The HTML5 Experience

Where it's at?

Steve Faulkner
the paciello group

HTML has got bigger

the web platform: a sprawling mass

Core platform
- HTML ⓦ ⓣ
- CSS ⓦ ⓣ
- DOM ⓣ
- JavaScript ⓣ

Graphics and typography
- SVG ⓦ
- Canvas ⓦ ⓣ ⓣ
- WebGL ⓦ
- WOFF ⓦ
- MathML ⓦ ⓜ

Media
- Audio Processing API
- WebVTT
- Media Fragments

Storage
- Indexed Database ⓦ ⓣ
- Offline Web applications ⓦ ⓣ ⓣ
- Web Storage ⓦ ⓜ ⓣ

Files
- File ⓦ ⓜ ⓣ
- Blob URLs ⓦ ⓜ
- BlobBuilder ⓦ ⓜ
- File Reader ⓦ ⓜ ⓣ
- File System ⓦ
- File Writer ⓦ

Real-time communication
- Web Real-Time Communication
- WebSocket protocol WebSocket API ⓦ ⓣ
- Server-Sent Events ⓦ ⓣ
- XMLHttpRequest ⓦ ⓜ ⓣ ⓣ
- Progress Events ⓣ

Platform interaction, events, messaging
- Geolocation ⓦ ⓣ
- DeviceOrientation ⓦ ⓣ
- DOM Events ⓣ
- Touch Events ⓦ ⓣ
- Pointer Lock ⓜ
- Gamepad ⓜ
- Fullscreen ⓦ ⓜ
- getUserMedia ⓦ
- Battery Status ⓜ
- Web Notifications ⓦ
- Web Messaging ⓦ ⓜ
- Vibration
- HTML Media Capture
- Clipboard API and events

Performance optimization and analysis
- Web Workers ⓦ ⓜ ⓣ
- Shared Workers ⓦ
- Navigation Timing ⓦ ⓜ ⓣ ⓣ
- Timing control for script-based animations ⓦ
- Page Visibility ⓣ
- Resource Timing User Timing
- Performance Timeline

Security and privacy
- Cross-Origin Resource Sharing ⓦ ⓣ ⓣ
- Content Security Policy ⓣ
- The From-Origin Header
- DOMCrypt
- window.crypto.getRandomValues

Other core-platform bonus features
- Selectors API ⓦ ⓣ
- matches(*selector*) method ⓦ
- data URLs ⓦ ⓣ
- JSON parsing ⓦ ⓜ
- Structured clones ⓜ ⓣ
- Transferable objects ⓜ
- Mutation observers
- Typed Array ⓦ ⓜ
- URL API
- DOM Parsing and Serialization
- DOM XPath
- XML XPath XSLT xml-stylesheet

Foundations
- HTTP URLs
- TLS X.509
- Cookies
- Unicode
- Origin
- MIME Sniffing
- Encoding

Various other
- WebIDL ⓣ
- Link header
- Content-Disposition header
- XML Base XML Namespaces

HTML5 bonus

HTML bonus features

ARIA
Microdata DOM API
classList (DOMTokenList)
dataset
async for scripts
defer for scripts
Session-history management
hashchange
Sandboxed iframe
Drag and drop
contentEditable
HTML Editing APIs
UndoManager and DOM Transaction

ARIA - it's in

- Use of ARIA in HTML is defined in HTML5

Section 3.2.7 WAI-ARIA

Validating ARIA in HTML5?

Like HTML5 itself
It's a work in Progress

Nu Markup Validation Service

http://validator.w3.org/nu/

Using nu validator to test

WCAG 2.0 4.1.1 Parsing

4.1.1 Parsing: In content implemented using markup languages, elements have complete start and end tags, elements are nested according to their specifications, elements do not contain duplicate attributes, and any IDs are unique, except where the specifications allow these features. (Level A)

Note: Start and end tags that are missing a critical character in their formation, such as a closing angle bracket or a mismatched attribute value quotation mark are not complete.

How to:

1. validate page using Nu service
2. run the WCAG parse error bookmarklet.

WCAG 2.0 parsing error bookmarklet

HTML5 > ARIA
strong and implied semantics

Language feature	Strong native semantics and default implied ARIA semantics
`area` element that creates a hyperlink	`link` role
`base` element	No role
`datalist` element	`listbox` role, with the `aria-multiselectable` property set to "false"
`details` element	`aria-expanded` state set to "true" if the element's `open` attribute is present, and set to "false" otherwise
`head` element	No role
`hgroup` element	`heading` role, with the `aria-level` property set to the element's outline depth
`hr` element	`separator` role
`html` element	No role
`img` element whose `alt` attribute's value is empty	`presentation` role
`input` element with a `type` attribute in the Checkbox state	`aria-checked` state set to "mixed" if the element's `indeterminate` IDL attribute is true, or "true" if the element's checkedness is true, or "false" otherwise

duplicate role information

Implied roles only need to be applied to HTML elements with native semantics in very limited circumstances:

DON'T DO THIS

```
<button role="button">search</button>
```

OR THIS

```
<a href="poot.html" role="link">poot</a>
```

HTML5 > ARIA
default semantics and restrictions

Language feature	Default implied ARIA semantic	Restrictions
a element that creates a hyperlink	link role	Role must be either link, button, checkbox, menuitem, menuitemcheckbox, menuitemradio, tab, or treeitem
address element	No role	If specified, role must be contentinfo
article element	article role	Role must be either article, document, application, or main
aside element	note role	Role must be either note, complementary, or search
audio element	No role	If specified, role must be application
button element	button role	Role must be either button, link, menuitem, menuitemcheckbox, menuitemradio, radio
details element	group role	Role must be a role that supports aria-expanded

HTML5 elements with no role restrictions

Anything not listed in the tables.

