IBM’s WCAG 2.0 Compliance Costing Model

ANNUAL INTERNATIONAL TECHNOLOGY & PERSONS WITH DISABILITIES CONFERENCE

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Dan Shire  – IBM Interactive, IBM Canada

Session: Web – 080
February 27, 2013  v5
Our agenda

Project Overview
I/T Web Project Life Cycle
Sample sites & pages
Testing Results
Costing Model
Policy Considerations
Opportunities & Challenges

Why this presentation?

Our experience is relevant to organizations and web sites trying to estimate the costs of accessibility.
Project Overview

Questions that need answers:

• What does it take to make a website accessible?
• What does it take to keep it that way?
• What are the opportunities and challenges?

Project Steps

• Identify candidate sites and sample pages
• Assess sample pages for accessibility
• Estimate cost to test, repair, and maintain
• How to apply project experiences to sites and policy

7 week timeline
User experience, including accessibility and support for inclusive design, should be at the heart of your project – this can be integrated into every phase of the project.

Roles:

Activities:

Deliverables:
User experience, including accessibility and support for inclusive design, should be at the heart of your project – this can be integrated into every phase of the project.

**Roles:**
- Business Owner
- Marketing
- Project Manager
- Solution Architect
- Business Analyst
- Designer
- Developer
- Tester/QA
- Technical writer

**Activities:**
- Manage procurement
- Define requirements
- Creative Design
- Macro and micro design
- Develop application
- Define & execute test plans
- Document solution
- Support users
- Plan for next cycle
Accessibility impacts by role

**Business Owner** - correct accessibility standards and requirements in place

**Marketing** – communications and awareness (i.e, launch)

**Project Manager** - checklist in place for project milestones and status reporting

**Architect** - enabled and capable technology designed into the solution

**Designer** - design and implementation guidance complies with applicable standards

**Developer** - coding implementation initially tested to comply with applicable standards

**Tester** - QA and system testing to ensure compliance with applicable standards

**Technical writer** – documents accessibility features, tutorials, etc.
Web site refresh cycles

Two factors to consider

1. The look and feel (branding and navigation)
   - Expensive to update – design and significant coding changes. If you get accessibility wrong, it can be broken everywhere.

2. The content – e.g. seasonal hours of operation, ‘contact us’, online restaurant menu, new products and services.
   - This information can be relatively dynamic and may change frequently.
   - Compliance is a problem if the CMS is not enforcing the presentation style.

How often do organizations update their sites?

• Consensus from 5 web developer interviews
  - Static sites seem to be updated every 3 years, with a refresh of look & feel, navigation, menus, branding, and certainly refresh of content & technology

• Our test sample (10 sites)
  - Refresh periods varied over time. Anecdotal and a small sample.
  - In the last 5 years, most of our sites appear to have been refreshed on a cycle of < 2 years.
## Sites selected and description

99% of businesses\(^1\)

<table>
<thead>
<tr>
<th>Company Size / Site complexity</th>
<th>Small</th>
<th>Medium</th>
<th>Large</th>
</tr>
</thead>
<tbody>
<tr>
<td>Static web pages</td>
<td>A1 Restaurant</td>
<td>B1 Insurance</td>
<td>C1 Restaurant chain</td>
</tr>
<tr>
<td></td>
<td>A12 Township</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dynamic</td>
<td>A2 Online magazine</td>
<td>B2 University department</td>
<td>C2 National Retailer</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>C22 Government department</td>
</tr>
<tr>
<td>E-commerce</td>
<td></td>
<td>B3 Computer retailer</td>
<td>C3 Automaker online store</td>
</tr>
</tbody>
</table>

---

\(^1\) Source: Stats Canada
Most businesses are small businesses

Canadian experience

- 380,000 businesses
- small and medium
  - 1 to 49 employees: 94.8%
  - 50 to 200 employees: 4.2%
  - 1 to 200 employees: 99.0%
- large
  - > 200 employees: 1.0%
## Site pages tested

