

# *HTML 5 Accessibility*



Rich Schwerdtfeger

CTO Accessibility IBM Software

Steve Faulkner

Technical Director, The Paciello Group

Marco Zehe

Mozilla Corporation



## *HTML5 Accessibility – Building on the Basic Web Plumbing*

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- A Work in Progress
  - Details still being developed and agreed on
  - Browser implementations incomplete
  - Assistive Technology implementations far from complete
  - [www.HTML5accessibility.com](http://www.HTML5accessibility.com)
- We are at First Last Call Status
- ALL accessibility features added have been hard fought



## *HTML5 Accessibility – browser implementation summary*

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- **Windows Browsers Summary - Firefox has the best HTML5 Accessibility Support Score**
  - Chrome, Internet Explorer, Opera and Safari are all training far behind
- **Mac Browsers Summary - Safari has the best HTML5 Accessibility Support Score**
  - Chrome, Opera and Firefox are all training far behind
- Details: [www.HTML5accessibility.com](http://www.HTML5accessibility.com)



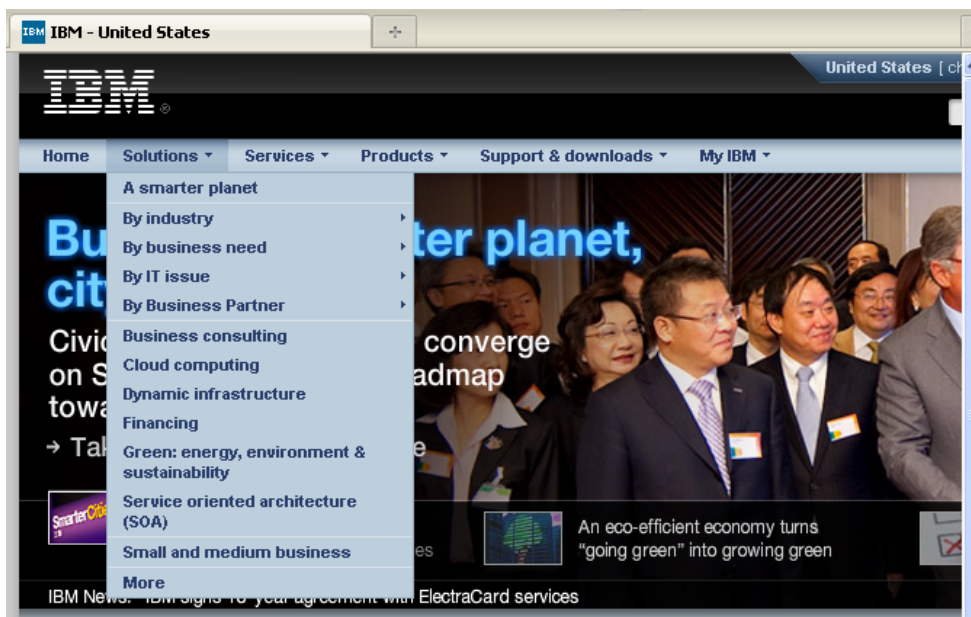
## *What is W3C ARIA (Accessible Rich Internet Applications)?*

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- A way for authors to apply rich accessibility semantics in Web 2.0 content to support OS platform accessibility
- A way to reproduce the keyboard functionality of desktop applications on a web page
- A vehicle to provide full interoperability with assistive technologies for Rich Internet Applications through the browser
- The evolving declarative accessibility API for the Web

*WAI-ARIA is part of HTML 5*

# WAI-ARIA – Why and How it Works




- 20% of the work needed for rich desktop
- A Cross platform accessibility API
- Full Keyboard navigation like desktop
- Ubiquitous adoption
- Designed to support WCAG 2 and the U.S. 508 Refresh
- All major browsers providing support

```
<div role="menu" aria-haspopup="true">
  <div role="menuitem" aria-selected="true"
    tabindex="-1">
    A smarter planet
  </div>...
</div>
```

## Browser converts ARIA to accessibility services

- Benchmark your organization: Global CFO self-assessment
- Next generation Power7 Systems for small & midsize businesses
- Industries ▶
- Government
- K-12 and higher education
- Small and medium business
- A smarter planet
- CIOs
- CFOs
- IBM Business Partners
- Investors
- Journalists
- Job seekers
- Developers

Assistive Technology



Menu Item A Smarter Planet!