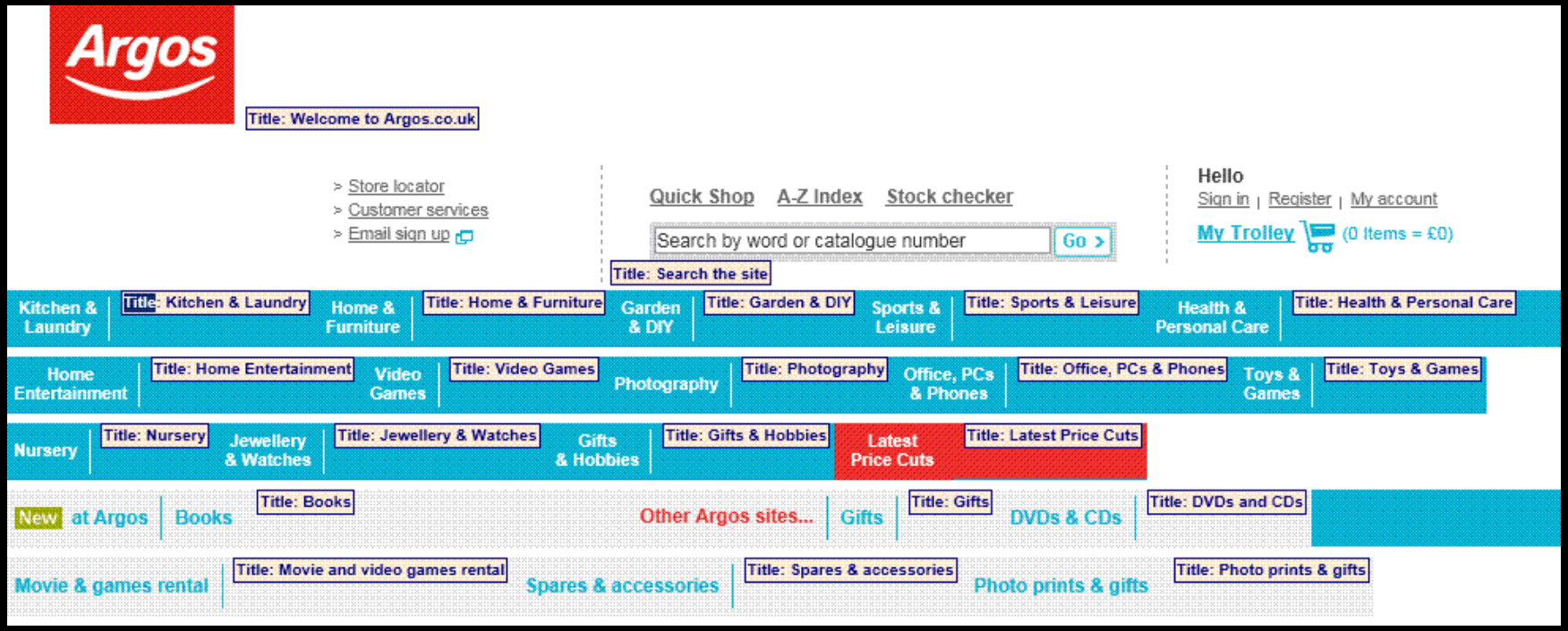
4.6 Text-level semantics

4.5 Grouping content

 <p>

title attribute and reality

Often misused:



[title attribute use and abuse examples]

User groups not well served by use of the title attribute

- **Mobile phone users**
  - title attribute content is not displayed on mobile phone browsers or touch based interfaces.
- Keyboard only users
  - keyboard users can neither access title attribute content or are aware that it is there.
- Screen magnifier users
  - The style of tooltips containing title attribute content cannot be modified by authors so that it readable by screen magnifier users. This results in in title attribute content being obscured and unreadable if it is more than a few words long.
- Screen reader users
  - there is no semantic differentiation between content provided by the title attribute and content provided by the alt attribute on images.
- Users with fine motor skill impairments
  - placing the mouse over a link or a button to view a tooltip can be difficult.
- Users with cognitive impairments
  - Typically tooltips only appear for a short duration < 5 seconds, some users are unable to read the text in a tooltip in such a short time.

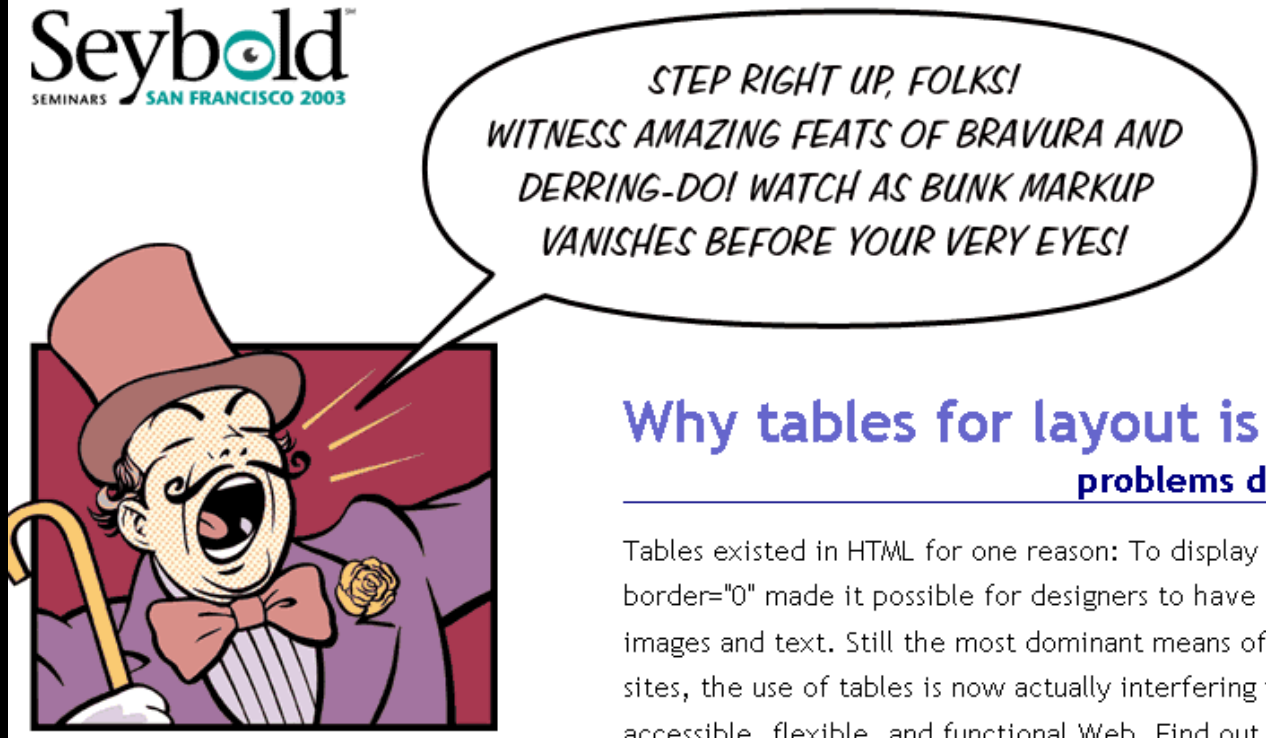
HTML5 title attribute advice & requirements

- Must not be used in place of an alt attribute on an image
- Must not be used to provide captions
- Should not be used to provide footnotes
- May be used to provide an accessible name (label) for a form control when a visible label is otherwise available

```
<input type=text title="search">
<button>search</button>
```

developers are stupid?

