



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 ^W ^T

CSS ^W ^T

DOM ^T

JavaScript ^T

Graphics and typography

SVG ^W

Canvas ^W ^T ^T

WebGL ^W

WOFF ^W

MathML ^W ^M

Media

Audio Processing API

WebVTT

Media Fragments

Storage

Indexed Database ^W ^T

Offline Web applications ^W ^T ^T

Web Storage ^W ^M ^T

Files

File ^W ^M ^T

Blob URLs ^W ^M

BlobBuilder ^W ^M

File Reader ^W ^M ^T

File System ^W

File Writer ^W

Real-time communication

Web Real-Time Communication

WebSocket protocol WebSocket

API ^W ^T

Server-Sent Events ^W ^T

XMLHttpRequest ^W ^M ^T ^T

Progress Events ^T

Platform interaction, events, messaging

Geolocation ^W ^T

DeviceOrientation ^W ^T

DOM Events ^T

Touch Events ^W ^T

Pointer Lock ^M

Gamepad ^M

Fullscreen ^W ^M

getUserMedia ^W

Battery Status ^M

Web Notifications ^W

Web Messaging ^W ^M

Vibration

HTML Media Capture

Clipboard API and events

Performance optimization and analysis

Web Workers ^W ^M ^T

Shared Workers ^W

Navigation Timing ^W ^M ^T ^T

Timing control for script-based

animations ^W

Page Visibility ^T

Resource Timing User Timing

Performance Timeline

Security and privacy

Cross-Origin Resource Sharing ^W ^T ^T

Content Security Policy ^T

The From-Origin Header

DOMCrypt

window.crypto.getRandomValues

Other core-platform bonus features

Selectors API ^W ^T

matches(*selector*) method ^W

data URLs ^W ^T

JSON parsing ^W ^M

Structured clones ^M ^T

Transferable objects ^M

Mutation observers

Typed Array ^W ^M

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 ^T

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

W3C®

nu



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	<code>link</code> role	Role must be either <code>link</code> , <code>button</code> , <code>checkbox</code> , <code>menuitem</code> , <code>menuitemcheckbox</code> , <code>menuitemradio</code> , <code>tab</code> , or <code>treeitem</code>
address element	<code>No role</code>	If specified, role must be <code>contentinfo</code>
article element	<code>article</code> role	Role must be either <code>article</code> , <code>document</code> , <code>application</code> , or <code>main</code>
aside element	<code>note</code> role	Role must be either <code>note</code> , <code>complementary</code> , or <code>search</code>
audio element	<code>No role</code>	If specified, role must be <code>application</code>
button element	<code>button</code> role	Role must be either <code>button</code> , <code>link</code> , <code>menuitem</code> , <code>menuitemcheckbox</code> , <code>menuitemradio</code> , <code>radio</code>
details element	<code>group</code> role	Role must be a role that supports <code>aria-expanded</code>

HTML5 elements with no role restrictions

Anything not listed in the tables.

4.6 Text-level semantics

`` ``

4.5 Grouping content

`<div>` `<p>`

title attribute and reality

Often misused:

The screenshot shows the Argos website homepage with various navigation elements. The Argos logo is in the top left. Below it, a search bar and navigation links are visible. The main navigation bar is divided into several sections, each with a title attribute. The sections are:

- Kitchen & Laundry** (Title: Kitchen & Laundry)
- Home & Furniture** (Title: Home & Furniture)
- Garden & DIY** (Title: Garden & DIY)
- Sports & Leisure** (Title: Sports & Leisure)
- Health & Personal Care** (Title: Health & Personal Care)
- Home Entertainment** (Title: Home Entertainment)
- Video Games** (Title: Video Games)
- Photography** (Title: Photography)
- Office, PCs & Phones** (Title: Office, PCs & Phones)
- Toys & Games** (Title: Toys & Games)
- Nursery** (Title: Nursery)
- Jewellery & Watches** (Title: Jewellery & Watches)
- Gifts & Hobbies** (Title: Gifts & Hobbies)
- Latest Price Cuts** (Title: Latest Price Cuts)
- Books** (Title: Books)
- Other Argos sites...**
- Gifts** (Title: Gifts)
- DVDs & CDs** (Title: DVDs and CDs)
- Movie & games rental** (Title: Movie and video games rental)
- Spares & accessories** (Title: Spares & accessories)
- Photo prints & gifts** (Title: Photo prints & gifts)

