

DRUPAL SPEAKS

AURAL USER INTERFACES AND HOW WE'RE MAKING DRUPAL 8 THE MOST ACCESSIBLE CMS IN THE WORLD

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ISN'T DRUPAL ACCESSIBLE ALREADY?

“As an inclusive community, we are committed to making sure that Drupal is an accessible tool for building websites that can also be accessed by people with disabilities.”

WE HAVE AN ACCESSIBILITY CHECKLIST

<http://drupal.org/node/465106>

- All non-text content has alternative text
- All data tables have headings
- Users can complete and submit all forms
- Links make sense out of context
- Media has captions and/or transcripts
- Non-HTML content is accessible
- Users can skip repetitive elements on the page
- Meaning is not conveyed through color alone
- Content is clearly written and easy to read
- JavaScript is accessible
- The site complies to standards

WE HAVE ACCESSIBILITY TAGS FOR ISSUES

+needs accessibility review

+needs color accessibility review

+a11y

ACCESSIBILITY PLEDGE

#D7AX

#D8AX

“I pledge to make this [module or theme] as accessible as it can be. If you find any flaws, please submit an issue [link to issue queue]. Help me fix them if you can.”

Accessibility tools and best practices

Accessibility pledge wiki

INTERFACES GIVE US ACCESS TO INFORMATION

INTERFACES ARE SENSUAL

- Visual
- Aural
- Tactile
- Every sense but taste and smell (so far)

INTERFACE \neq VISUAL

OH CRAP! SCREEN READERS! PUT IN ALT ATTRIBUTES!

VISUAL IS NOT PRIMARY

WHAT IS ACCESSIBILITY?

ACCESSIBILITY IS THE FOUNDATION OF USABILITY

THREE LEVELS OF DOING ACCESSIBILITY

- The markup - automated testing
- The ux - behavioral testing
- The content - real-time feedback

QUAIL

ACCESSIBILITY INFORMATION LIBRARY

UNLEASH THE ROBOTS

Automated testing

CODIFY BEST PRACTICE

Accessibility module

BEHAVIORAL TESTING

...OR, CHECK YOUR EGO.

DRUPALCAMP TWIN CITIES TESTING SESSIONS

Study findings

- “Fairly accessible for speech/ keyboard for content consumption.”
- “I was able to complete tasks using only my keyboard”
- “That was truly a pain free testing experience.” using Dragon NaturallySpeaking11 Professional

SESSION RECORDING HIGHLIGHTS

Testing content creation in Drupal

- 01.00.00
- 01.01.00

ISSUES ABOUT FORM VALIDATION THAT WE DISCOVERED DURING THE TESTING

- **Make the status message field discoverable by assistive technology agents; alert AT agent users to error messages**
- **Mark invalid form field with [aria-invalid=true]**
- **Issues from Twin Cities**

AURAL USER INTERFACES

DRUPAL SPEAKS?

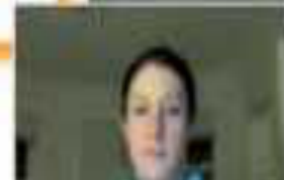
YOU BETCHA!

LET'S HAVE A LISTEN

Drupal Speaks

[View](#)[Edit](#)[Devel](#)

Hello, this is Drupal. Welcome to Portland!
And thank you for attending this session.
Wim and Jesse are very excited to talk
about aural user interfaces. And
remember. Put a bird on it.



0:00 / 0:12



YouTube



WHY CONSIDER SPEECH OUTPUT?
ISN'T SEMANTIC HTML ENOUGH?

Configuration | tres

tres:8082/admin/config

Home

Menu

Shortcuts

root

Home » Administration

Configuration

Hide descriptions

PEOPLE

>

Account settings

Configure default behavior of users, including registration requirements, e-mails, and fields.

CONTENT AUTHORIZING

>

Text formats and editors

Configure how user-contributed content is filtered and formatted, as well as the text editor user interface (WYSIWYGs or toolbars).

MEDIA

>

File system

Tell Drupal where to store uploaded files and how they are accessed.

>

Image styles

Configure styles that can be used for resizing or adjusting images on display.

>

Image toolkit

Choose which image toolkit to use if you have installed optional toolkits.

SYSTEM

>

Site information

Change site name, e-mail address, slogan, default front page, and number of posts per page, error pages.

>

Cron

Manage automatic site maintenance tasks.

