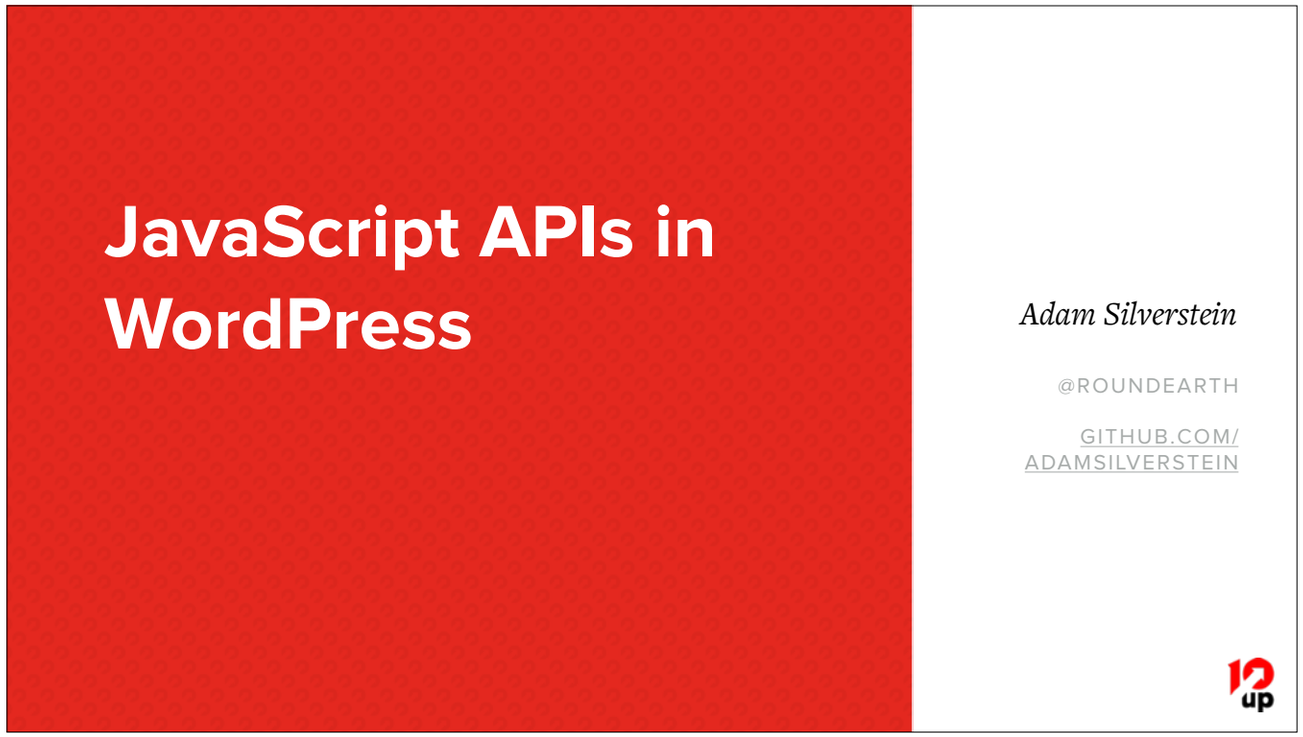


thanks everyone for coming to my talk. lets jump right in because we have a lot to cover in 30 minutes

i gave it a nice short title to get you in the door although I'm taking about a bit more than APIs

In fact we are going too cover a huge amount of tools in this talk and my goal is to overwhelm you with information and ideas. my hope is you will come out of this talk inspired to create something new and exciting

github.com/adamsilverstein/wceu2018

all of the links i mention in this talk, and the slideshow itself will be available later today at this github url which i'll also put up at the end of the talk

don't worry if you miss a detail or can't see the code samples as I'll be moving pretty quickly.

Learn JavaScript Deeply

Remember when Matt told us to learn JavaScript deeply a few years ago?