<table>
<thead>
<tr>
<th>Company Size / Site complexity</th>
<th>Small</th>
<th>Medium</th>
<th>Large</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Static web pages</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A1: 5 of 8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Homepage, Contact, About Us, Menu, Press</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A12: 5 of 154</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Homepage, Contact, Map, Community Events, News &amp; Announcements</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Dynamic</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A2: 5 of 380</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Homepage, Registration, Search Results, Video Page, Blog Page</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B2: 6 of 126</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Homepage, Permission forms, Graduate studies list, Publications, Calendar</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C2: 7 of 107</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Homepage, Search results, Sign up, Locations, <strong>E-flyer signup</strong>, Weekly flyer, Sports, Golf</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C22: 5 of 14</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Homepage, Welcome, FAQ, Introduction, Step 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>E-commerce</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B3: 4 of 1,434</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Create account, Product, Shopping Cart, Order Confirmation, (Third Party “Place Order”)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C3: 5 of 201</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Build and Price, Choose Model, Choose Options, Choose Accessories, Summary</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Testing methodology

The assessment team performs the assessment tasks, collects, and summarizes the findings.

**Perform Assessment phase**
- Create detailed application test cases
- Configure automated test tools, AT, and OS settings
  - Run test using automated test tools
  - Conduct test using Assistive Technologies
  - Conduct manual test using expert techniques
- Inventory and summarize findings
- Assign severity ratings to issues
- Review issues with technical stakeholders

**Legend**
- Assessment
- *Remediate

*Note:* Comprehensive testing methodology

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## Testing results – number of issues

<table>
<thead>
<tr>
<th>Company Size / Site complexity</th>
<th>Small</th>
<th>Medium</th>
<th>Large</th>
</tr>
</thead>
<tbody>
<tr>
<td>Static web pages</td>
<td>63 issues</td>
<td>87 issues</td>
<td>200 issues</td>
</tr>
<tr>
<td></td>
<td>68 issues</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dynamic</td>
<td>248 issues</td>
<td>85 issues</td>
<td>32 issues</td>
</tr>
<tr>
<td></td>
<td></td>
<td>160 issues</td>
<td></td>
</tr>
<tr>
<td>E-commerce</td>
<td></td>
<td>48 issues</td>
<td>28 issues</td>
</tr>
</tbody>
</table>

### Notes:

1. Total number of issues does **not** reflect the relative effort to remediate issues.
2. Total does **not** always reflect the relative maturity of a site.
3. Total does **not** reflect the severity of various issues.
4. Total does **not** reflect the nature of a category of site.
5. Sample size is **not** large enough to draw conclusions.
6. Totals are **not** strictly comparable due to variance in number of pages assessed.
## Testing results – types of issues & challenges

<table>
<thead>
<tr>
<th>Company Size / Site complexity</th>
<th>Small</th>
<th>Medium</th>
<th>Large</th>
</tr>
</thead>
<tbody>
<tr>
<td>Static web pages</td>
<td><strong>A1:</strong> identical ALTs, no keyboard, video ownership</td>
<td><strong>B1:</strong> Easy to understand, predictable, parsing errors, good attachments</td>
<td><strong>C1:</strong> Pretty good, except Nutrition calendar, parsing errors</td>
</tr>
<tr>
<td></td>
<td><strong>A12:</strong> no keyboard, confusing; staff content</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dynamic</td>
<td><strong>A2:</strong> Advertising, “messy”, “accessible, just not usable”, parsing issues</td>
<td><strong>B2:</strong> good text-based navigation; unreadable attachments</td>
<td><strong>C2:</strong> 900 Parsing errors, large but “pretty good”, minor structure issues</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>C22:</strong> Step 1 focus issue, by line navigation</td>
</tr>
<tr>
<td>E-commerce</td>
<td></td>
<td><strong>B3:</strong> Horrible code, “busy”, 3rd party transaction</td>
<td><strong>C3:</strong> flash front end (not tested), On input error</td>
</tr>
</tbody>
</table>
WCAG 2.0 Success Criteria and Techniques