Seybold SEMINARS SAN FRANCISCO 2003



Bill Merikallio ; Scott Design, Inc.
Adam Pratt ; Adobe Systems Incorporated

International Versions

We're going global! If English isn't your native

Why tables for layout is stupid:

problems defined, solutions offered

Tables existed in HTML for one reason: To display tabular data. But then border="0" made it possible for designers to have a grid upon which to lay out images and text. Still the most dominant means of designing visually rich Web sites, the use of tables is now actually interfering with building a better, more accessible, flexible, and functional Web. Find out where the problems stem from, and learn solutions to create transitional or completely table-less layout.

next >

Who finds the thought of layout tables distasteful?

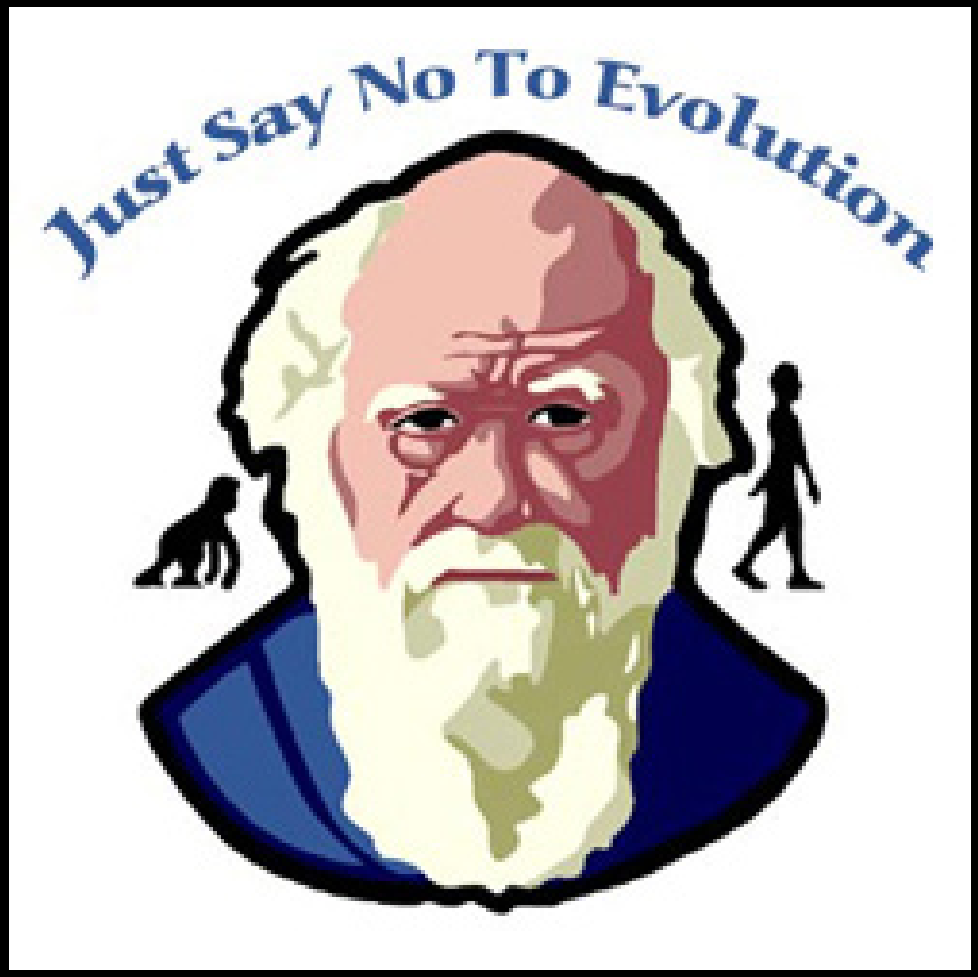
Why tables for layout is stupid

circa 2003

HTML living standard

"Tables **must not** be used as layout aids. Historically, some Web authors have misused tables in HTML as a way to control their page layout. This usage is non-conforming, because tools attempting to extract tabular data from such documents would obtain very confusing results. In particular, users of accessibility tools like screen readers are likely to find it very difficult to navigate pages with tables used for layout."