I hope you have taken that to heart with your themes and plugins and started using and learning more JavaScript.

The DEEPLY part is learning the new build tools and frameworks that make up the modern JavaScript stack

Soon you may building a feature, theme or plugin that is primarily or entirely JavaScript

Speaking of building, i’m proud to say that thanks to Omar Reiss, WordPress recently introduced a web pack based build process to our development workflow

```
src/js                          | All the JavaScript source.
├── _enqueues                   | Any script that ends up being enqueued.
|   ├── admin                   | Procedural scripts ran in the admin.
|   ├── deprecated              | All deprecated scripts.
|   ├── lib                     | All standalone lib scripts.
|   ├── vendor                  | All 3rd party deps that can't be managed with NPM.
|   └── wp                      | All scripts that assign something to the wp namespace.
|       ├── customize           | Anything under wp.customize.
|       ├── editor              | Anything under wp.editor.
|       ├── media               | Anything under wp.media.
|       ├── utils               | Anything under wp.utils.
|       └── widgets             | jQuery widgets on the wp namespace.
└── media                       | The media library.
```

this era bled us to reorganize our JavaScript in a sensible way while building it back into its legacy location for backwards compatibility

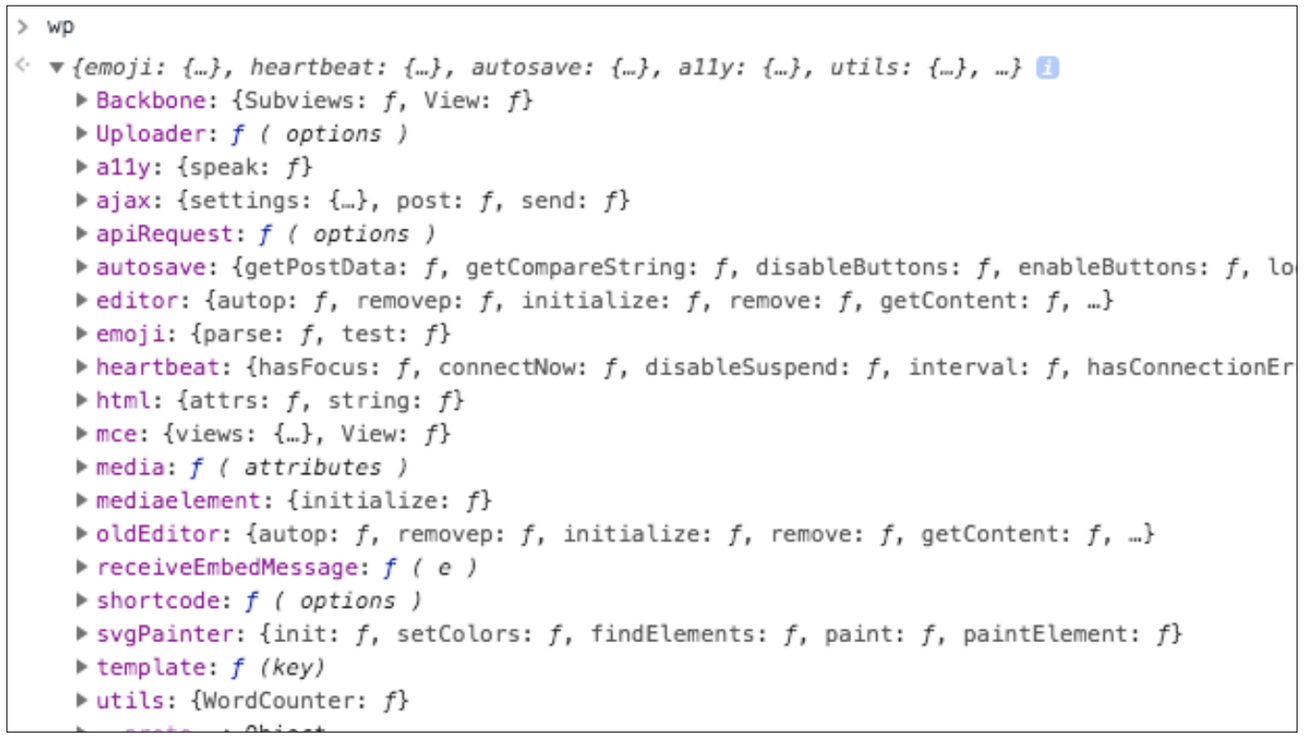
Of course, this is also sets up core for merging Gutenberg and its modern JavaScript coding practices