4 Principles
12 Guidelines
38 Success Criteria (A + AA)
100’s Techniques

Perceivable
1.1 Text alternative
1.2 Time-based media
1.3 Adaptable
1.4 Distinguishable

Understandable
3.1 Readable
3.2 Predictable
3.3 Input Assistance

Operable
2.1 Keyboard Accessible
2.2 Enough time
2.3 Seizures
2.4 Navigable

Robust
4.1 Compatible

Understanding WCAG 2.0
• Rationale and Benefits
• Examples
• Sufficient Techniques

WCAG 2.0 Techniques
• General (G1-G199)
• HTML (H2-H91)
• CSS (C6-C63)
• SCRIPT (SCR1-37)
• SERVER (SVR1-4)
• SMIL (SM1-14)
• TEXT (T1-T3)
• ARIA (ARIA1-4)
• Common Failures (F1-F89)

Interactive – gives views by priority and technology

4 Principles/ 12 Guidelines
• 61 Success Criteria
  • 25 Level A
  • 13 Level AA
  • 23 Level AAA

How to Meet
Interactive – gives views by priority and technology
## Issues/topics by WCAG 2.0 Success Criteria

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Issue</td>
<td>WCAG #</td>
<td>WCAG#</td>
<td>Topics covered</td>
<td>Technique</td>
</tr>
<tr>
<td>2</td>
<td>ALT incorrect</td>
<td>Non-text content</td>
<td>1.1.1</td>
<td>ALT missing&lt;br&gt;ALT should be empty&lt;br&gt;ALT too long&lt;br&gt;ALT not accurate</td>
<td>F26: Providing text alternatives for the area elements of image maps&lt;br&gt; F27: Providing short text alternative for non-text content that serves the same purpose</td>
</tr>
<tr>
<td>3</td>
<td>CAPTCHA inaccessible</td>
<td>Non-text content</td>
<td>1.1.1</td>
<td>Using visual-only means of confirming human user &lt;br&gt;Headsings missing &lt;br&gt;Lists missing &lt;br&gt;Table poorly used as layout &lt;br&gt;Using bold instead of semantic markup &lt;br&gt;Missing labels for form fields &lt;br&gt;NOTE: Title missing covered separately</td>
<td>G14: Ensuring that the Web Page contains another CAPTCHA using the same purpose &lt;br&gt;G143: Providing a text alternative that describes the purpose of the CAPTCHA &lt;</td>
</tr>
<tr>
<td>4</td>
<td>Content missing structure</td>
<td>Info and Relationships</td>
<td>1.3.1</td>
<td>Label missing&lt;br&gt;Lack of definition of purpose&lt;br&gt;Using bold instead of semantic markup&lt;br&gt;Missing labels for form fields</td>
<td>F33: Failure of Success Criterion 1.3.2 due to using an HTML layout table that does not make sense when linearized&lt;br&gt; H49: Using semantic markup to mark emphasized or special text &lt;br&gt;H44: Using label elements to associate text labels with form controls &lt;br&gt;H25: Providing a title using the title element</td>
</tr>
<tr>
<td>5</td>
<td>Content not ordered properly</td>
<td>Meaningful Sequence</td>
<td>1.3.2</td>
<td>Using an HTML layout table that does not make sense when linearized</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Contrast insufficient</td>
<td>Contrast (Minimum)</td>
<td>1.4.3</td>
<td>Text without sufficient contrast from background</td>
<td></td>
</tr>
</tbody>
</table>
Costs of Web Accessibility remediation – Hours of effort by role