USER INTERFACE

>

Shortcuts

Add and modify shortcut sets.

DEVELOPMENT

>

Performance

Enable or disable page caching for anonymous users and set CSS and JS bandwidth optimization options.

>

Logging and errors

Settings for logging and alerts modules. Various modules can route Drupal's system events to different destinations, such as syslog, database, email, etc.

>

Maintenance mode

Take the site offline for maintenance or

tres:8082/admin

Configuration | tres

tres:8082/admin/config

[Skip to main content](#)

Toolbar items

[Home](#)
[Menu](#)
[Shortcuts](#)
[Edit](#)
[Tour](#)
[root](#)

Administration menu

- [Content](#)
- [Structure](#)
- [Appearance](#)
- [People](#)
- [Extend](#)
- [Configuration](#)
- [Reports](#)
- [Help](#)

User-defined shortcuts

- [Add content](#)
- [All content](#)

[Edit shortcuts](#)

User account actions

- [View profile](#)
- [Edit profile](#)
- [Log out](#)

You are here

- [Home](#)
- [Administration](#)

Configuration

1000

10

These effects are also consistent with the literature.

Source: <http://www.fishbase.org>

142

Source: The author's survey data.

1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 2680, 26

100 pages

Downloaded At: 11:53 11 September 2009

Statistical analysis



1

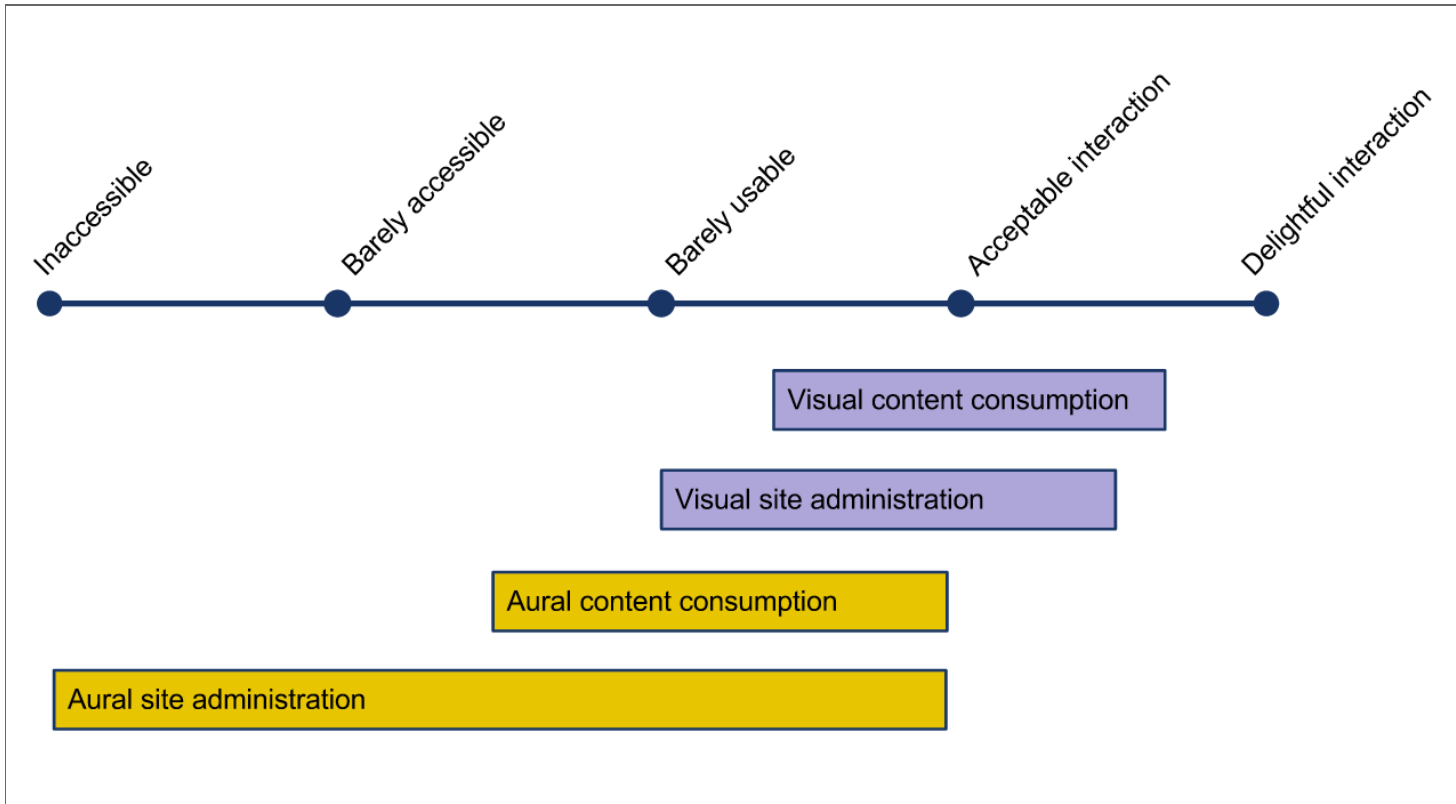
1. *Journal of the American Medical Association*, 1997; 277: 1039-1043.