Hello WordPress

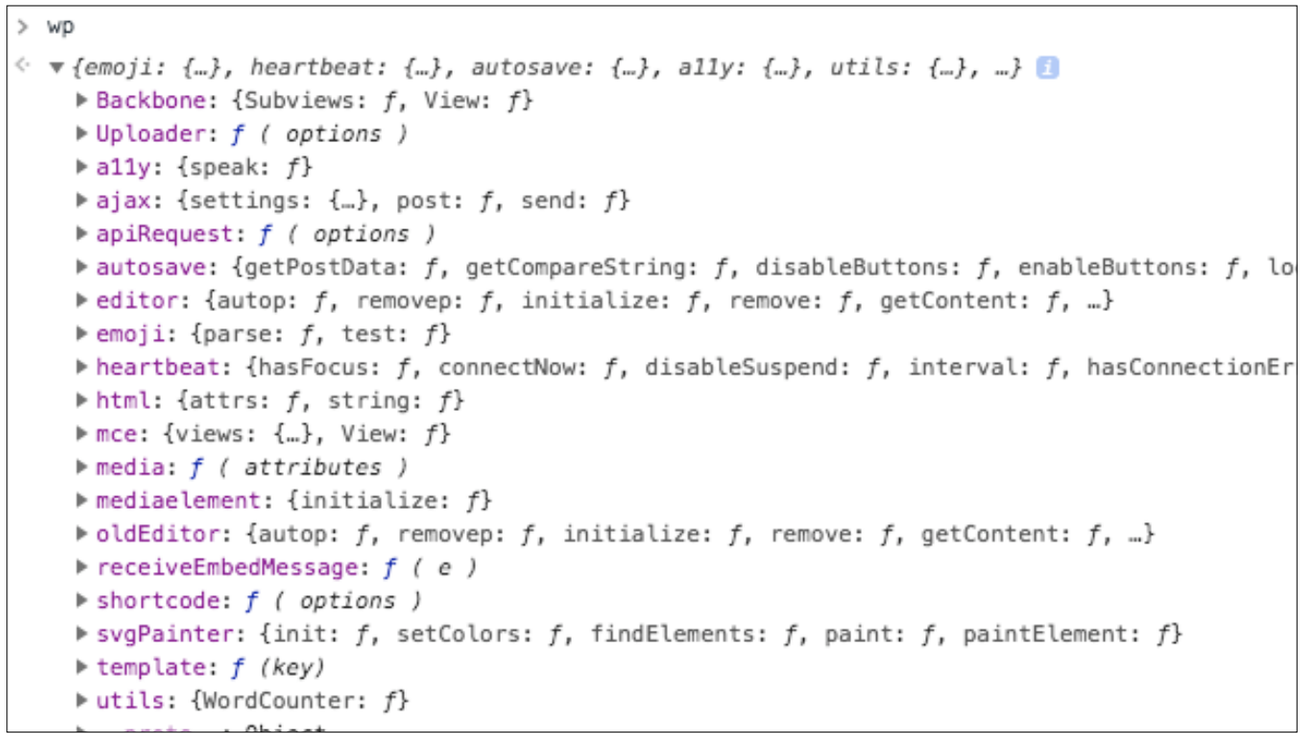
WordPress comes with many libraries and tools to help your JavaScript project and with the REST API and soon Gutenberg, developing for WordPress is increasingly a JavaScript task.