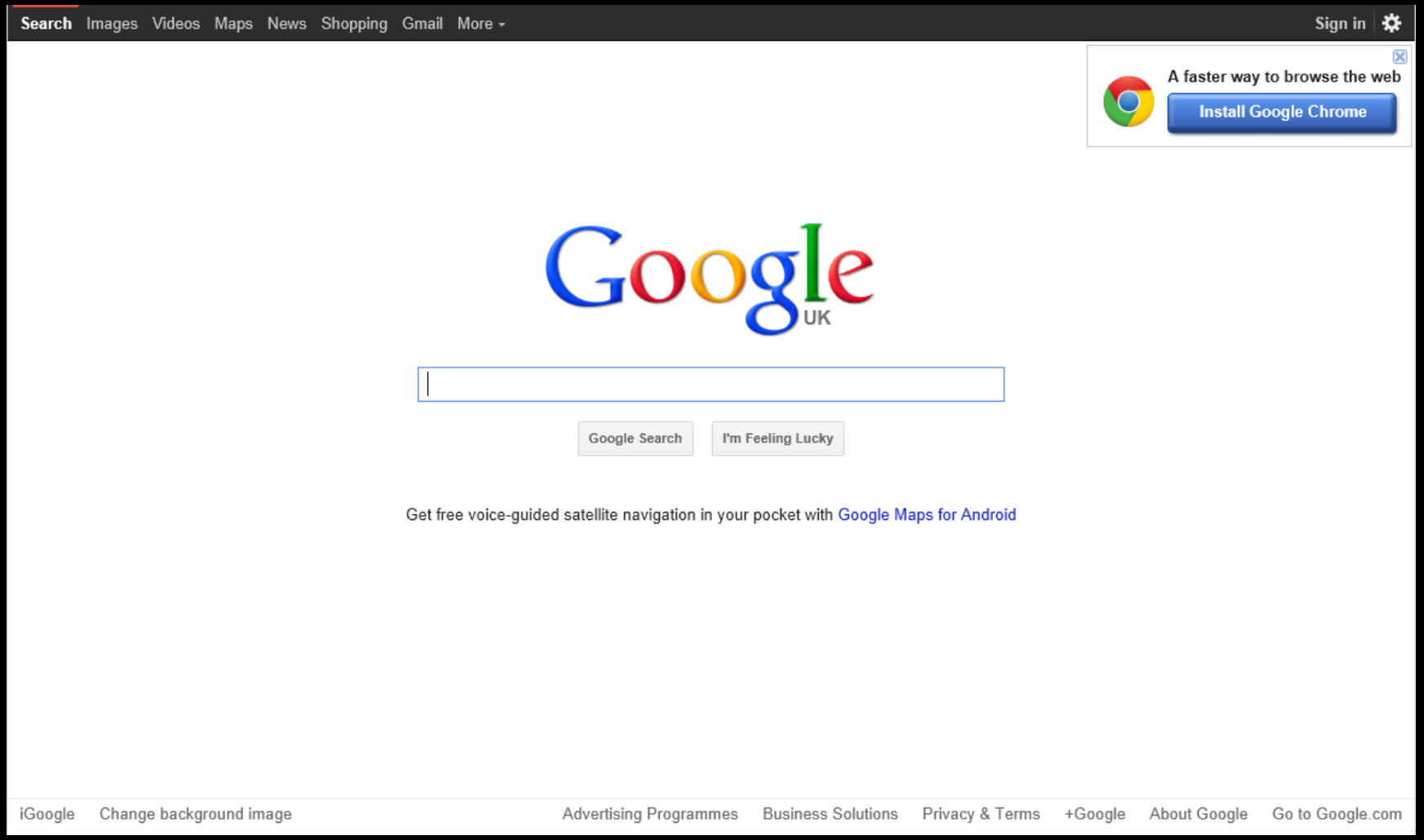
Just Say No - does not work



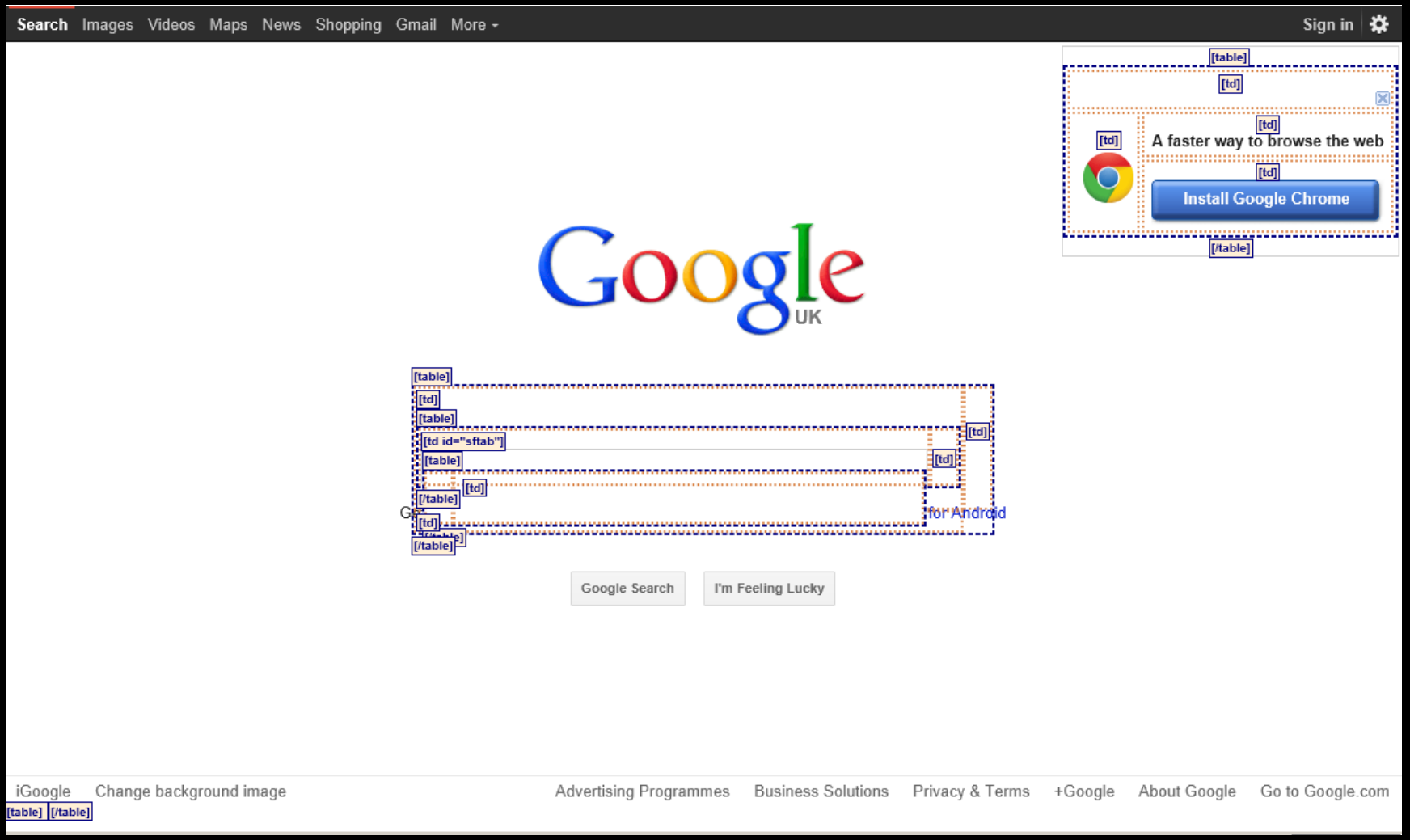
HTML5 specification

"Tables **should not** be used as layout aids. Historically, many Web authors have tables in HTML as a way to control their page layout making it difficult to extract tabular data from such documents. In particular, users of accessibility tools, like screen readers, are likely to find it very difficult to navigate pages with tables used for layout. **If a table is to be used for layout it must be marked with the attribute role="presentation**" for a user agent to properly represent the table to an assistive technology and to properly convey the intent of the author to tools that wish to extract tabular data from the document."