TOUR MODULE TOOLTIP MARKUP

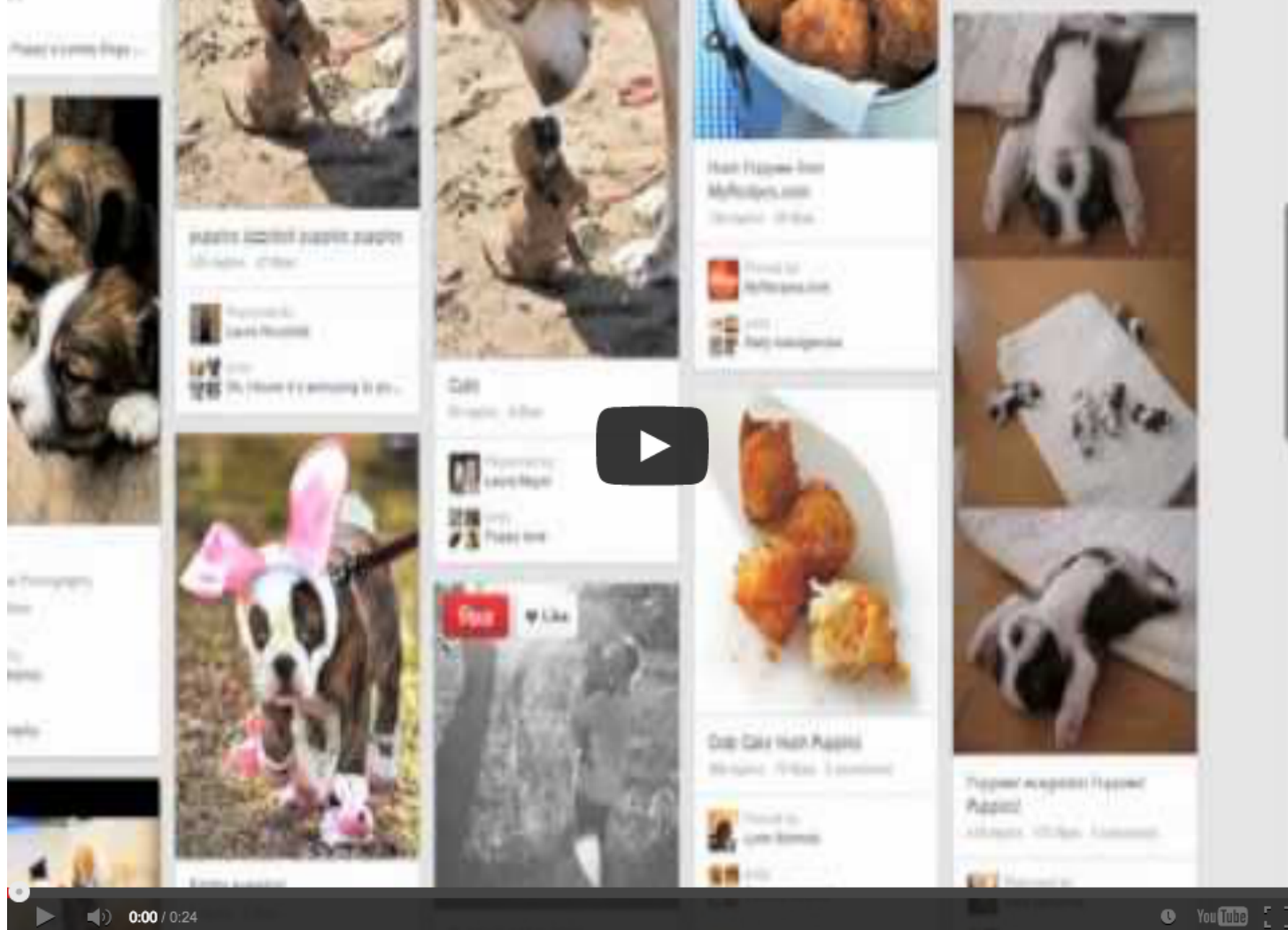
```
<div data-index="0">
  <div role="dialog" aria-labelledby="tour-tip-views-ui-displays-label" aria-describedby="tour-tip-views-ui-displays-contents">
    <h2 id="tour-tip-views-ui-displays-label">Displays</h2>
    <p id="tour-tip-views-ui-displays-contents">A view can consist of multiple displays.</p>
    <div class="tour-progress">1 of 10</div>
    <a href="#" class="joyride-next-tip">Next</a>
    <a href="#close" class="joyride-close-tip">X</a>
  </div>
</div>
```