Hello window.wp

Historically as we have built new JavaScript features in core, we have added them to the global **wp** namespace or `window.wp`



The WP namespace is modular so different screens may have a different wp object and you can use the parts you need by enqueueing them



This is the wp object when you load the post page - I typed wp into the console which is a great way to explore especially since we don’t yet have a centralized place for JavaScript code documentation.

this talk will cover some of the more interesting and useful tools and hopefully inspire you to leverage them in your next project.

Documentation

make.wordpress.org/core/2018/01/31/js-docs-initiative-add-inline-docs-for-javascript/

atimmer.github.io/wordpress-jsdoc/wp.media.html

herregroen.github.io/wordpress-jsdoc/

Anton Timmermans is leading an effort to add inline documentation for all of our JavaScript which lets us generate a JSDoc guide, and ultimate create a developer handbook much the same way we currently generate our PHP code reference.

As as reminder, all these links will be available on my github later today.

———

Oh! this slide has nothing to do with my presentation. I added it here to remind myself to take a breather and a sip of water

wp.editor

Add a rich HTML editor to your app from JavaScript

Lets dive in! OK - wp editor!

Wp.editor lets you transform a text area into a rich HTML editor using the same TinyMCE editors use in the post edit screen, including custom plugins you want to support.

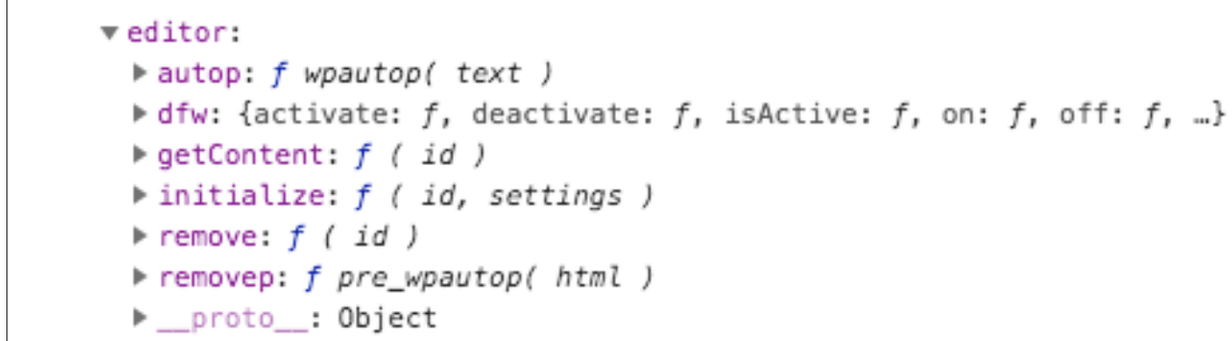
—-

Links:

https://codex.wordpress.org/Javascript_Reference/wp.editor

https://make.wordpress.org/core/2017/05/20/editor-api-changes-in-4-8/

wp.editor



This is perfect for adding a rich editor to a meta box or a front end tool you are building in JavaScript. Again, I'll have links to all the documentation i could find for each object posted with my slides.

———

Links:

https://codex.wordpress.org/Javascript_Reference/wp.editor

https://make.wordpress.org/core/2017/05/20/editor-api-changes-in-4-8/

```jsx
import React, { Component } from 'react';

export const getTinyMCEContent = () => {
  const currentEditor = tinymce.activeEditor;

  return currentEditor ? currentEditor.getContent() : '';
};

export const clearTinyMCEContent = () => {
  const currentEditor = tinymce.activeEditor;
  currentEditor.setContent('');
};

class TinyMCEEditor extends Component {
  constructor(props) {
    super(props);
    this.containerId = `live-editor-${Math.floor(Math.random() * 100000)}`;
    this.editorSettings = window.liveblog_settings.editorSettings;
    wp.editor.initialize(this.containerId, this.editorSettings);
  }
```