The 'Latest Price Cuts' section is highlighted in red. The 'New at Argos' link is highlighted in yellow. The 'My Trolley' link is highlighted in blue. The 'Search the site' button is highlighted in blue. The 'Go >' button is highlighted in blue. The 'Sign in', 'Register', and 'My account' links are highlighted in blue. The 'Email sign up' link is highlighted in blue. The 'Store locator', 'Customer services', and 'Quick Shop' links are highlighted in blue. The 'A-Z Index' and 'Stock checker' links are highlighted in blue. The 'Hello' link is highlighted in blue. The 'Sign in', 'Register', and 'My account' links are highlighted in blue. The 'My Trolley' link is highlighted in blue. The '0 Items = £0' text is highlighted in blue.

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



*STEP RIGHT UP, FOLKS!
WITNESS AMAZING FEATS OF BRAVURA AND
DERRING-DO! WATCH AS BUNK MARKUP
VANISHES BEFORE YOUR VERY EYES!*

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.

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

[International Versions](#)

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

next >

Who finds the thought of layout tables distasteful?



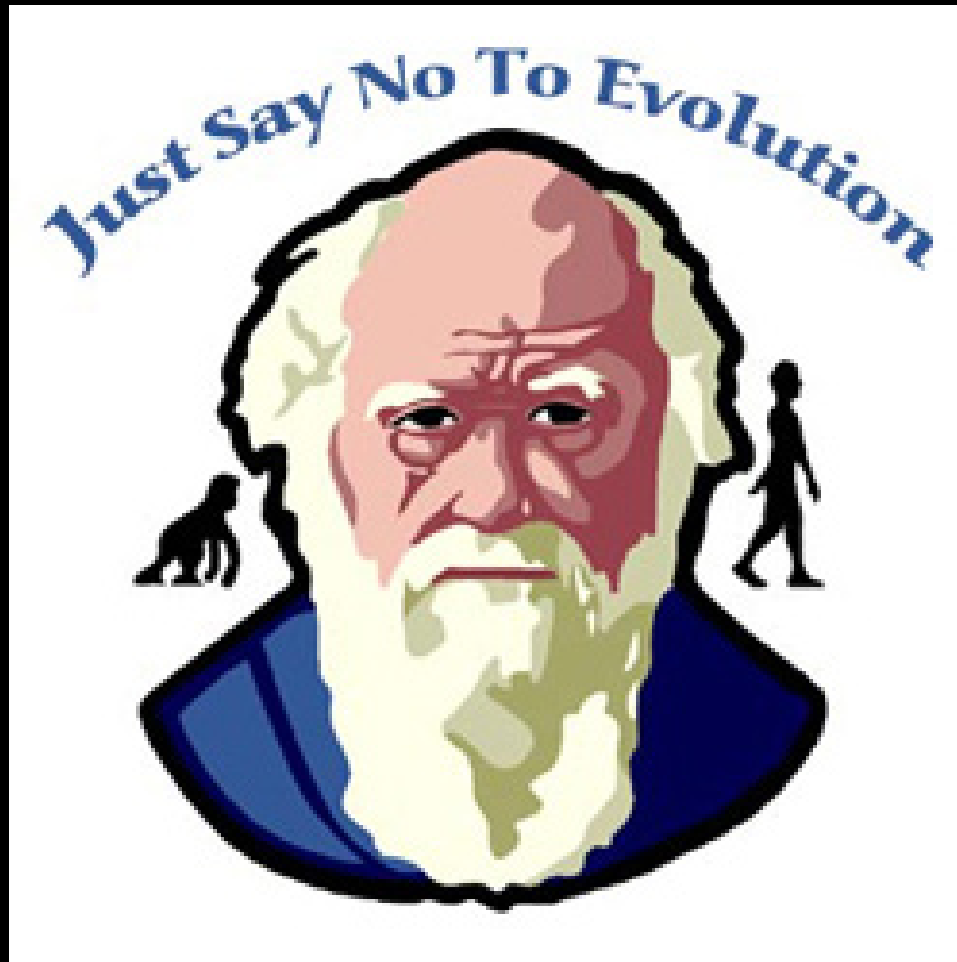
Why tables for layout is stupid

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!**

Search Images Videos Maps News Shopping Gmail More ▾ Sign in ⚙

A faster way to browse the web
 [Install Google Chrome](#)



[Google Search](#) [I'm Feeling Lucky](#)

Get free voice-guided satellite navigation in your pocket with [Google Maps for Android](#)