One of 13 menu items





# WAI-ARIA

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- [WAI-ARIA is integrated into HTML 5](#)
  - Author conformance defined in HTML5
    - i.e. rules for use of ARIA in HTML5
  - [A new HTML to Platform Accessibility API Implementation Guide](#)
    - Another work in progress
    - Provide guidance for user agent (browser) of how to implement the accessibility of HTML features.
    - Promotes harmonization of implementation across browsers.
    - Improved interoperability users and web developers win!



*MultiMedia = Multi-Modal (<video> & <audio>)*

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## **Accessibility Issues with the Media elements**

### *User Requirements*

- Blindness
- Low vision
- Atypical color perception
- Deafness
- Hard of hearing
- Deaf-blind
- Dexterity/mobility impairment
- Cognitive & neurological disabilities

[http://www.w3.org/WAI/PF/HTML/wiki/Media\\_Accessibility\\_Requirements](http://www.w3.org/WAI/PF/HTML/wiki/Media_Accessibility_Requirements)



*MultiMedia = Multi-Modal (<video> & <audio>)*

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## **Accessibility Issues with the Media elements**

### *Alternative Content Technologies*

- Captioning
- Enhanced captions/subtitles
- Transcripts
- Sign translation
- Described video
- Extended video descriptions
- Text video description
- Clear audio
- Content navigation by content structure

[http://www.w3.org/WAI/PF/HTML/wiki/Media\\_Accessibility\\_Requirements](http://www.w3.org/WAI/PF/HTML/wiki/Media_Accessibility_Requirements)





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## **Caption/Subtitle/Descriptive Video/ Sign Language Synchronization Formats**

- Web Video Time Text (.vtt) <http://dev.w3.org/html5/webvtt/>
- Timed Text Markup Language (.xml.dfxp) <http://www.w3.org/TR/ttaf1-dfxp/>
  - [Society of Television and Motion Pictures Engineers TimedText \(SMPTE-TT\)](#)
- Neither format has been declared a default
- Only IE 10 supports TTML and WebVTT for both wrt. Captions/Subtitles
- Web VTT is a specification in flux - not finalized to date
- SMPTE-TT is a profile of TTML



*MultiMedia = Multi-Modal (<video> & <audio>)*

## The <track> element

```
<track kind="captions" src="myvid.vtt" srclang="en"/>
```

```
<track kind="subtitle" src="myvid_sp.xml.dfxp" srclang="sp"/>
```

Keyword	Brief description
<i>subtitles</i>	Transcription or translation of the dialogue, suitable for when the sound is available but not understood (e.g. because the user does not understand the language of the media resource's soundtrack). Displayed over the video.
<i>captions</i>	Transcription or translation of the dialogue, sound effects, relevant musical cues, and other relevant audio information, suitable for when the soundtrack is unavailable (e.g. because it is muted or because the user is deaf). Displayed over the video; labeled as appropriate for the hard-of-hearing.
<i>descriptions</i>	Textual descriptions of the video component of the media resource, intended for audio synthesis when the visual component is unavailable (e.g. because the user is interacting with the application without a screen while driving, or because the user is blind). Synthesized as separate audio track.
<i>chapters</i>	Chapter titles, intended to be used for navigating the media resource. Displayed as an interactive list in the user agent's interface.
<i>metadata</i>	Tracks intended for use from script. Not displayed by the user agent.