THE ACCESSIBLE-TO-USABLE SCALE



ACCESSIBILITY FOR EVERYONE

DYNAMIC APPLICATIONS UNDERGO STATE AND
PROPERTY CHANGES.



THOSE CHANGES MUST BE *EXPRESSED*

WE BUILD *INTERFACES*

FOR *EVERYONE*

SO HOW DO WE DO IT?

SHOW AND ANNOUNCE THE CHANGES

1999

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doi:10.1002/ajb.a

© 2004 Blackwell Publishing Ltd, *Journal of Internal Medicine* 255: 103–110

[illegible]

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Actual prices in the retail market

study (1995) showed

There are many important things you can do. Support your local government, help out your friends and neighbors, and do things that make your community a better place. You can also help to make the world a better place by being kind and helpful to everyone you meet. You can also help to make the world a better place by being kind and helpful to everyone you meet.

Free format: [text]

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^a Adapted from [10].

Published

Source: <http://www.fishbase.org>

Supplier operations

► **THESE** **THINGS** **ARE** **THE** **REASON** **WE** **ARE** **HERE** **TODAY**

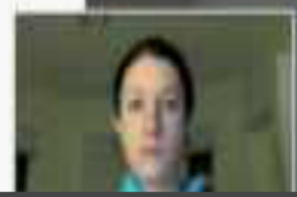
• NEW! SITTING

© 2005 Wiley Periodicals, Inc.

• CURRENT STATUS

4. DIFFERENTIAL REPRESENTATION

© 2004 Blackwell Publishing Ltd *Journal of Internal Medicine* 255: 103–110



RICH EXPERIENCE FOR EVERYONE

ARIA

ACCESSIBLE RICH INTERNET APPLICATIONS

STATES LIKE

- active
- disabled
- pressed

PROPERTIES LIKE

- label
- form
- dialog

ARIA-LIVE

Describes an HTML element that reads its contents when those contents are altered.

```
<div aria-live="polite" class="element-hidden">  
  some text to speak  
</div>
```

EXPRESS CHANGES AURALLY
DRUPAL.ANNOUNCE

```
// Pass a string.
Drupal.announce('The application has been updated.');
```



```
// Make sure the string is translatable.
Drupal.announce(
  Drupal.t('The application has been updated.')
);
```

```
<body>
...
<div id="drupal-live-announce" class="element-invisible" aria-live="polite" aria-busy="false">The application has been updated.</div>
</body>
```

QUICK SUCCESSIVE CALLS

```
<script>
// Quick successive calls will concatenate.
Drupal.announce(Drupal.t('Freegan before they sold out polaroid.'));
Drupal.announce(Drupal.t('Pitchfork letterpress polaroid four.'));
Drupal.announce(Drupal.t('Cardigan cosby sweater fanny pack.'));
</script>

<div id="drupal-live-announce" class="element-invisible" aria-live="polite" aria-busy="false">
Freegan before they sold out polaroid.
Pitchfork letterpress polaroid four.
Cardigan cosby sweater fanny pack.
</div>
```


WAIT, DOESN'T THIS ACCESSIBILITY FEATURE DEPEND
ON JAVASCRIPT?

JavaScript enabled	Respondents
Yes	98.6%
No	1.4%

SOURCE

WebAIM 2012 Survery

GUIDE THE FLOW

DRUPAL.TABBINGMANAGER

WHY DRUPAL.TABBINGMANAGER?