Here is an example of a react component that uses wp.editor. I built this recently to enhance the liveblogging plugin from Automatic to optionally replace the react based editor uses by default

```
render() {
    return <textarea className="liveblog-editor-textarea" id={this.containerId} />;
}
```

Here is how it works - first in the component’s render method, we output a text area for the editor onto the page

```
this.editorSettings = window.liveblog_settings.editorSettings;
wp.editor.initialize(this.containerId, this.editorSettings);
```

later, I call wp.editor to initialize the TinyMCE editor. This gives editors the same wp-editor experience they are used to in wp admin. I expect eventually we will have similar functionality for adding a standalone gutenberg editor in the same way.

---

https://github.com/youknowriad/standalone-gutenberg

wp.codeEditor

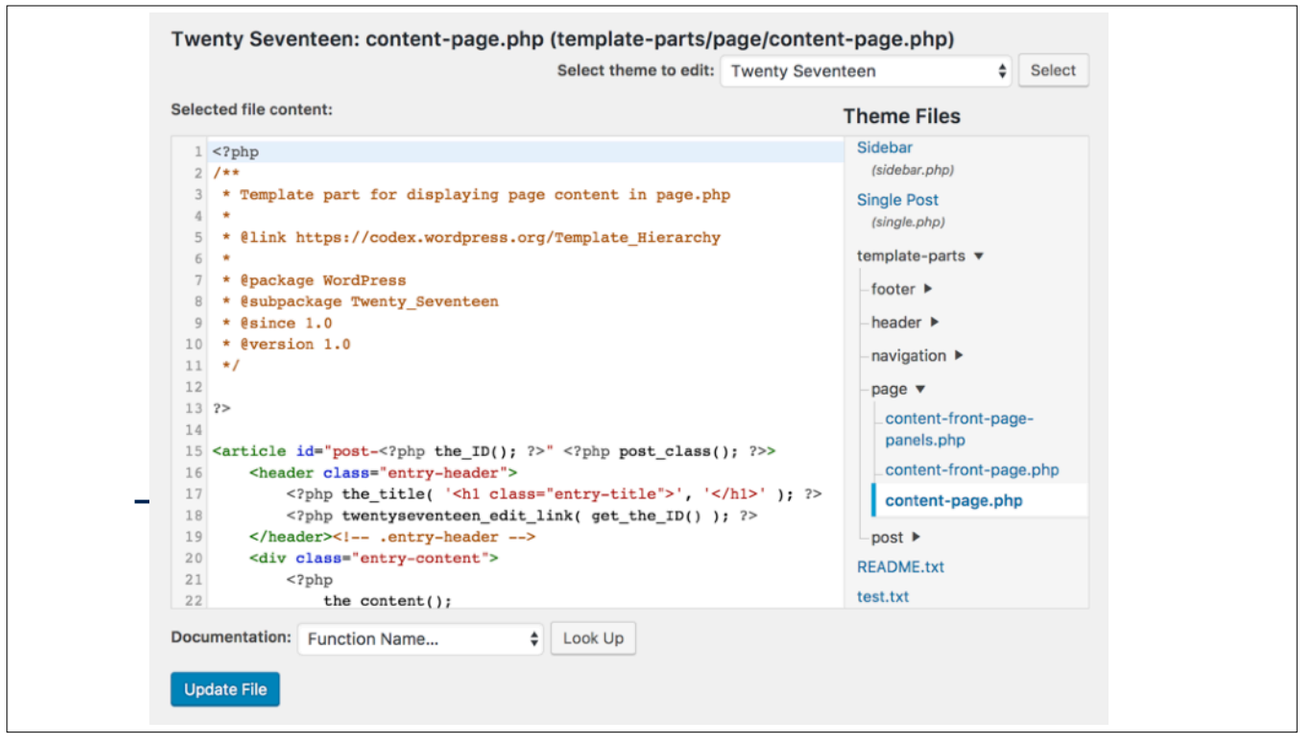
Add a code editor or syntax highlighting to a textarea.