<table>
<thead>
<tr>
<th>12 Guidelines</th>
<th>25 Success Criteria (Level A)</th>
<th>Biz</th>
<th>Mkt</th>
<th>PM</th>
<th>Ach</th>
<th>Dev</th>
<th>QA</th>
<th>TW</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1 Text Alternative</td>
<td>1.1.1 Non-Text Content</td>
<td>4 1</td>
<td>*</td>
<td>1</td>
<td>1</td>
<td>*</td>
<td></td>
<td>All</td>
</tr>
<tr>
<td>1.2 Time-based Media</td>
<td>1.2.1 Audio-only and Video-only (Prerecorded)</td>
<td>1</td>
<td>*</td>
<td>1</td>
<td>1</td>
<td>*</td>
<td></td>
<td>+ $ 2.25 / min</td>
</tr>
<tr>
<td></td>
<td>1.2.2 Captions (Prerecorded)</td>
<td>1</td>
<td>*</td>
<td>1</td>
<td>1</td>
<td>*</td>
<td></td>
<td>+ $ 2.25 / min</td>
</tr>
<tr>
<td></td>
<td>1.2.3 Audio Descriptions or Captions (Prerecorded)</td>
<td>1</td>
<td>*</td>
<td>1</td>
<td>1</td>
<td>*</td>
<td></td>
<td>+ $ 4.00 / min</td>
</tr>
<tr>
<td>1.3 Adaptable</td>
<td>1.3.1 Info and Relationships</td>
<td>*</td>
<td>2</td>
<td>8</td>
<td>*</td>
<td></td>
<td>All</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.3.2 Meaningful Sequence</td>
<td>*</td>
<td>1</td>
<td>2</td>
<td>*</td>
<td></td>
<td>none</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.3.3 Sensory Characteristics</td>
<td>*</td>
<td>1</td>
<td>2</td>
<td>*</td>
<td></td>
<td>none</td>
<td></td>
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<tr>
<td>1.4 Distinguishable</td>
<td>1.4.1 Use of colour</td>
<td>*</td>
<td>.5</td>
<td>1</td>
<td>*</td>
<td></td>
<td>none</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.4.2 Audio Control</td>
<td>*</td>
<td>.5</td>
<td>8</td>
<td>*</td>
<td></td>
<td>none</td>
<td></td>
</tr>
<tr>
<td>2.1 Keyboard Accessible</td>
<td>2.1.1 Keyboard</td>
<td>*</td>
<td>*</td>
<td>4</td>
<td>*</td>
<td></td>
<td>8/10</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.1.2 No Keyboard Trap</td>
<td>*</td>
<td>*</td>
<td>24</td>
<td>*</td>
<td></td>
<td>none</td>
<td></td>
</tr>
<tr>
<td>2.2 Enough Time</td>
<td>2.2.1 Timing Adjustable</td>
<td>2</td>
<td>*</td>
<td>2</td>
<td>4</td>
<td>*</td>
<td></td>
<td>none</td>
</tr>
<tr>
<td></td>
<td>2.2.2 Pause, Stop, Hide</td>
<td>4</td>
<td>*</td>
<td>1</td>
<td>8</td>
<td>*</td>
<td></td>
<td>1 site</td>
</tr>
<tr>
<td>2.3 Seizures</td>
<td>2.3.1 Three Flashes or Below Threshold</td>
<td>*</td>
<td>*</td>
<td>.25</td>
<td>*</td>
<td></td>
<td>none</td>
<td></td>
</tr>
<tr>
<td>2.4 Navigable</td>
<td>2.4.1 Bypass Blocks</td>
<td>*</td>
<td>1</td>
<td>8</td>
<td>*</td>
<td></td>
<td>9/10</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.4.2 Page Title</td>
<td>*</td>
<td>.1</td>
<td>1</td>
<td>*</td>
<td></td>
<td>6/10</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.4.3 Focus Order</td>
<td>*</td>
<td>.5</td>
<td>12</td>
<td>*</td>
<td></td>
<td>2/10</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.4.4 Link Purpose</td>
<td>*</td>
<td>.1</td>
<td>1</td>
<td>*</td>
<td></td>
<td>8/10</td>
<td></td>
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<tr>
<td>3.1 Readable</td>
<td>3.1.1 Language of Page</td>
<td>*</td>
<td>*</td>
<td>.25</td>
<td>*</td>
<td></td>
<td>9/10</td>
<td></td>
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<tr>
<td>3.2 Predictable</td>
<td>3.2.1 On Focus</td>
<td>*</td>
<td>*</td>
<td>12</td>
<td>*</td>
<td></td>
<td>1 site</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.2.2 On Input</td>
<td>*</td>
<td>1</td>
<td>12</td>
<td>*</td>
<td></td>
<td>4/10</td>
<td></td>
</tr>
<tr>
<td>3.3 Input Assistance</td>
<td>3.3.1 Error Identification</td>
<td>*</td>
<td>.5</td>
<td>8</td>
<td>*</td>
<td></td>
<td>5/10</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.3.2 Labels or Instructions</td>
<td>1</td>
<td>*</td>
<td>.5</td>
<td>4</td>
<td>*</td>
<td></td>
<td>7/10</td>
</tr>
<tr>
<td>4.1 Compatible</td>
<td>4.1.1 Parsing</td>
<td>*</td>
<td>*</td>
<td>1</td>
<td>*</td>
<td></td>
<td>All</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.1.2 Name, Role, Value</td>
<td>1</td>
<td>*</td>
<td>4</td>
<td>8</td>
<td>*</td>
<td></td>
<td>2/10</td>
</tr>
</tbody>
</table>