Google search circa NOW!



layout tables...



example code display

current table code

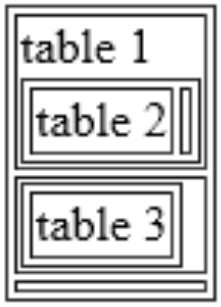
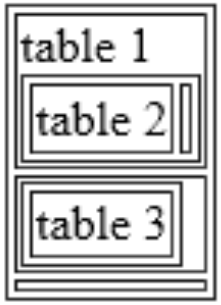
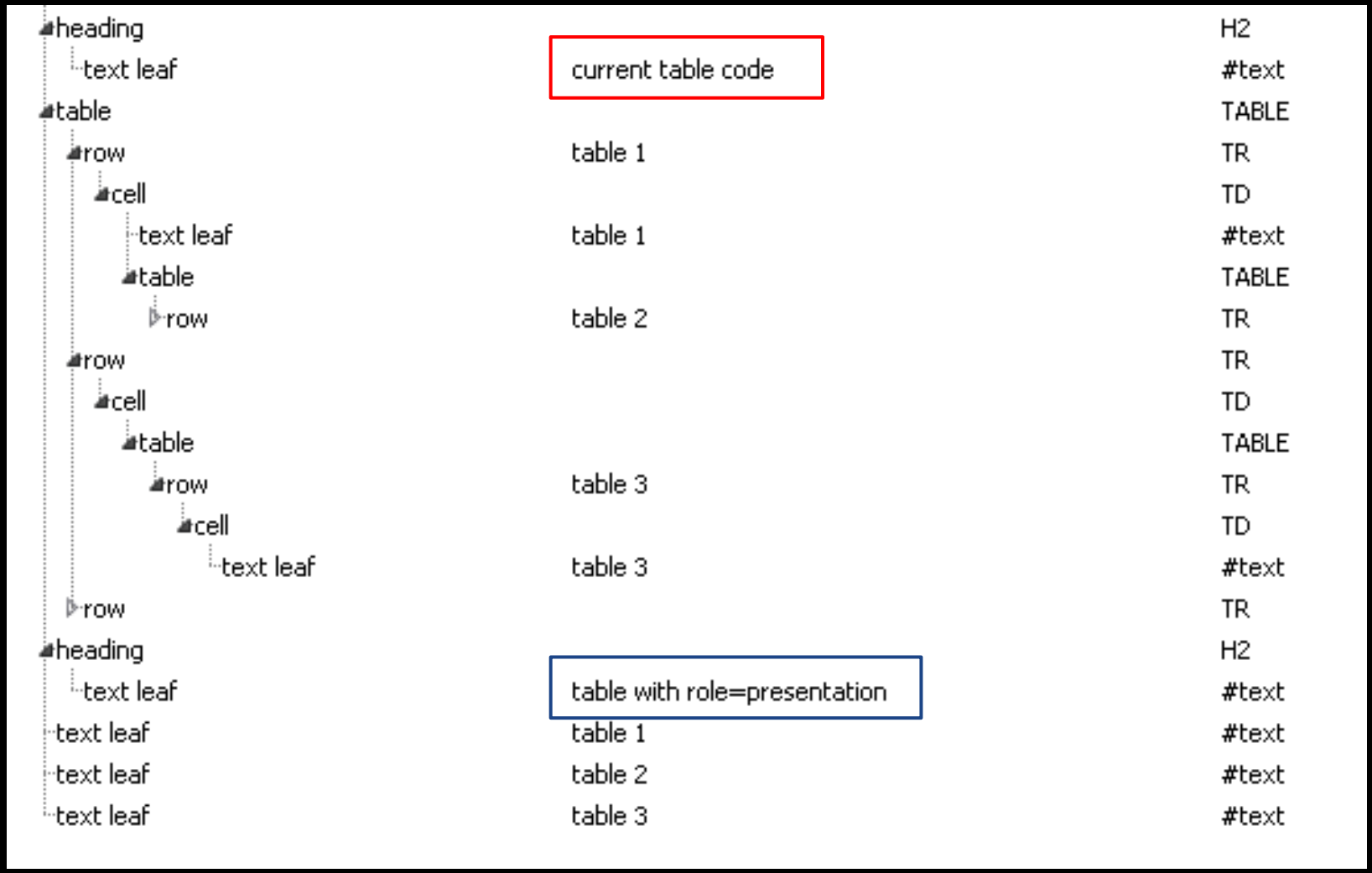


