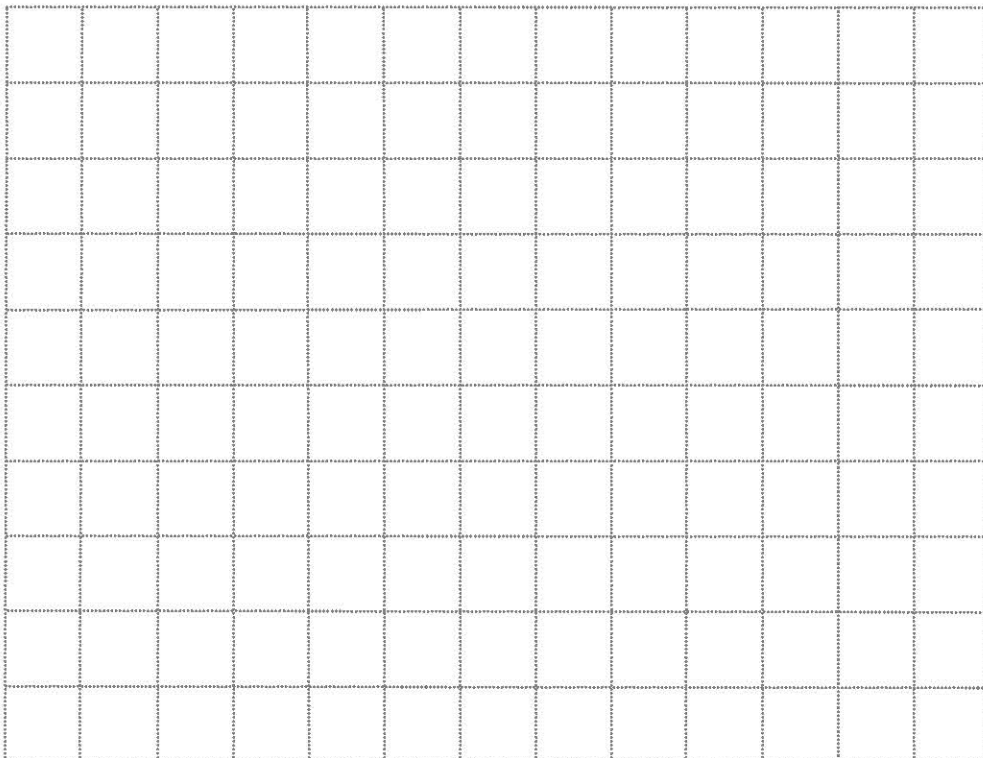


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## Testing/fixing tools: NetCentric CommonLook Office (Word, Powerpoint)

- CommonLook yields an .xml file in the same folder as the Word document (CommonLook Office 2 won't require the xml), helpful for your next export
- CommonLook Office 2 (coming later in 2012) will support PowerPoint, will eliminate the need for .xml file

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## Real-world testing is critical to accessibility and usability

Test to ensure the design works for **real users**

Focus Groups	Usability Testing
<i>Who:</i> Group	<i>Who:</i> One person at a time
<i>What:</i> Get a sample of users' opinions and abstract feelings about concept	<i>What:</i> Show something and ask them what it is, or to try to complete a task
<i>When:</i> Before design	<i>When:</i> After overall design, each page type, each template

**Frequent** testing trumps statistical relevance  
Test in **context**: *their phone ringing, their equipment, their workflow*

*"If we had asked the public what they wanted, they would have said 'faster horses'."* – Henry Ford (1863-1947)

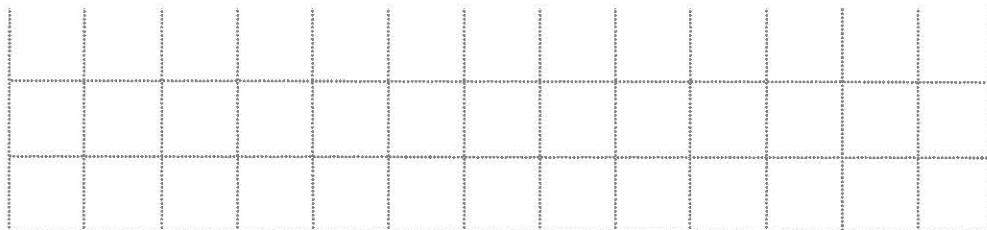
**The Hawthorne effect:** the tendency for people to act differently when they know someone's watching.