iGoogle [Change background image](#) [Advertising Programmes](#) [Business Solutions](#) [Privacy & Terms](#) [+Google](#) [About Google](#) [Go to Google.com](#)

layout tables...

Search Images Videos Maps News Shopping Gmail More ▾ Sign in ⚙

The image shows the Google UK homepage with several layout tables overlaid on it. The largest table is a 2x2 grid that encloses the search bar and the 'Google Search' and 'I'm Feeling Lucky' buttons. A smaller table is overlaid on the Chrome advertisement in the top right corner, containing the Chrome logo, the text 'A faster way to browse the web', and the 'Install Google Chrome' button. The text 'Google' and 'UK' are visible in the center of the page. The footer contains links for 'iGoogle', 'Change background image', 'Advertising Programmes', 'Business Solutions', 'Privacy & Terms', '+Google', 'About Google', and 'Go to Google.com'.

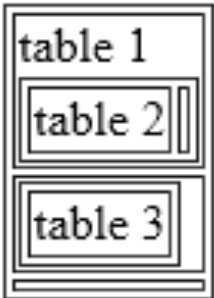
Google UK

Google Search I'm Feeling Lucky

iGoogle Change background image Advertising Programmes Business Solutions Privacy & Terms +Google About Google Go to Google.com

example code display

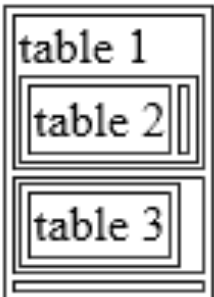
current table code



A diagram showing a table structure with three rows. The top row is labeled 'table 1'. The middle row is labeled 'table 2' and is enclosed in a double-line border. The bottom row is labeled 'table 3' and is also enclosed in a double-line border. The entire structure is enclosed in a double-line border.