“Depending upon the action to be performed by the dialog, the object with focus before the dialog box is opened should be saved. This will allow restoring focus to this element when the dialog box is closed.”

http://www.w3.org/TR/wai-aria-practices/#modal_dialog

MANAGING TABBING IS *DIFFICULT*

WHAT?

“Constrain tabbable elements to just those necessary to complete a task.”

OVERLAY MODULE

Home » Administration » Structure » Menus

Title*
Tools Machine name: tools

Administrative summary
Contains links for site visitors. Some modules add their link.

+ Add link

Show row weights

MENU LINK	ENABLED	OPERATIONS
+ Add content	<input checked="" type="checkbox"/>	Edit
+ Add custom block	<input checked="" type="checkbox"/>	Edit
+ Compose tips (disabled)	<input type="checkbox"/>	Edit

HOW-TO: TABBING MANAGEMENT

Using `Drupal::TabbingManager`.

APPLY TABBING CONSTRAINT

Using a core API rather than reinventing.

```
manageTabbing: function () {
  var tabbingContext = this.model.get('tabbingContext');

  // Always release an existing tabbing context.
  if (tabbingContext) {
    tabbingContext.release();
  }

  // Create a new tabbing context when edit mode is enabled.
  if (!this.model.get('isViewing')) {
    tabbingContext = Drupal.tabbingManager.constrain($('.contextual-toolbar-tab, .contextual'));
    this.model.set('tabbingContext', tabbingContext);
  }
}
```

Example from contextual.module.

ANNOUNCE THE DETAILS OF THE CONSTRAINT

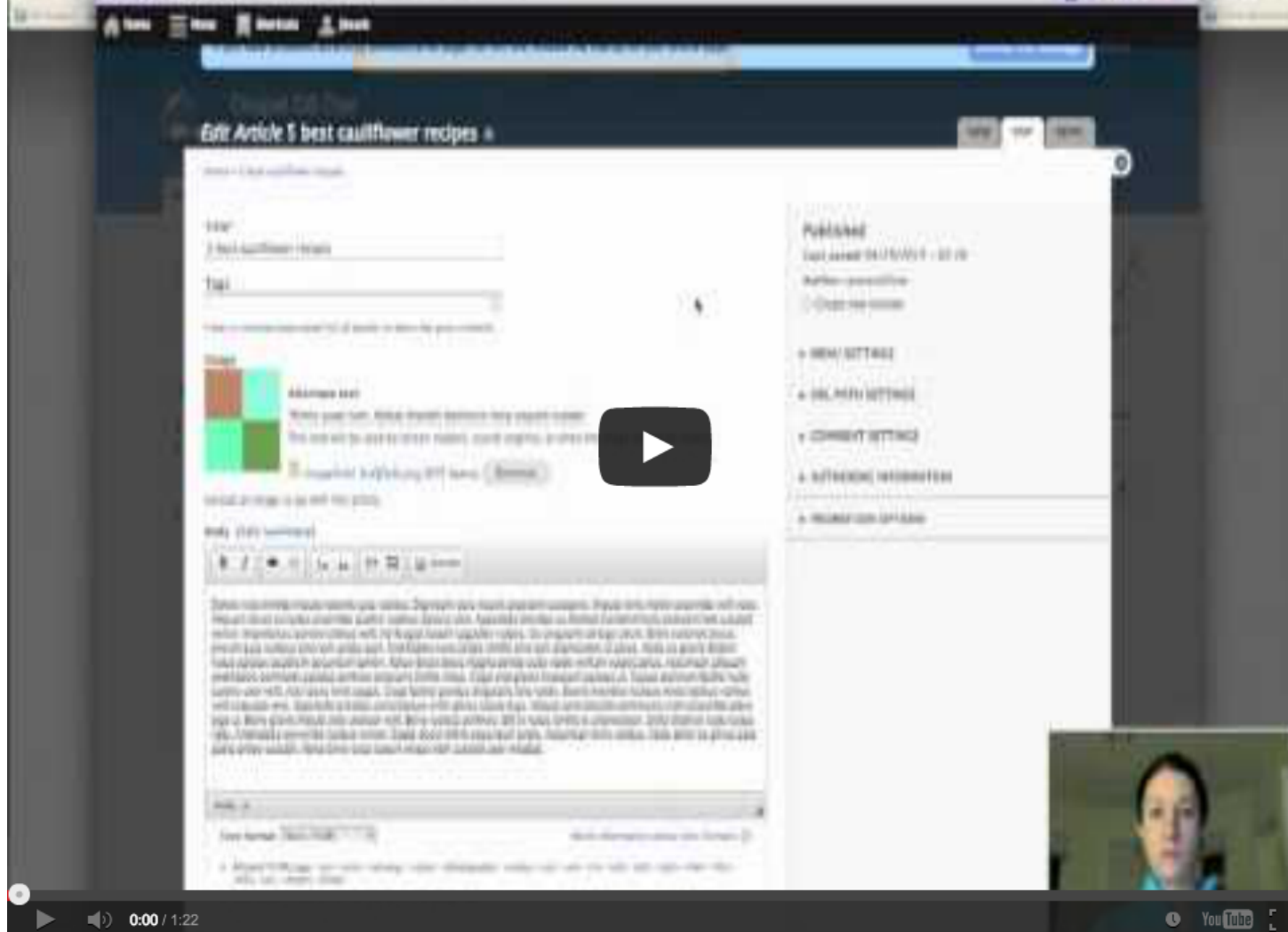
Using `Drupal.announce`.

```
announceTabbingConstraint: function () {  
  var args = {  
    '@contextualsCount': Drupal.formatPlural(Drupal.contextual.collection.length, '@count contextual link', '@count contextual links')  
  };  
  
  Drupal.announce(Drupal.t('Tabbing is constrained to a set of @contextualsCount and the edit mode toggle.', args));  
  Drupal.announce(Drupal.t('Press the esc key to exit.'));  
},
```