Notes: Example of variability by role - Text alternatives to images vs business alternative to CAPTCHA (i.e., phone support).
Example of variability of applicable success criteria - Short text descriptions vs long descriptions vs CAPTCHA alternative.
## Costs of Web Accessibility remediation – Hours of effort by role (Level AA)

<table>
<thead>
<tr>
<th>12 Guidelines</th>
<th>13 Success Criteria (Level AA)</th>
<th>Biz</th>
<th>Mkt</th>
<th>PM</th>
<th>Ach</th>
<th>Dev</th>
<th>QA</th>
<th>TW</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1 Text Alternative</td>
<td>1.1 Text alternatives</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.2 Time-based Media</td>
<td>1.2.4 Captions (Live)</td>
<td>4</td>
<td>*</td>
<td>1</td>
<td>1</td>
<td>*</td>
<td>none</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.2.5 Audio Description (Prerecorded)</td>
<td>1</td>
<td>*</td>
<td>1</td>
<td>1</td>
<td>*</td>
<td>5/10</td>
<td></td>
</tr>
<tr>
<td>1.3 Adaptable</td>
<td>1.3 Adaptable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.4 Distinguishable</td>
<td>1.4.3 Contrast (4.5:1 minimum)</td>
<td>*</td>
<td>6</td>
<td>3</td>
<td>*</td>
<td>4/10</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.4.4 Resize text</td>
<td>*</td>
<td>8</td>
<td>*</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.4.5 Images of text</td>
<td>*</td>
<td>2</td>
<td>1</td>
<td>*</td>
<td>1 site</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.1 Keyboard</td>
<td>2.1 Keyboard Accessible</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.2 Enough Time</td>
<td>2.2 Enough Time</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.3 Seizures</td>
<td>2.3 Seizures</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.4 Navigable</td>
<td>2.4.5 Multiple Ways</td>
<td>*</td>
<td>4</td>
<td>8</td>
<td>*</td>
<td>3/10</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.4.6 Headings and Labels</td>
<td>*</td>
<td>1</td>
<td>2</td>
<td>*</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.4.7 Focus visible</td>
<td>*</td>
<td>8</td>
<td>*</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.1 Readable</td>
<td>3.1.2 Language of Parts</td>
<td>*</td>
<td>.5</td>
<td>*</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.2 Predictable</td>
<td>3.2.3 Consistent Navigation</td>
<td>*</td>
<td>.5</td>
<td>1</td>
<td>*</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.2.4 Consistent Identification</td>
<td>*</td>
<td>.5</td>
<td>1</td>
<td>*</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.3 Input Assistance</td>
<td>3.3.3 Error Suggestion</td>
<td>1</td>
<td>*</td>
<td>.5</td>
<td>4</td>
<td>*</td>
<td>1 site</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.3.4 Error Prevention (Legal, Financial)</td>
<td>1</td>
<td>*</td>
<td>.5</td>
<td>4</td>
<td>*</td>
<td>none</td>
<td></td>
</tr>
<tr>
<td>4.1 Compatible</td>
<td>4.1 Compatible</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>
## Example rates by role