table 1
table 2
table 3

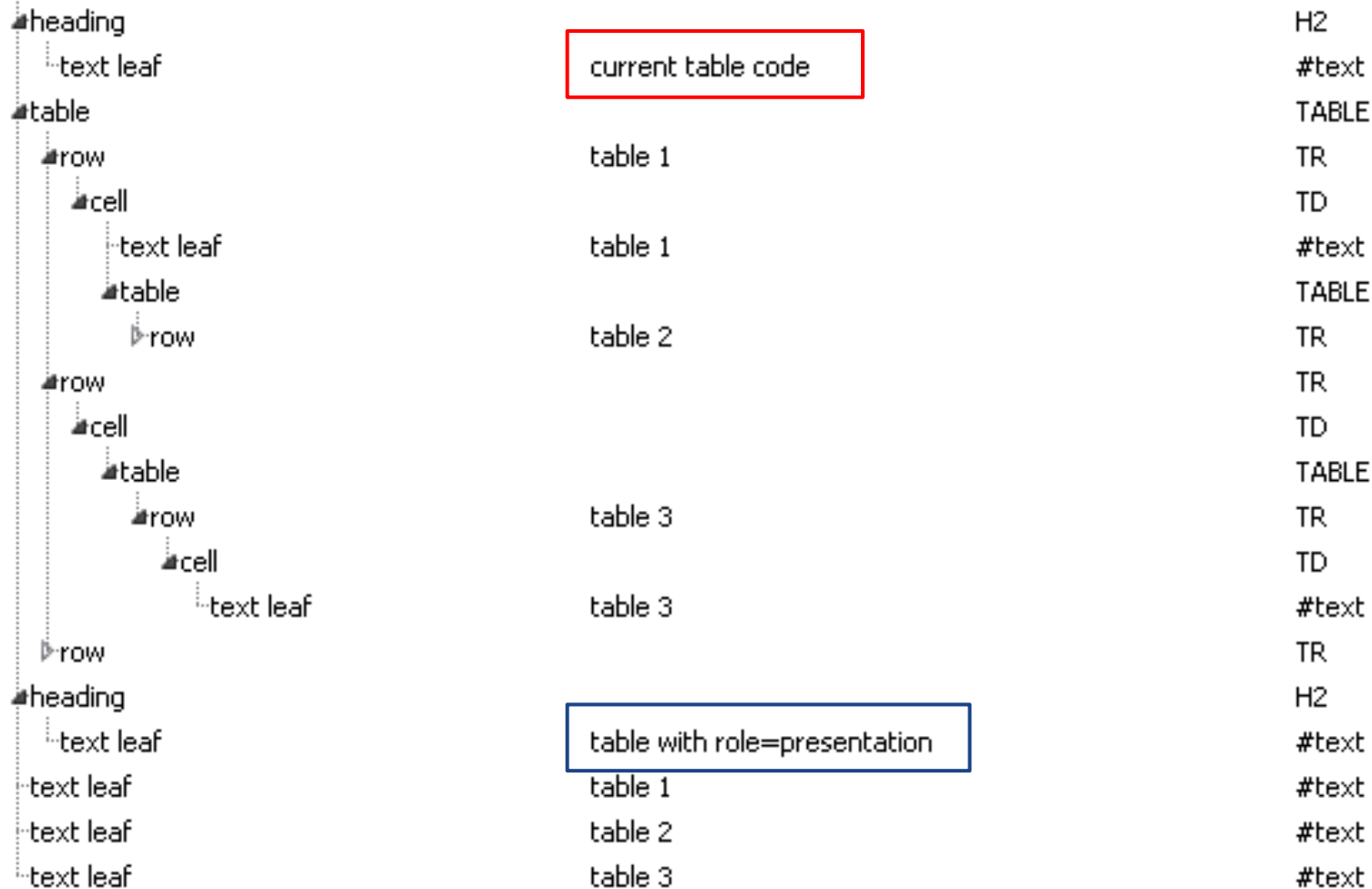
table with role=presentation



A diagram showing a table structure with three rows. The top row is labeled 'table 1'. The middle row is labeled 'table 2' and is enclosed in a double-line border. The bottom row is labeled 'table 3' and is also enclosed in a double-line border. The entire structure is enclosed in a double-line border.

table 1
table 2
table 3

example code accessibility tree



the difference...

```
<table role="presentation">
```

ARIA - a bridging technology



buttons everywhere

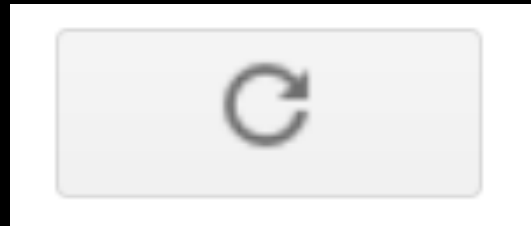
The image shows a presentation slide titled "HTML5 + ARIA Funka" by Steve Faulkner. The slide content is a screenshot of a Gmail interface with several buttons highlighted by red boxes:

- Search:** A blue search button with a magnifying glass icon in the top right of the Gmail header.
- Navigation:** A set of navigation buttons (back, forward, home, search) in the top right of the Gmail interface.
- Compose:** A red "COMPOSE" button in the top left of the Gmail interface.
- More:** A "More" button in the top center of the Gmail interface.
- Start presentation:** A button with a dropdown arrow in the top right of the presentation slide.
- Comments:** A button in the top right of the presentation slide.
- Share:** A blue "Share" button with a lock icon in the top right of the presentation slide.
- Toolbar:** A row of icons in the top left of the presentation slide, including a red "+" button, undo, redo, copy, paste, search, mouse cursor, eraser, lasso, text, image, and link icons.