Example from `contextual.module`.

COMPLEX TABBING FLOWS


Tabbing contexts can be stacked and popped as a user moves between task flows, even between modules.



The screenshot shows a WordPress admin interface for editing an article titled "5 best cauliflower recipes". The editor includes a title field, a featured image placeholder, and a content area with a video player. A sidebar on the right contains settings for the post, including a "Published" status, a "Publish" button, and sections for "More Settings", "Media Settings", "Comment Settings", "Advanced Information", and "Discussion Options". A small video feed of a person is visible in the bottom right corner.

Edit Article: 5 best cauliflower recipes

Title: 5 best cauliflower recipes

Featured Image: 

Published: Last saved: 2015/05/19 10:10

Buttons: [Publish](#) [Cancel](#)


More Settings:


Media Settings:

Comment Settings:

Advanced Information:

Discussion Options:

Video Player: 

Video Feed: 

Home

Blandit Commoveo Et Laoreet Sit

Submitted by awesepex on Thu, 08/08/2013 - 17:00



Blandit Commoveo Et Laoreet Sit: Body

Body (Edit summary)

B I [Icons] [Source]



0:00 / 2:18

YouTube

EMBRACE MODALITIES

BACKBONE.JS

*“The essential premise at the heart of Backbone has always been to try and **discover the minimal set of data-structuring** (Models and Collections) and user interface (Views and URLs) primitives that are useful when building web applications with JavaScript.”*