<table>
<thead>
<tr>
<th></th>
<th>Large ICT businesses</th>
<th>Small ICT businesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>$130</td>
<td>Level 2 Business Owner</td>
<td>Rates approx. $40 to $100</td>
</tr>
<tr>
<td>$72</td>
<td>Level 1 Marketing</td>
<td>15 page sites range from $3k to $5k</td>
</tr>
<tr>
<td>$83</td>
<td>Level 1 Project Manager</td>
<td></td>
</tr>
<tr>
<td>$115</td>
<td>Level 1 Architect</td>
<td></td>
</tr>
<tr>
<td>$115</td>
<td>Level 1 Designer</td>
<td></td>
</tr>
<tr>
<td>$83</td>
<td>Level 1 Developer</td>
<td></td>
</tr>
<tr>
<td>$83</td>
<td>Level 1 Tester/QA</td>
<td></td>
</tr>
<tr>
<td>$72</td>
<td>Level 1 Technical writer</td>
<td></td>
</tr>
</tbody>
</table>

Rates per day (7.25 hrs)

- Level 1 = 2-4 years,
- Level 2 = 4-9 years,
- Level 3 = 10+ years of experience

Surveyed 5 small businesses
Preliminary survey – 5 web development teams

A very small and unscientific sample
- 5 web development businesses (2 sole-proprietor, 3 teams (6, 20, 60))

Common themes

• Small sites (< 10 pages) are still reasonable candidates for an HTML solution
• Most sites are now implemented with a Content Management System (CMS)
  – CMS allows the end client to maintain their own site content
  – Emerging support in CMS for accessibility standards (Drupal, WordPress)
  – Some consultants have a proprietary CMS – this will be problematic
• New sites?
  – 10 to 15 pages cost in the range of $3,000 to $5,000 – with an open-source CMS
  – Municipalities – publicly available information (newspaper article) – refresh the look and feel and the information architecture of 4 municipal web sites @ $57,000 with AODA (WCAG 2.0 AA) compliance - 8 years since last refresh
• Knowledge of accessibility and standards
  – General awareness (5 of 5)
  – Some consultants seem to have a good understanding (4 of 5 in this sample)
## Sample Remediation costs

<table>
<thead>
<tr>
<th>Company Size / Site complexity</th>
<th>Small</th>
<th>Medium</th>
<th>Large</th>
</tr>
</thead>
<tbody>
<tr>
<td>Static web pages</td>
<td>A1: $4.5k – $18.5k 50 hours to 199 hours</td>
<td>B1: $4.8k - $16k 52 hours to 178 hours</td>
<td>C1: $12.4k - $32.3k 134 hours to 349 hours</td>
</tr>
<tr>
<td></td>
<td>A12: $4.8k - $16.4k 53 hours to 184 hours</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dynamic</td>
<td>A2: $10.3k - $34k 112 hours to 382 hours</td>
<td>B2: $4.5k - $21.2k 50 hours to 247 hours</td>
<td>C2: $9.2k - $34.8 100 hours to 385 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>C22: $2k - $10k 24 hours to 115 hours</td>
</tr>
<tr>
<td>E-commerce</td>
<td></td>
<td>B3: $3.7k - $19.9k 41 hours to 224 hours</td>
<td>C3: $2.4k - $13.5k 27 hours to 152 hours</td>
</tr>
</tbody>
</table>