The presentation slide also features a navigation pane on the left with the following thumbnails:

- 20: sample code accessibility tree
- 21: ARIA - a bridging technology
- 22: 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">&nbsp;
    </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:

```
<a href="#" onclick="doIt()" role=button>search</a>
```

- 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

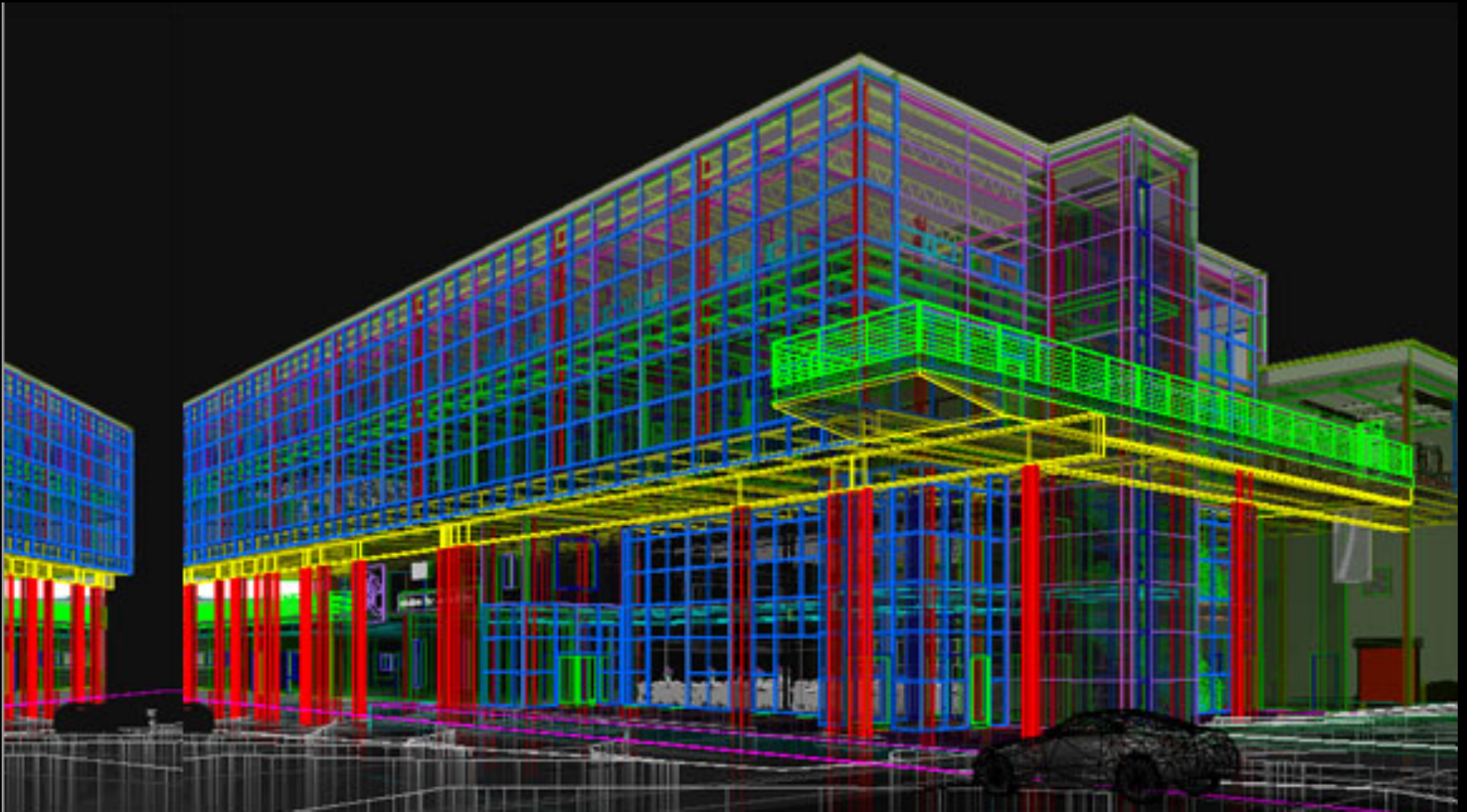
HTML4	no
HTML5	yes
WAI-ARIA	none
MSAA	ROLE_SYSTEM_GROUPING
MSAA + UIA Express	se UIA or MSAA guidance
UIA	Group ??discuss graphic/image vs. group??
IAccessible2	ROLE_SYSTEM_GROUPING Object attribute role="figure" note: accessible name from child figcaption
AT-SPI	?
AX AXRole AXSubrole AXRoleDescription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