table with role=presentation



example code accessibility tree

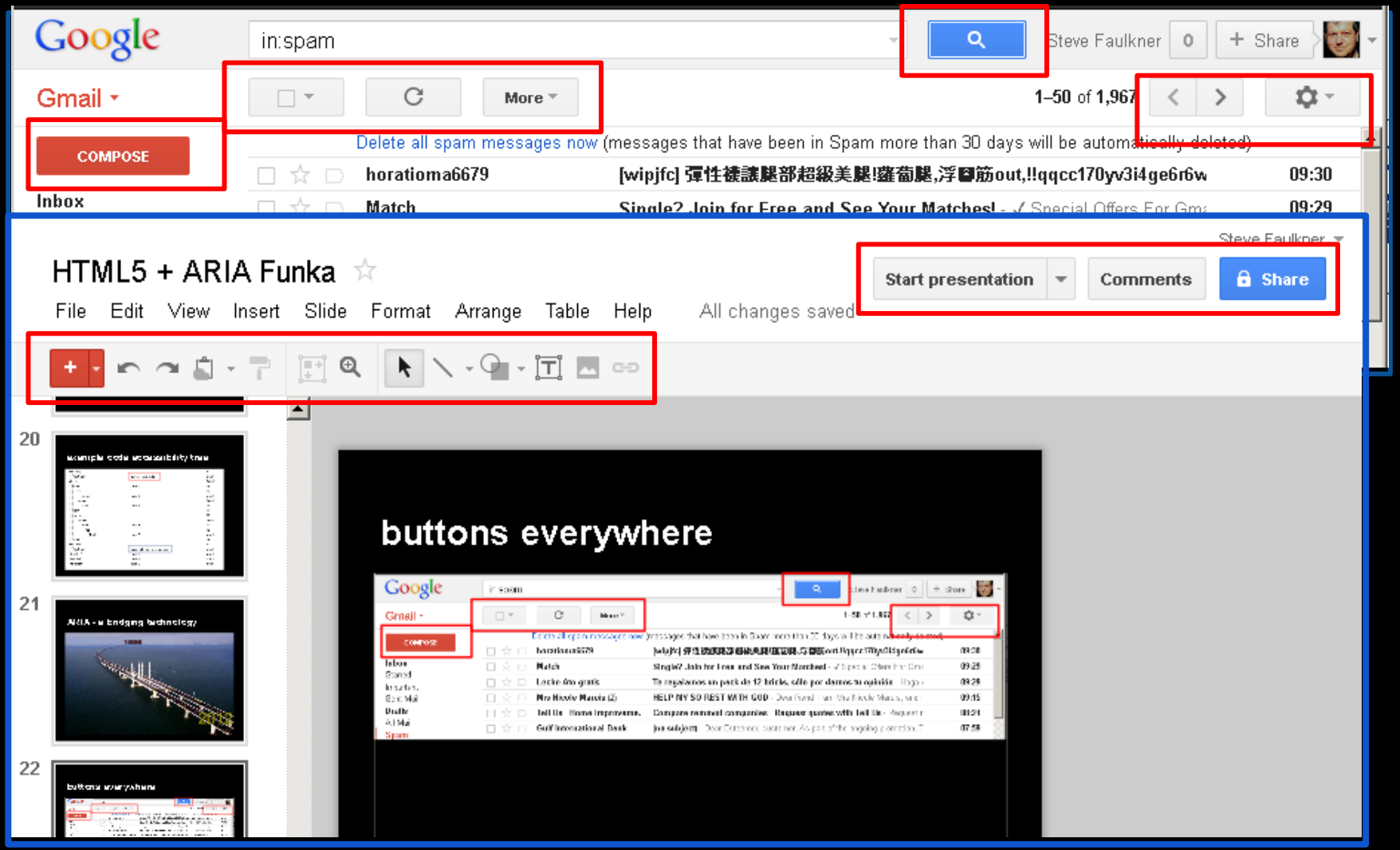


the difference...

<table **role="presentation"**>

ARIA - a bridging technology

buttons everywhere



2012

```
<div tabindex="0" role="button" act="20" class="T-I
  J-J5-Ji nu T-I-ax7 L3" style="-moz-user-select:
none;" aria-label="Refresh" data-tooltip="Refresh">
 <div class="asa"><span class="J-J5-Ji ask"> 
                    </span>
        <div class="asf T-I-J3 J-J5-Ji"></div>
                    </div>
                    </div>
```

roles infer behaviour

If you use a widget role ensure to add the associated interaction behaviours:

search

- With focus on the button, pressing Space or Enter keys executes the action for that button.
  - If the button activation closes the containing entity or launches another entity, then focus moves to the newly opened entity.
  - If the button activation does not close or dismiss the containing entity, then focus remains on the button.

roles infer behaviour

better yet, use a button:

```
<button onclick="doIt()>search</button>
```

- HTML5 Accessibility Chops: Just use a (native HTML) button
- WAI-ARIA 1.0 Authoring Practices - design patterns

new elements in HTML5

article
aside
audio
canvas
command
datalist
details
figcaption
figure
footer
header
hgroup
keygen
color input
Date input
Date and Time input
Local Date and Time input
E-mail input
Month input
Number input
Range input
Search input
Telephone input
Time input
URL input
Week input
mark
menu > context menu
menu> list
menu > toolbar
meter
nav
output
progress
section
source
summary
time
track
video

HTML5Accessibility.com

Use and support NVDA the open source screen reader for Windows.

HTML5accessibility.com developed by TPG *your accessibility partner.* Contact us for solutions to your accessibility issues.

A work in progress: February 2012

Also on this site: HTML5 accessibility support work arounds. **Elsewhere:** French version: L'accessibilité d'HTML5 Italian version: Accessibilità di HTML5 HTML5 Accessibility Chops HTML5: Techniques for providing useful text alternatives - developer edition

Windows Browsers Summary - Firefox has the best HTML5 Accessibility Support Score

HTML5 Accessibility Support Score

24/100 92/100 22/100 18/100 18/100

matching features to semantics

<figure>

alt="The castle lies in ruins, the original tower all that remains in one piece."

<figcaption>Film photograph. ****Séraphin Médéric Mieusement ****, 1936.**</figcaption>**

</figure>

HTML5 Accessibility Chops: the figure and figcaption elements
HTML5 Accessibility Chops: using nested figure elements
HTML5 semantics and accessibility

figure Accessibility API mapping

HTML4	no
HTML5	yes
WAI-ARIA	none
MSAA	ROLE_SYSTEM_GROUPING
MSAA + UIA Express	se UIA or MSAA guidance
UIA	Group ??discuss graphic/image vs. group??
IAccessible2	ROLE_SYSTEM_GROUPING Object attribute role="figure" **note:** accessible name from child figcaption
AT-SPI	?
AX AXRole AXSubrole AXRoleDescription	?

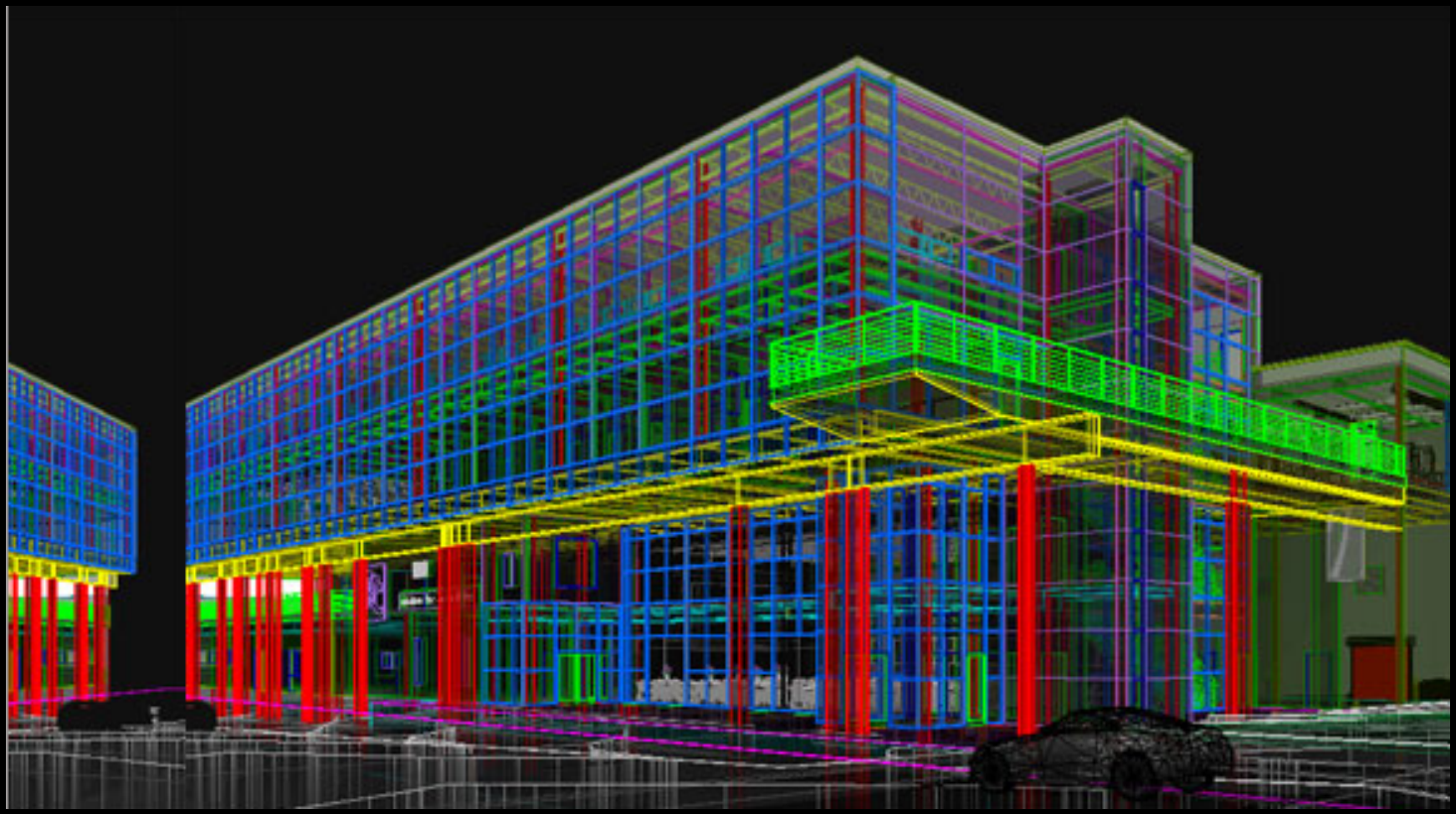
HTML to Platform Accessibility APIs Implementation Guide