wp codeEditor provides a code editor and syntax highlighting for text areas

make.wordpress.org/core/2017/10/22/code-editing-improvements-in-wordpress-4-9/

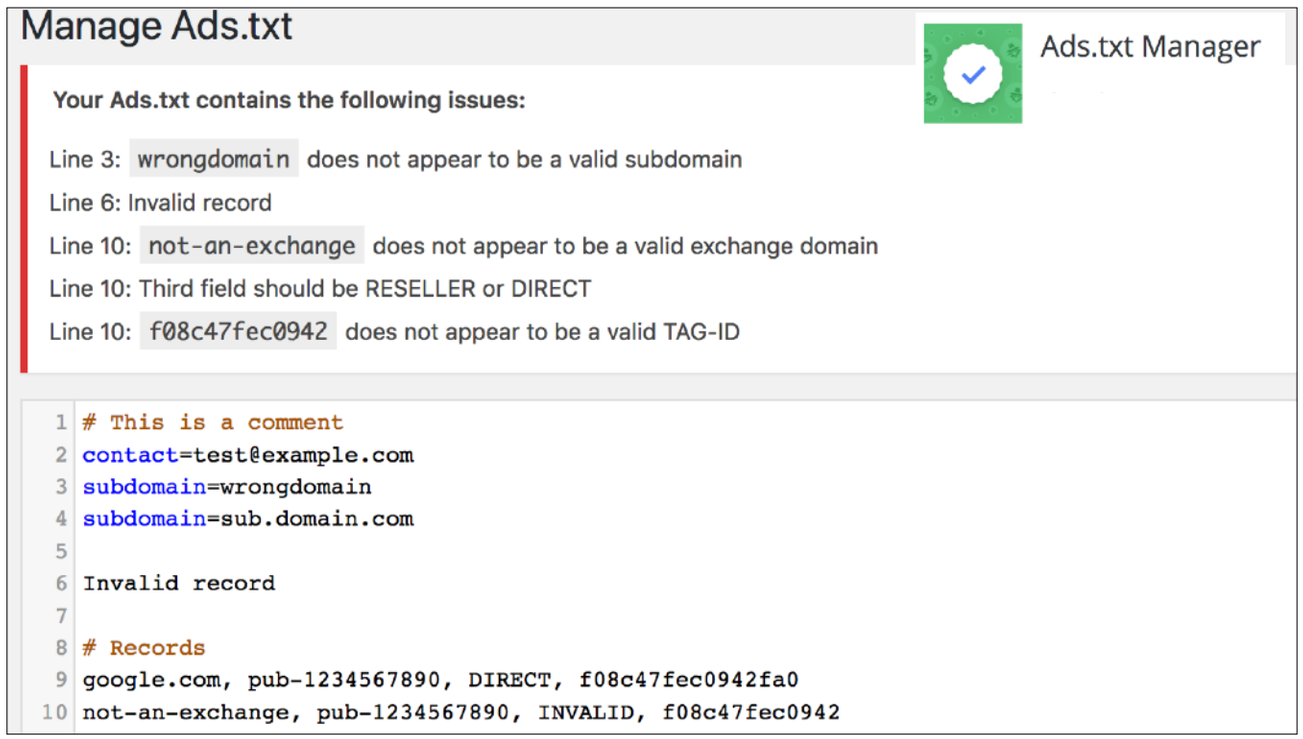
CodeMirror is a versatile text editor implemented in JavaScript for the browser.

we included code mirror in core in wordpress 4.9 to enhance code editing in the theme and plugin editors and CSS editing in the customizer.



now in the theme editor you get a rich editor display with code highlighting.

you can use this same functionality in your own plugin or theme, wherever you want to to provide an editor or syntax highlighting of code.