[http://www.w3.org/WAI/PF/HTML/wiki/Media\\_TextAssociations](http://www.w3.org/WAI/PF/HTML/wiki/Media_TextAssociations)

[http://www.w3.org/WAI/PF/HTML/wiki/Media\\_MultitrackAPI](http://www.w3.org/WAI/PF/HTML/wiki/Media_MultitrackAPI)



*MultiMedia = Multi-Modal (<video> & <audio>)*

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## **Alt Media (Sign Language, described video)**

- A Media Controller API is emerging at the W3C that would allow for supporting multiple media files, allowing for sign language translation, extended audio-description support, etc.
- While not yet completed, this is seen as one of the last major hurdles to be overcome within the Working Group

## **Textual Alternatives**

- Still to be resolved is how to provide textual alternatives (short and long) to the imagery associated to video elements, prior to the launch of the video



*MultiMedia = Multi-Modal (<video> & <audio>)*

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## *Adding a video with HTML5*

```
<video
  poster="myvid.jpg" (*)
  tabindex="0"
  preload="auto"
  height="240" width="320"
  controls>
<source src="myvideo.mp4" type="video/mp4"/>
<source src="myvideo.webm" type="video/webm"/>
<source src="myvideo.ogv" type="video/ogg"/>
<track kind="captions" src="myvideo.vtt" srclang="en"/>
<track kind="subtitle" src="myvideo_sp.vtt" srclang="sp"/>
<p>Final fallback content</p>
</video>
```

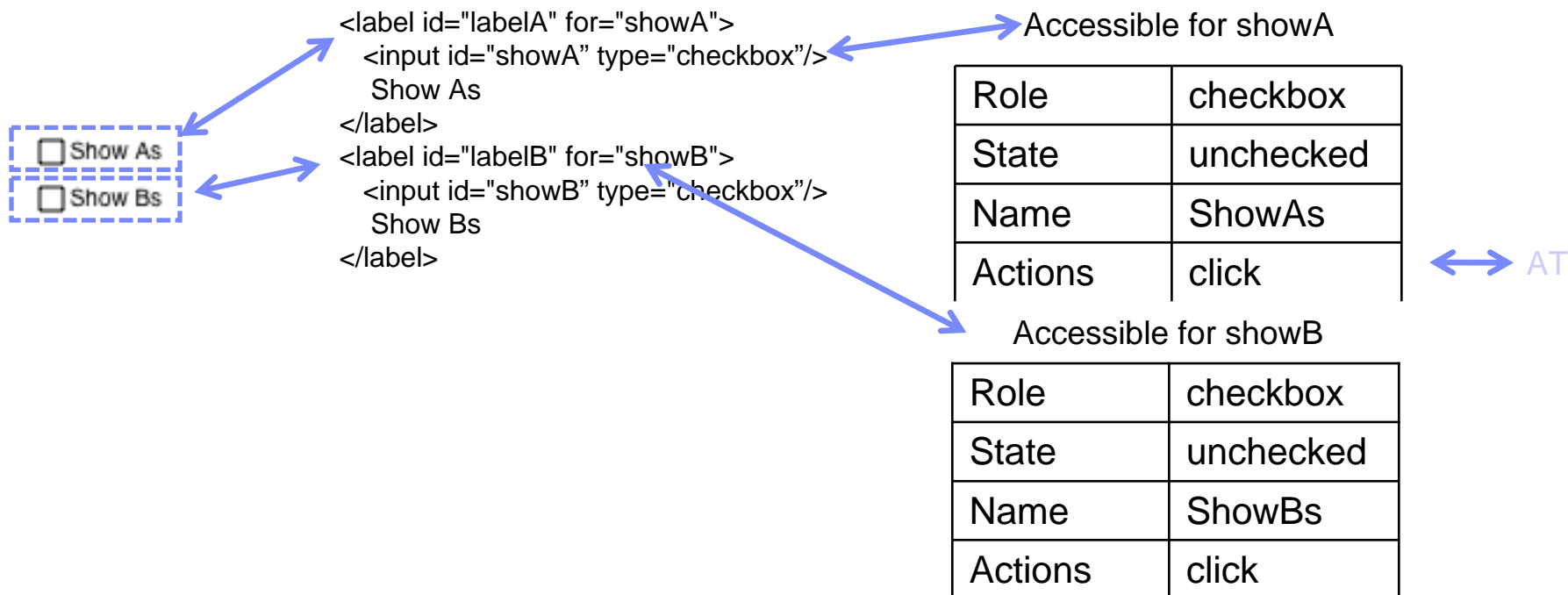


# Canvas Accessibility Conceptualization (use of fallback content)

<canvas>

Fallback Content (canvas subtree)