Notes:
1. Level A + AA costs for Business Analyst, Architect, Design, Development, & minimal Project Management (remediation costs did not include QA/Test)
2. Only costs to remediate 5 sample pages are shown.
3. Some remediation costs quickly exceed site redesign costs.
4. Ranges reflect variability in site design, technology choices, and accessibility requirements themselves.
Example of variability

3.3.2 Level A Provide labels - Labels and input instructions

Sighted user sees the ‘Search’ button

Blind user hears “Image Button 1”

Technology choice has greatest impact on variability of remediation costs
- Maintenance considerations
- When technology changes
- In-house custom built vs open source vs vendor
- Trends: Today’s technology may not be tomorrow’s problem
Example of variability
1.4.4 Level AA Resize Text - Non-HTML may not resize

Flash video player

Video content zooms - good, but not player controls and labels don’t - poor

Fix choice requires major re-work or major dependency
Site type and design impact maintenance costs

<table>
<thead>
<tr>
<th>Company Size / Site complexity</th>
<th>Small</th>
<th>Medium</th>
<th>Large</th>
</tr>
</thead>
<tbody>
<tr>
<td>Static web pages</td>
<td>Poor page structure</td>
<td>Average page structure</td>
<td>Poor control labels</td>
</tr>
<tr>
<td></td>
<td>Poor navigation</td>
<td>Uses CSS well</td>
<td>Poor keyboard</td>
</tr>
<tr>
<td></td>
<td>Poor design/template affect whole (but small) site</td>
<td>Easy Navigation</td>
<td>Poor page structure</td>
</tr>
<tr>
<td></td>
<td>Little CMS usage</td>
<td></td>
<td>Poor navigation</td>
</tr>
<tr>
<td>Dynamic</td>
<td>Dependency on inaccessible Non-HTML unique user interface components</td>
<td>Document repository accessibility will be large burden to maintain accessibility of all the documents</td>
<td>Good Navigation</td>
</tr>
<tr>
<td></td>
<td>Poor page structure</td>
<td></td>
<td>Good Keyboard</td>
</tr>
<tr>
<td></td>
<td>Poor navigation</td>
<td></td>
<td>Good Form labels</td>
</tr>
<tr>
<td>E-commerce</td>
<td></td>
<td>Needs nested headings</td>
<td>Flash movies have no audio or text descriptions</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Poor keyboard</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Needs long description of pictures</td>
</tr>
</tbody>
</table>

Note: Example of maintenance impacts
Costs assumed outside model framework

Technical and business IT costs
Project level overhead costs
Organizational costs

Technical and business IT costs

1. **Software tools** purchases and training
   - Automated tools like IBM Rational Policy Tester, a-Designer, etc.
   - Costs are still impact to business and out sourcing groups
   - Opportunity for government to provide automated tools to business?

2. **Technical accessibility skills training**
   - Architects, designers, developers, and testers
   - Assume the skills and resources are available
   - Costs are still impact
   - Opportunity for government to provide training?

3. **Technology accessibility enabled**
   - Newer technologies and proprietary toolkits may not yet be enabled
   - Newer technologies and proprietary toolkits may be better enabled
   - Alternative or redundant solutions driving costs to 50% and beyond.

4. **Return on Investment (ROI) not factored into model framework**
   - Increased sales, increased employee productivity, etc.
   - Studies and pilots needed
Costs assumed outside model framework – continued

**Project level overhead costs**

5. **Schedule**
   - Model framework assume its part of an existing project - so no schedule delay/costs due to additional accessibility testing for example.

6. **Project overhead**
   - its part of an existing project - so no additional costs for project management, regression testing, etc.