figcaption Accessibility API mapping

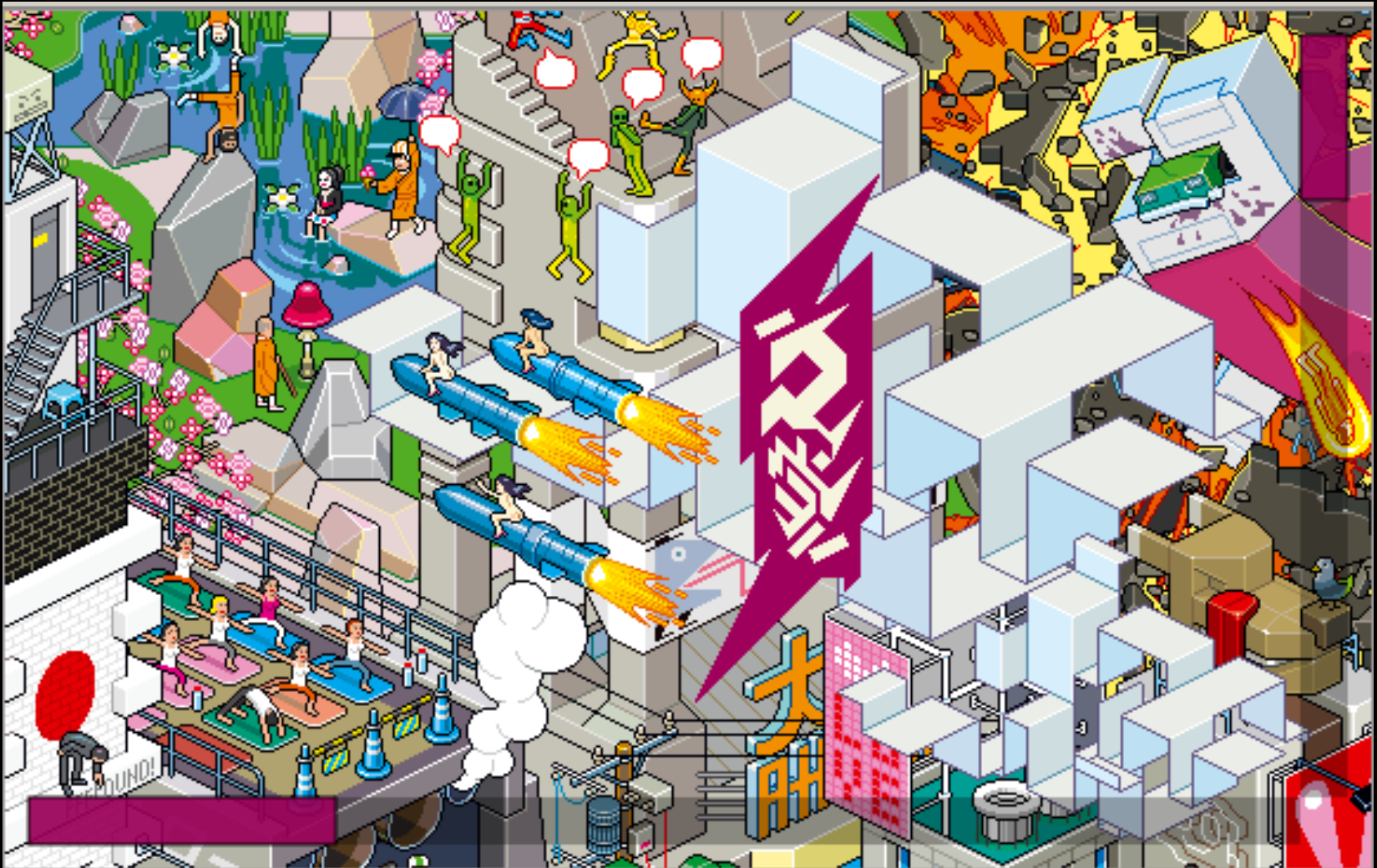
HTML4	no
HTML5	yes
WAI-ARIA	none
MSAA	ROLE_SYSTEM_TEXT
MSAA + UIA Express	se UIA or MSAA guidance
UIA	Text
IAccessible2	IA2_ROLE_CAPTION Object attribute role="figcaption"
AT-SPI	ROLE_CAPTION
AX AXRole AXSubrole AXRoleDescription	AXGroup (null) group