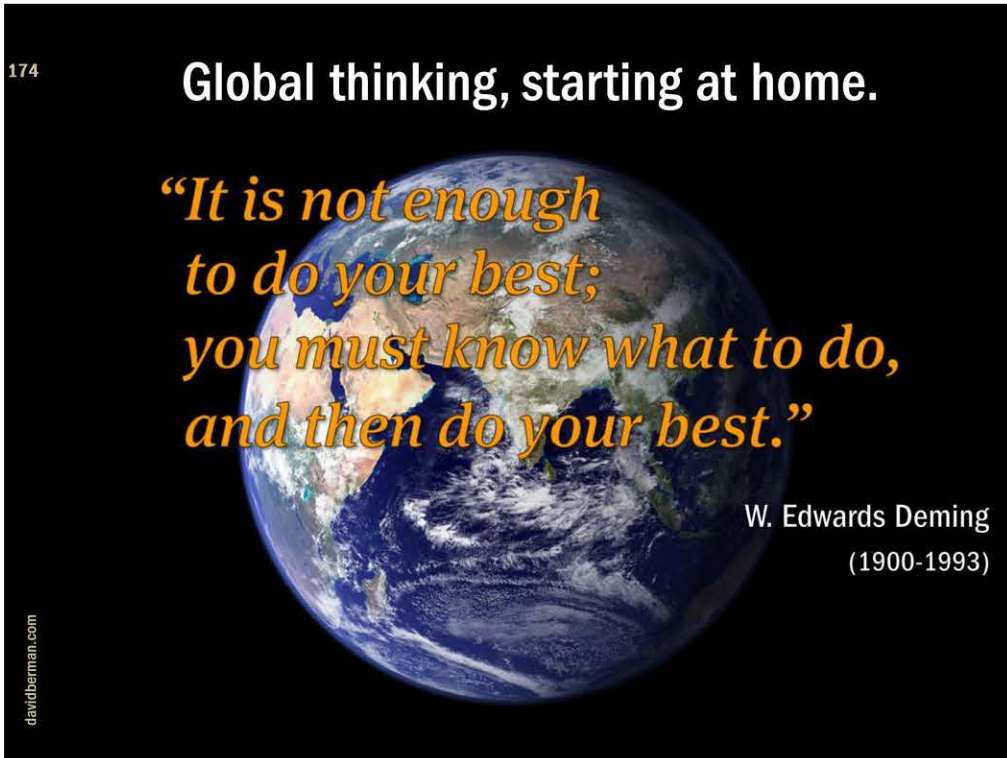
### David's fave books about Usability Testing:

*Don't Make Me Think* by Steve Krug, Que Publishing, 2000, ISBN: 0-7897-2310-7

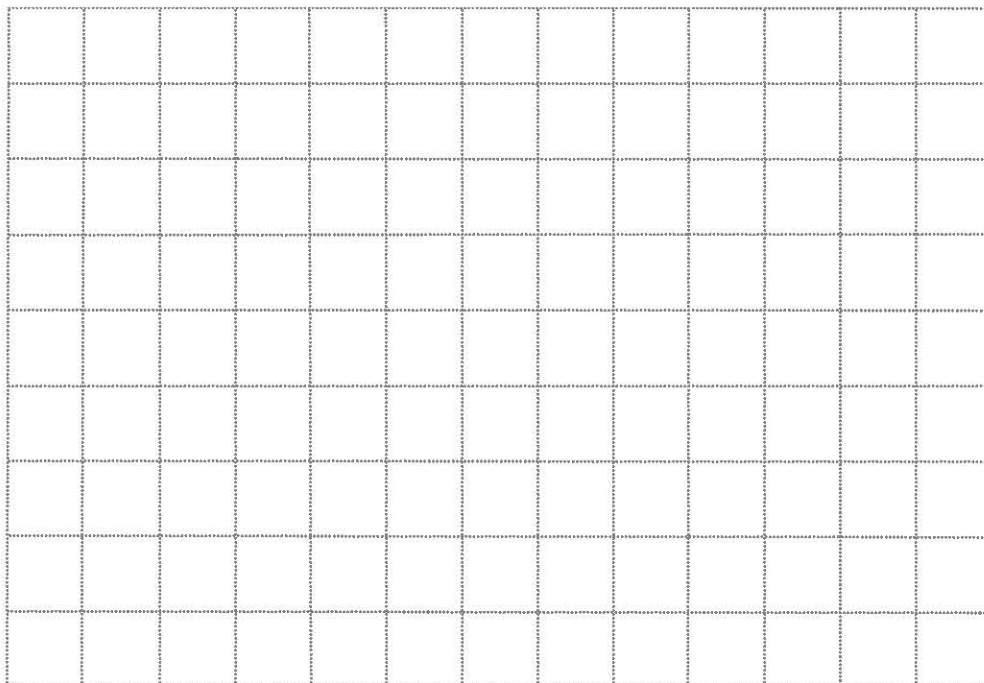
*Handbook of Usability Testing* by Jeffrey Rubin, John Wiley & Sons, 1994, ISBN: 0-471-59403-2

...also, to learn more about testing, consider our course on information/interface design.





Find a list of hypertext links and books cited in this learning guide at:  
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