Here is an example of using code mirror in our ads.txt plugin: we used wp.codeMirror to add line numbers and syntax highlight the ads.txt edit field, making it easier to spot potential errors.

```
<textarea class="widefat code" rows="25" name="adstxt" id="
    adstxt_content"><?php echo esc_textarea( $content ); ?></
    textarea>
```

The code for this is pretty straightforward… First we add a text area to the dom with any existing content

```
<textarea class="widefat code" rows="25" name="adstxt" id="
    adstxt_content"><?php echo esc_textarea( $content ); ?></
    textarea>


wp_enqueue_script( 'adstxt', esc_url( plugins_url( '/js/admin.js
    ', dirname( __FILE__ ) ) ), array( 'jquery', 'wp-backbone',
    'wp-codemirror' ), false, true );
wp_enqueue_style( 'code-editor' );
```

next we enqueue our javascript, adding wp-codemirror as a dependency, and also enqueuing the required code-editor styles

```
<textarea class="widefat code" rows="25" name="adstxt" id="
    adstxt_content"><?php echo esc_textarea( $content ); ?></
    textarea>


wp_enqueue_script( 'adstxt', esc_url( plugins_url( '/js/admin.js
    ', dirname( __FILE__ ) ) ), array( 'jquery', 'wp-backbone',
    'wp-codemirror' ), false, true );
wp_enqueue_style( 'code-editor' );


var editorArea = document.getElementById( 'adstxt_content' );
    editorOptions = { lineNumbers: true, mode: 'shell' },
    editor = wp.CodeMirror.fromTextArea( editorArea, editorOptions );
```

Finally, in our javascript, we call wp.CodeMirror.fromTextArea on our text area, passing control options to turn it into a rich editor

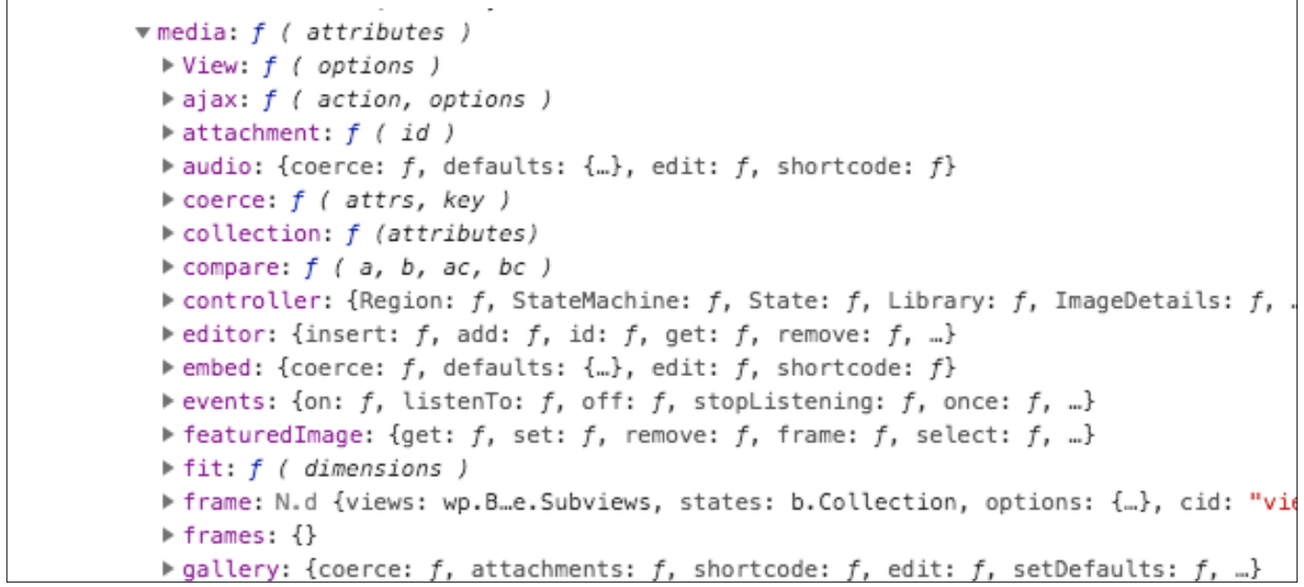
wp.media

Leverage and extend the WordPress media library.