[HTML to Platform Accessibility APIs Implementation Guide](#)

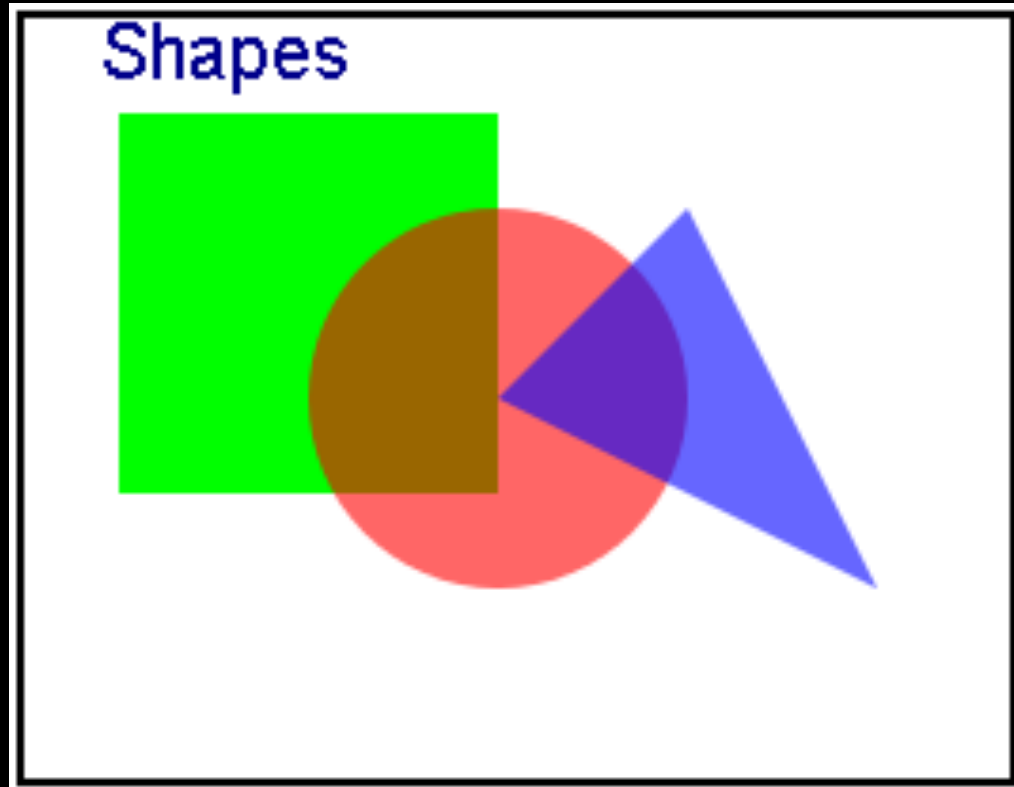
HTML5 canvas: interactivity



HTML5 canvas: UI controls