**Organizational/Enterprise costs**

7. **User Accommodations & support**
   - Costs for ensuring that employees, citizens, and end users have a reasonable level of supporting assistive technology, internet access, latest enabled browsers, and a supporting operating system platform and the amount of training required to configure and use the technology efficiently.

8. **Periodic Audits**
   - Not included in the cost model, but are recommend to better maintain compliance. Measurements (scanning & testing) and reporting (including executive dashboards) drives accessibility compliance for the organization / province.

9. **Application portfolio management**
   - Should include accessibility and other attributes such as quality, privacy, security, internationalization, etc. - assumed are in place

10. **Document Management**
    - Additional costs depending on business/organization.
Policy Considerations

Ownership of the problem / content – will require applicability guidance

- Content vs hosting vs links
  - Own content but not hosting environment (uncaptioned video on YouTube)
  - Own hosting environment but not content (documents & web services from others)
  - Own both (applicable) and/or links (not applicable)

- 3rd party services and components(widgets) (who and when in life cycle)

Evolving technologies – will require updates to policy

- Mobile devices (platforms, service providers, content owners, etc.)
- HTML 5 (?)
- 3D Internet (i.e., Second Life – it’s peaked)

Conformance claims guidance

- **Platform**: Which OS and browser to test? (Usage, ubiquity; which browser to recommend?)
- **Testing tools**: Which tools to use to make claims? (Cost, ease of use, supporting AA criteria)
- **Assistive Technology**: Which AT to make claims? (JAWS, ZoomText, AT failure, down level versions, etc.)
Canadian Accessibility Regulations

Ontario: Accessibility for Ontarians with Disabilities Act

- Covers BOTH public and private sector
  - 380,000 obligated organizations
- **Customer service** (like ADA)
- **Information and communication** (like ADA & S508)
  - All government (public sector) – WCAG 2.0 A now, AA phased in
  - Businesses with > 50 employees must provide WCAG 2.0 (A, later AA) web sites for customers

- **Employment**
  - I/T must support employees with disabilities, or organization must provide reasonable accommodation

Government of Canada

- WCAG 2.0 AA for all federal departments & agencies
The project identified challenges and opportunities

Our project challenges reflect the realities to be faced by web site owners
  • Insufficient testing tools, under developed testing methods, uncertainty with guidelines, challenges with issue summarization, coordination of resources

Project challenges present policy governance opportunities
  • Standardize on a testing/measurement tool. Use for government-approved enforcement and self-assessment
    – Robust; adaptable; role-based; clear output; reduced false positives
  • Provide an intermediary checklist or tool for testing; such a tool could include a template for capturing issues
  • Offer suggested methods and procedures
  • Provide targeted and progressive education and goals
    – Priority and Severity
Do most businesses have the internal skills to maintain their own web sites?

In a word … no.

87% of businesses have fewer than 20 employees (Statistics Canada 2009)

- Most of these organizations will not have an I/T person on staff
- They would typically outsource their web site development and maintenance (based on interviews with 5 web development companies)
- If the site is implemented in an accessible CMS, content can be well-maintained locally (consistent, accessible, and following the rules)
- I/T and related technology based businesses may have internal skills available – (see report under IT capacity & skills)

5.2% of companies have 50 or more employees

- Reasonable to assume these companies may have I/T staff capable of developing and maintaining the web site.
Challenges & recommendations

Training - there’s a significant learning curve – WCAG standards are complex to learn and use effectively.
- Colleges and Universities – fundamental inclusive design curriculum
- Practical & relevant training for web developers

Tools – for development and testing – different tools give different results
- Recommendations for candidate tools, potentially sponsor test tool(s)
- Work with vendors and open-source community (e.g. Drupal CMS)

Processes – templates
- A library of resources, especially helpful to small organizations
- Collaborate with international partners on reusable assets (e.g. G3ict.org)
Questions?

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