Jeremy Ashkenas — <http://ashkenas.com/backbonejs-1.0/>

FRAMEWORK DOESN'T MATTER

SEPARATION OF CONCERNS MATTERS

BEFORE DRUPAL 8

event handlers → rendering → debug hell

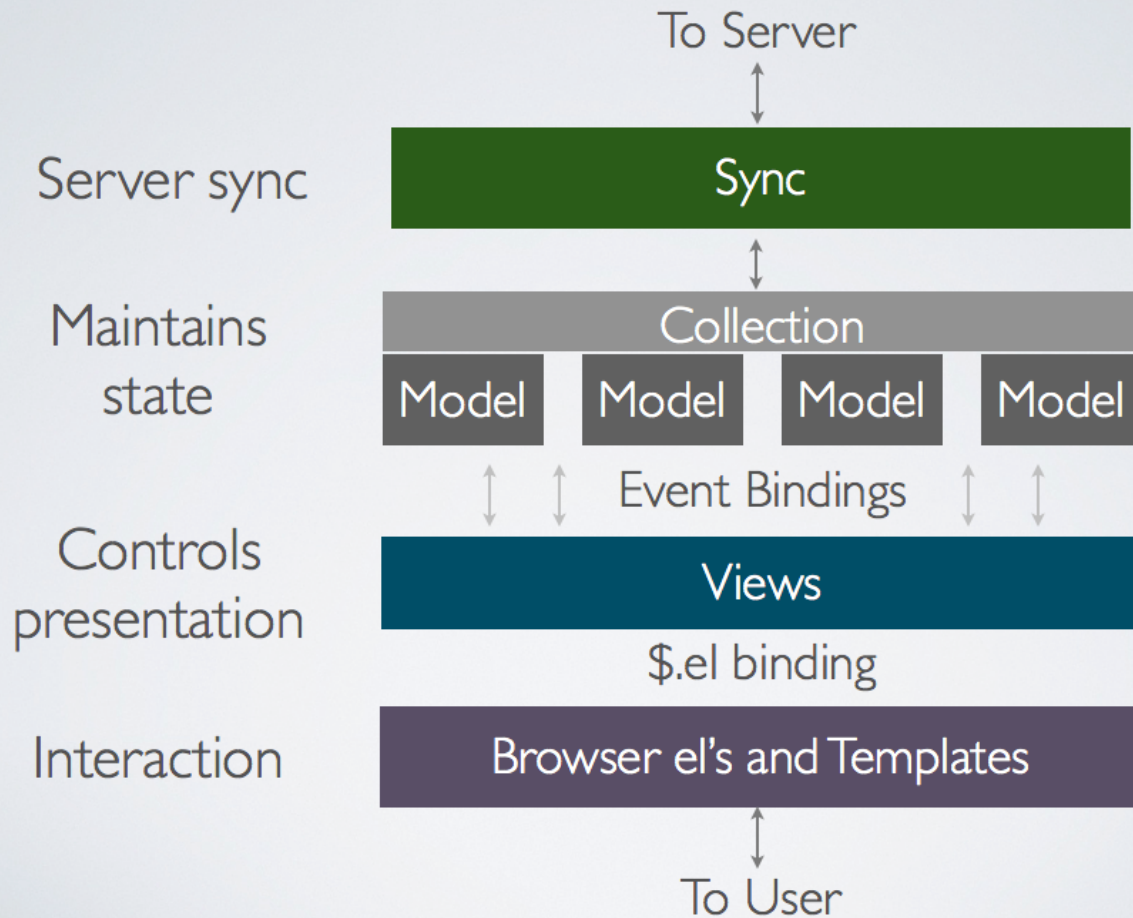
NOW IN DRUPAL 8

events → state

state → rendering

developer → happy

FITTING THEM TOGETHER



Source: <http://kiranb.scripts.mit.edu/backbone-slides/>

EXAMPLE

```
function toggleEditMode (event, data) {  
  for (var i = contextuais.length - 1; i >= 0; i--) {  
    contextuais[i][(data.status) ? 'detachHighlightBehaviors' : 'attachHighlightBehaviors']();  
    contextuais[i].$region.toggleClass('contextual-region-active', data.status);  
  }  
}
```

versus

```
_toggleEditMode: function (event, data) {  
  Drupal.contextual.collection.each(function (model) {  
    model.set('isLocked', data.status);  
  });  
}
```

HOW-TO: BACKBONE.JS FOR BETTER ACCESSIBILITY

ONE *MODEL*,
MANY *VIEWS*

STEP 1: CREATE A MODEL

Contains state, is stupid. Views update it.

```
Drupal.contextualToolbar.Model = Backbone.Model.extend({
  defaults: {
    // Whether the toggle is currently in "view" or "edit" mode.
    isViewing: true,
    // Whether the toggle should be visible or hidden.
    isVisible: false,
    // A TabbingContext object as returned by Drupal.TabbingManager:
    // the set of tabbable elements when edit mode is enabled.
    tabbingContext: null
  }
});
```

Example from contextual.module.

STEP 2: CREATE A VISUAL VIEW

99.9% of sites need visual output & mouse + touch input.

```
Drupal.contextualToolbar.VisualView = Backbone.View.extend({
  events: {
    'click': function () {
      this.model.set('isViewing', !this.model.get('isViewing')),
    }
  },
  initialize: function () {
    this.model.on('change', this.render, this);
  },
  render: function () {
    var $el = this.el;
    var m = this.model;
    $el.toggleClass('element-hidden', !m.get('isVisible'));
    $el.find('button').toggleClass('active', !m.get('isViewing'));
    return this;
  }
});
```

Example from contextual.module.