Accessible Objects in Canvas



Canvas fallback element bounds

*Browser*



## *Canvas 2D API extensions to support screen magnification*

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- New `drawSystemFocusRing` and `drawCustomFocusRing` functions to drive magnification and render focus according to system settings
- Canvas is not the best technology for rich text. HTML working group vacated decision on caret and selection API. Currently, accessibility being used as a tool to prevent its use. New caret and selection API proposal resubmitted in lieu of LibreOffice and Mozilla PDF Reader work
- New Text Metrics text baseline in Canvas 2D API to facilitate focus ring drawing
- New hit testing APIs being proposed (`setElementPath`, `addHitRegion`) to bind a path to fallback content supplying the magnifier location information
- New `scrollPathIntoView` function – inadequate as can't be used to drive a magnifier without element accessibility semantics



## *Text Alternatives: Expect things to change*

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- **Contentious area of HTML accessibility**
  - Many HTML 4 accessibility features introduced late in the process – not well thought out
  - longdesc seldom used and underspecified
  - Text alternatives applied to a limited number of elements
  - Interoperability with assistive technologies was not considered
- **Changes are extensive**
  - New figure and figcaption elements
  - longdesc and table summary are gone
  - alt attribute not required in all cases
  - Title attribute can be a conforming substitute for alt attribute
  - Extensive author conformance requirements baked into HTML5
- **Switching to WAI-ARIA for alternative text and descriptions**
  - Consistent mechanism to provide labels for all elements
  - Consistent mechanism to provide descriptions for all elements
  - ARIA 1.1 to fill gaps in HTML 5 accessibility



## Many New Standard Controls

- **New Input Types**

- Range (slider)
- Text boxes: text, search, telephone, url, email, password
- Dates and Time
- Number: validation
- Color picker
- And the usual: checkbox, radio, buttons, image buttons, file upload

- **More Form Elements**

- Output
- Progress
- Meter

- **Validation**

- Required
- Min, max, and step
- Pattern for regular expressions
- Custom validation constraints

- **Behavior**

- Autocomplete, list, and multiple, datalist
- Placeholder
- Autofocus

- **Interactive Elements**

- Menus and Commands
- Details and Summary

### Accessibility impact

- Consistently mapped to Accessibility APIs
- Web apps act more like desktop apps with AT
- Less need for custom UI in web apps





## *ARIA 1.1 – Goals and issues*

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- Fill HTML 5 gaps not addressed by ARIA 1.0
  - An attribute to replace longdesc
  - An attribute for a poster description
  - New disclosure and figure roles
  - A switch role (a subclass of checkbox)
  - Apply aria-haspopup to more roles
  - Inconsistencies in role overriding
  - A semantic zoom role
  - A caret role for cloud-based editors and SVG
  
- Fix minor ARIA 1.0 fixes
  
- Must be easy to implement



## *HTML 5 and Mobile Web Accessibility*

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- Assistive Technology Features will become mainstream in mobile, Yet, ...
- Mobile browser are in varying states of readiness of supporting accessible Web content
  - Incomplete WAI-ARIA support
  - Some browsers only target select disabilities
  - HTML 5 support incomplete
- Accessibility test tools are limited to desktop
- Many mobile applications are hybrids with native application components
- Key Mobile Gap in platform is dependent on new W3C IndieUI spec.



## *Browser/Assistive Technology Support*

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- Heavy lifting to start in 2012
- Will operate off the first [HTML Mapping Guide](#)
- Huge undertaking by AT vendors
- Expect mobile to lag desktop



## *Take Aways*

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- HTML 5 accessibility is a work in progress
- HTML 5 accessibility will change from HTML 4
- Organizations must re-educate their development community and accessibility staff on the latest accessibility technology for the Web
- Do not expect full AT and tools support until 2012/13



## *Accessibility Test Tools*

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- Open Ajax Alliance to start on HTML 5 accessibility rules 2<sup>nd</sup> half 2012
- Test tools require browser plugins for dynamic content



## *Demo – Firefox HTML5 Demo*

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*Questions?*

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