figcaption Accessibility API mapping

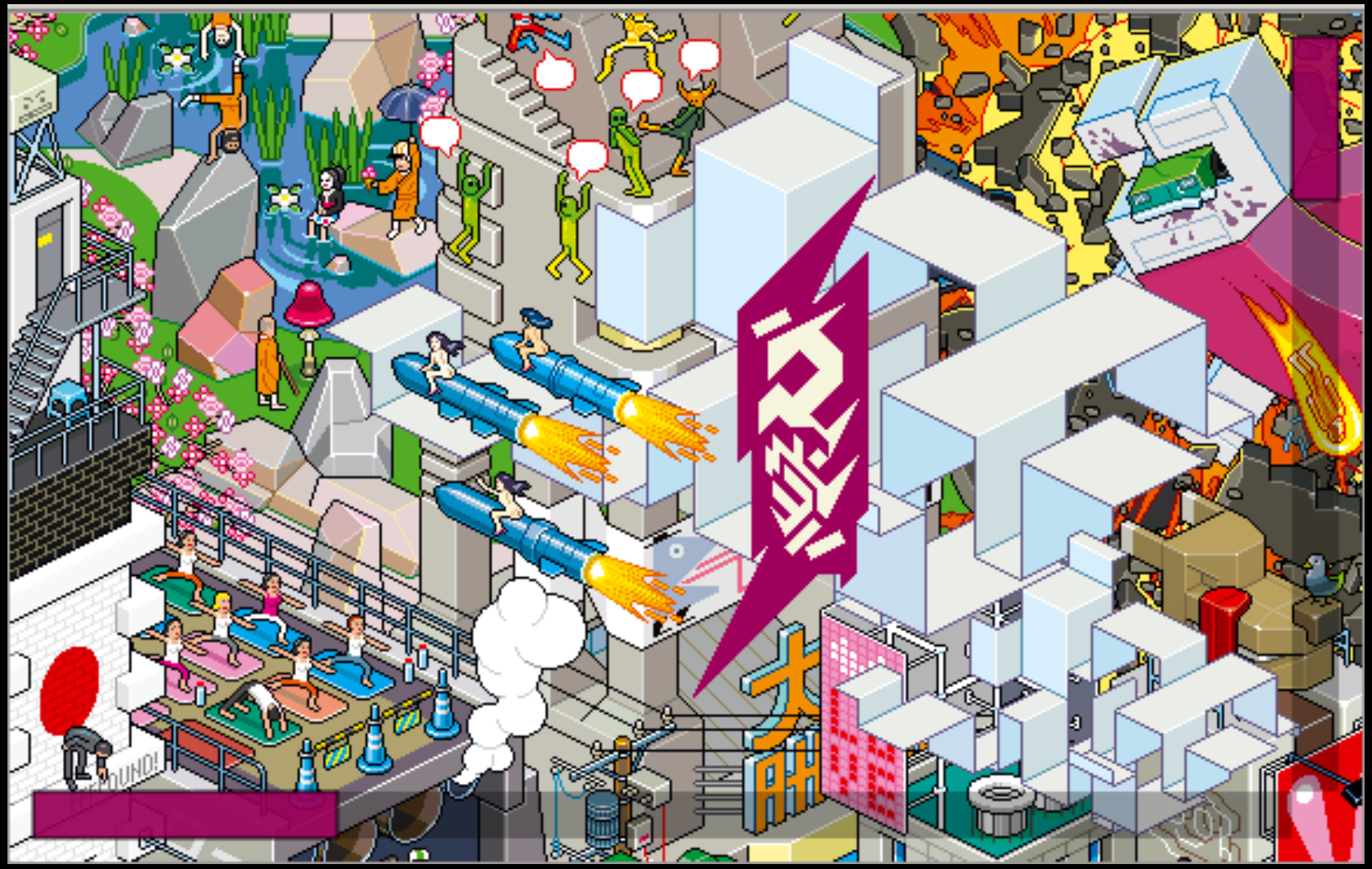
HTML4	no
HTML5	yes
WAI-ARIA	none
MSAA	ROLE_SYSTEM_ TEXT
MSAA + UIA Express	se UIA or MSAA guidance
UIA	Text
IAccessible2	IA2_ROLE_CAPTION Object attribute role="figcaption"
AT-SPI	ROLE_CAPTION
AX AXRole AXSubrole AXRoleDescription	AXGroup (null) group