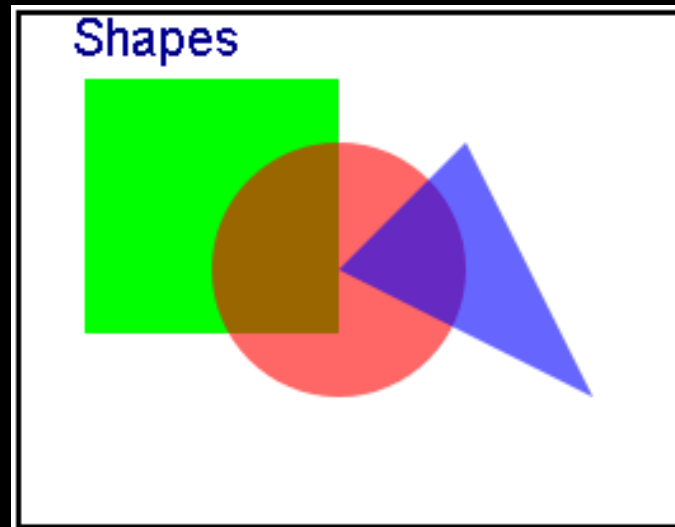


HTML5 canvas: simple example



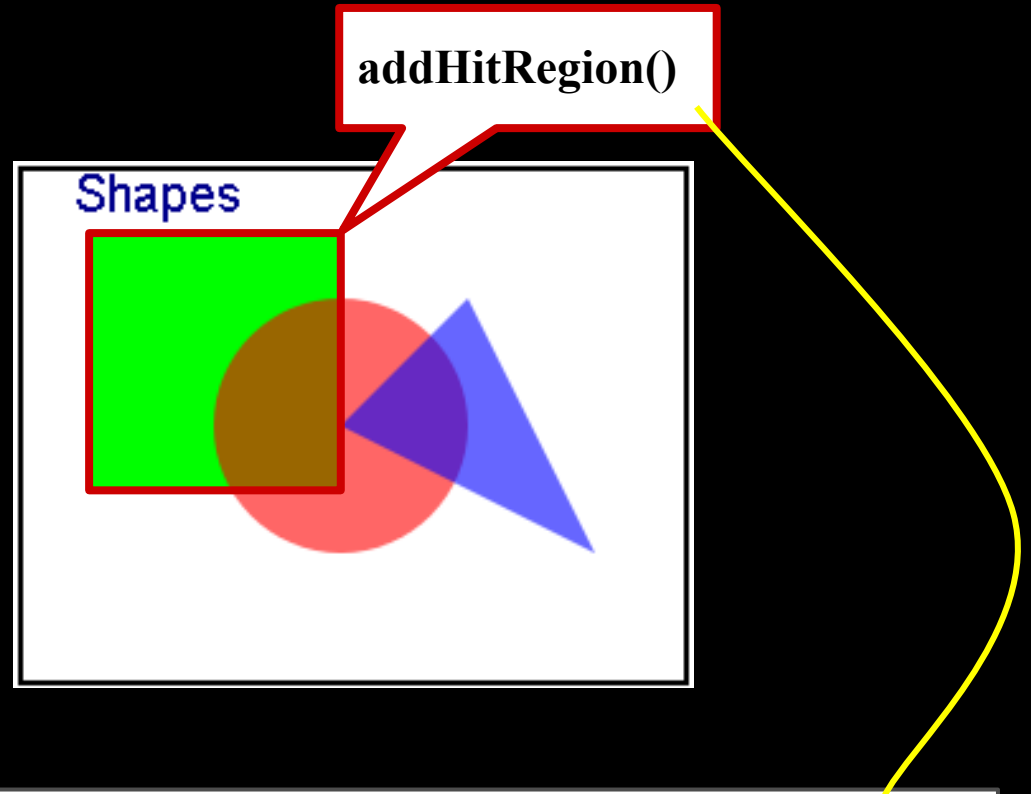
HTML5 canvas: issues

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