STEP 3: CREATE A KEYBOARD VIEW

For screen reader users & power users: keyboard input.

```
Drupal.contextualToolbar.KeyboardView = Backbone.View.extend({  
  // ...  
});
```

Unnecessary here: the `click` event in the `VisualView` already works with keyboard input. We don't need `focus` or `blur`.

STEP 4: CREATE AN AURAL VIEW

For screen reader users: aural output.

```
Drupal.contextualToolbar.AuralView = Backbone.View.extend({
  initialize: function () {
    this.model.on('change', this.render, this);
    this.model.on('change:isViewing', this.manageTabbing, this);
  },
  render: function () {
    var $el = this.el;
    var m = this.model;
    $el.find('button').attr('aria-pressed', !m.get('isViewing'));
    return this;
  },
  manageTabbing: function () {
    // See TabbingManager example.
    Drupal.announce('<a relevant, explanatory message>');
  }
});
```

Example from contextual.module.

ALL DONE!

Everything remains in sync!

Just like that.

PROPOSED BEST PRACTICE

Evolving as we develop more complex interactions

DEVEL ACCESSIBILITY

NOT FAMILIAR WITH USING A SCREEN READER?

CONSOLE.LOG ANNOUNCEMENTS

polite Drupal announcement: "Tabbing is no longer constrained by the Contextual module"	announce.log.js:11
polite Drupal announcement: "The overlay has been opened to Configure Search block in Bartik (default theme)"	announce.log.js:11
polite Drupal announcement: "Tabbing is constrained to items in the administrative toolbar and the overlay."	announce.log.js:11
>	

VISUALIZE TABBING CONSTRAINTS

The screenshot shows the 'Edit menu Tools' page in a web browser. The browser's address bar displays the URL: `localhost/tres/#overlay=admin/structure/menu/manage/tools/edit%3Fdestination%3Dnode`. The page features a top navigation bar with links for 'Home', 'Menu', 'Shortcuts', and 'root', all of which are highlighted with red boxes. Below this, the page title is 'Edit menu Tools' with a plus icon. A breadcrumb trail at the top of the main content area shows 'Home' » 'Administration' » 'Structure' » 'Menus', with each link highlighted in red. The main form includes a 'Title*' field containing 'Tools' (highlighted in red) and a 'Machine name: tools' label. Below the title is an 'Administrative summary' section with the text 'Contains links for site visitors. Some modules add their link.' (highlighted in red). A '+ Add link' button is located below the summary. To the right of the table, a 'Show row weights' link is highlighted in red. The table itself has three columns: 'MENU LINK', 'ENABLED', and 'OPERATIONS'. It contains three rows: 'Add content' (enabled, with an 'Edit' button), 'Add custom block' (enabled, with an 'Edit' button), and 'Compose tips (disabled)' (disabled, with an 'Edit' button). Each row's first cell (the link name) is highlighted with a red box. The 'Edit' buttons in the 'OPERATIONS' column are also highlighted with red boxes. A red 'X' icon is visible in the top right corner of the overlay.

Home » Administration » Structure » Menus

Title*
Tools Machine name: tools

Administrative summary
Contains links for site visitors. Some modules add their link.

+ Add link

Show row weights

MENU LINK	ENABLED	OPERATIONS
+ Add content	<input checked="" type="checkbox"/>	Edit
+ Add custom block	<input checked="" type="checkbox"/>	Edit
+ Compose tips (disabled)	<input type="checkbox"/>	Edit

http://drupal.org/project/devel_a11y

A UI IS *SIGHT*, AND *SOUND* AND *TOUCH*

DRUPAL 8 WILL COMMUNICATE WITH EACH SENSE

USING SHARED TOOLS AND A STRUCTURED FRAMEWORK

AND *YOUR* MODULE?

REFERENCES

1. Screen Reader User Survey #4. 2013. <http://webaim.org/projects/screenreadersurvey4/>
2. <http://kiranb.scripts.mit.edu/backbone-slides/#compenents-diagram>

RESOURCES

1. <http://previousnext.com.au/blog/so-you-want-be-accessible>
2. http://squizlabs.github.io/HTML_CodeSniffer/
3. <http://webaim.org/projects/screenreadersurvey4/>
4. **Pillow fight**

HOW DO WE MAKE AURAL UIS INFORMATIVE WITHOUT BEING ANNOYING?

Listening to long instruction sentences gets annoying if they don't introduce more info and just repeat the same thing on every page. Eventually, one might want to turn off these audio announcements.

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