HTML to Platform Accessibility APIs Implementation Guide

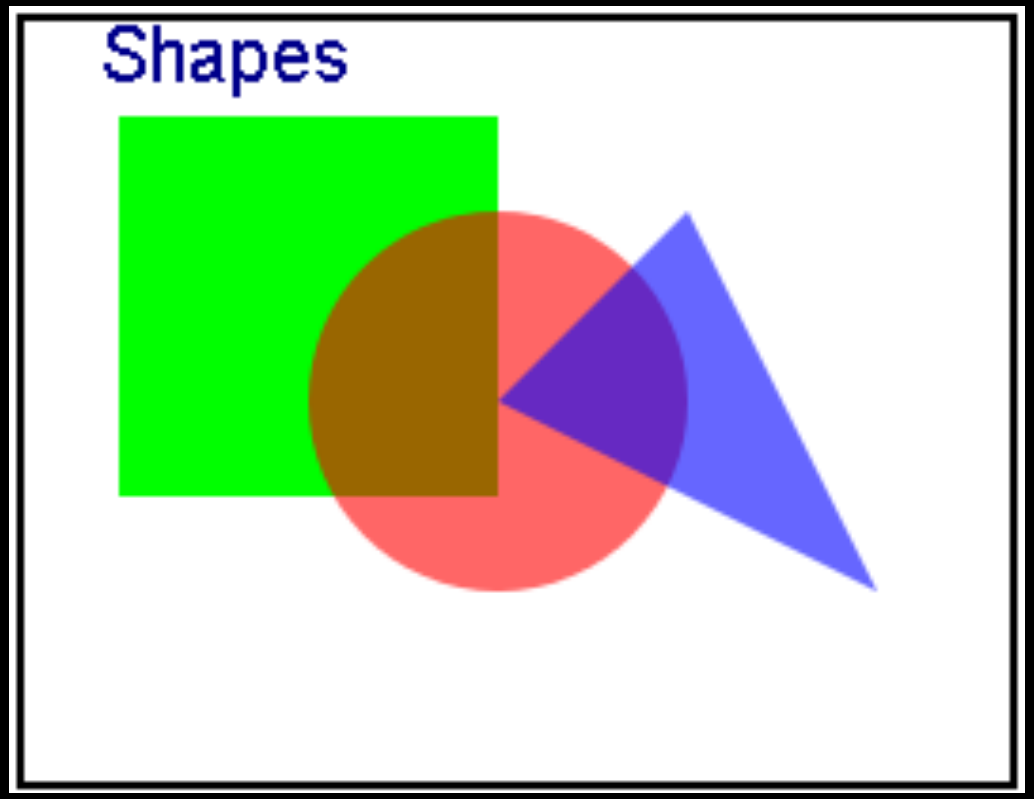
HTML5 canvas: interactivity



HTML5 canvas: UI controls

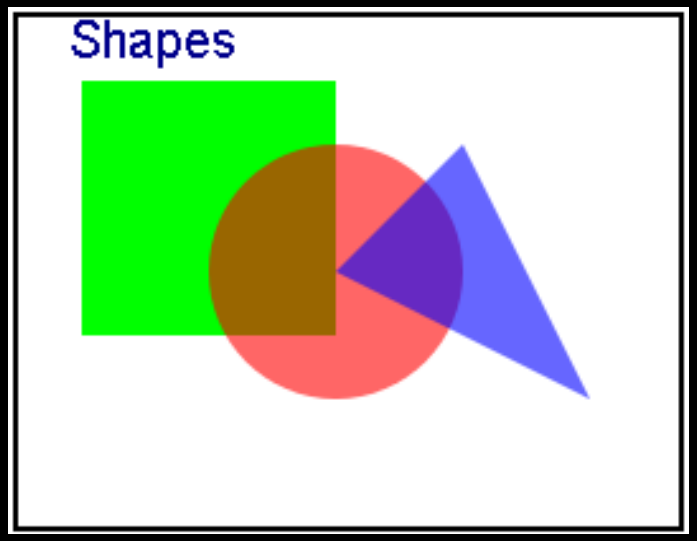


HTML5 canvas: simple example



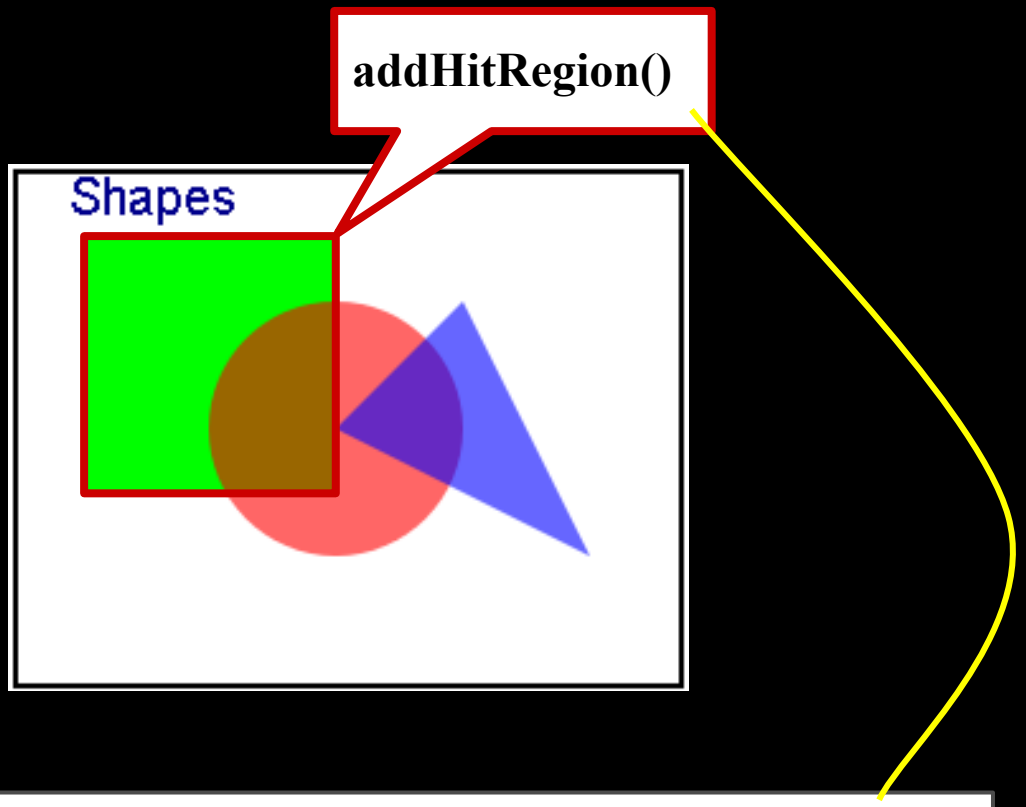
HTML5 canvas: issues

1. focus
2. visible focus
3. semantics
    a. role
    b. state
    c. property
4. text



HTML5 canvas: solutions

1. focus
2. semantics
   a. role
   b. state
   c. property
   d. text




```
<canvas>
<a href="http://en.wikipedia.org/wiki/Square">square</a>
</canvas>
```

thank you

- http://twitter.com/stevefaulkner
- http://paciellogroup.com/blog
- http://html5accessibility.com
- sfaulkner@paciellogroup.com