wp media lets you interact with the media library and extend it with custom functionality

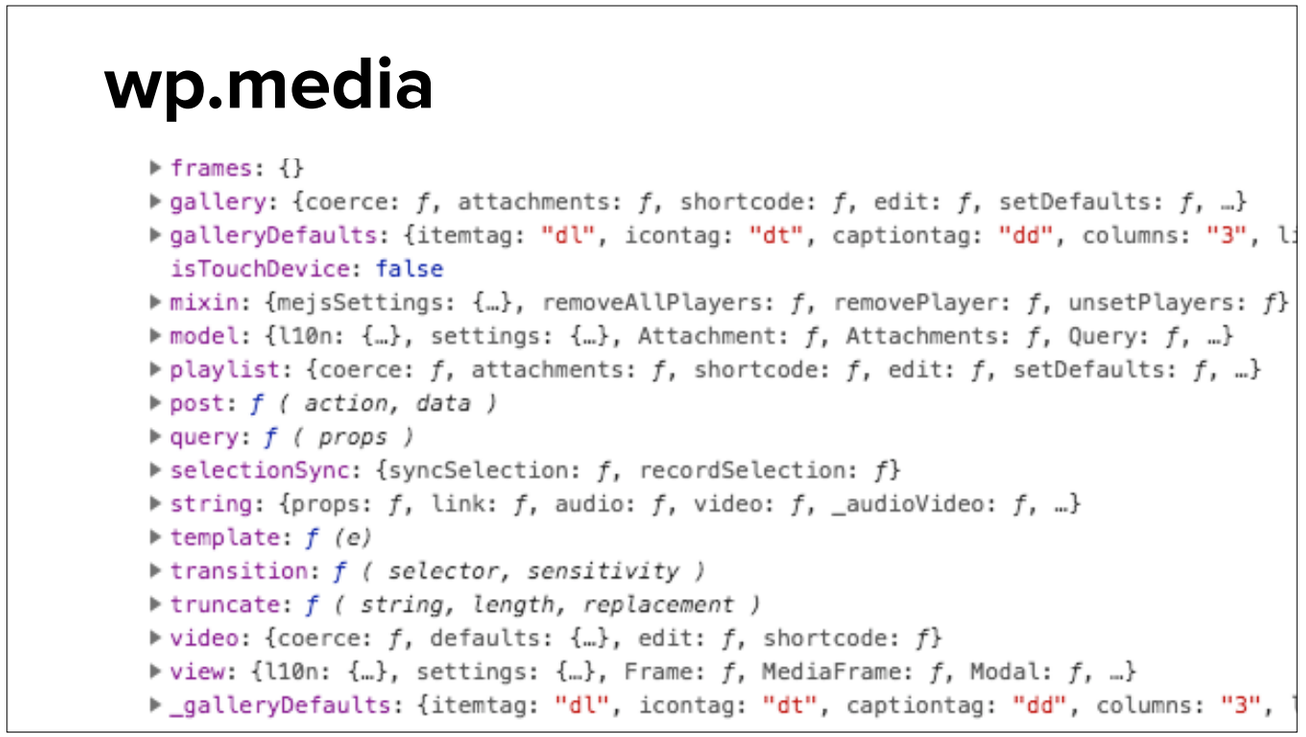
there are many examples in plugins and tutorials about how to use wp.media especially for operations like inserting an image from the media library

wp.media



Extending wp.media to add custom functionality can be tricky though and there is no good central documentation about how to extend it

wp.media



media has a large number of views and models and it can be confusing to decipher what to extend.

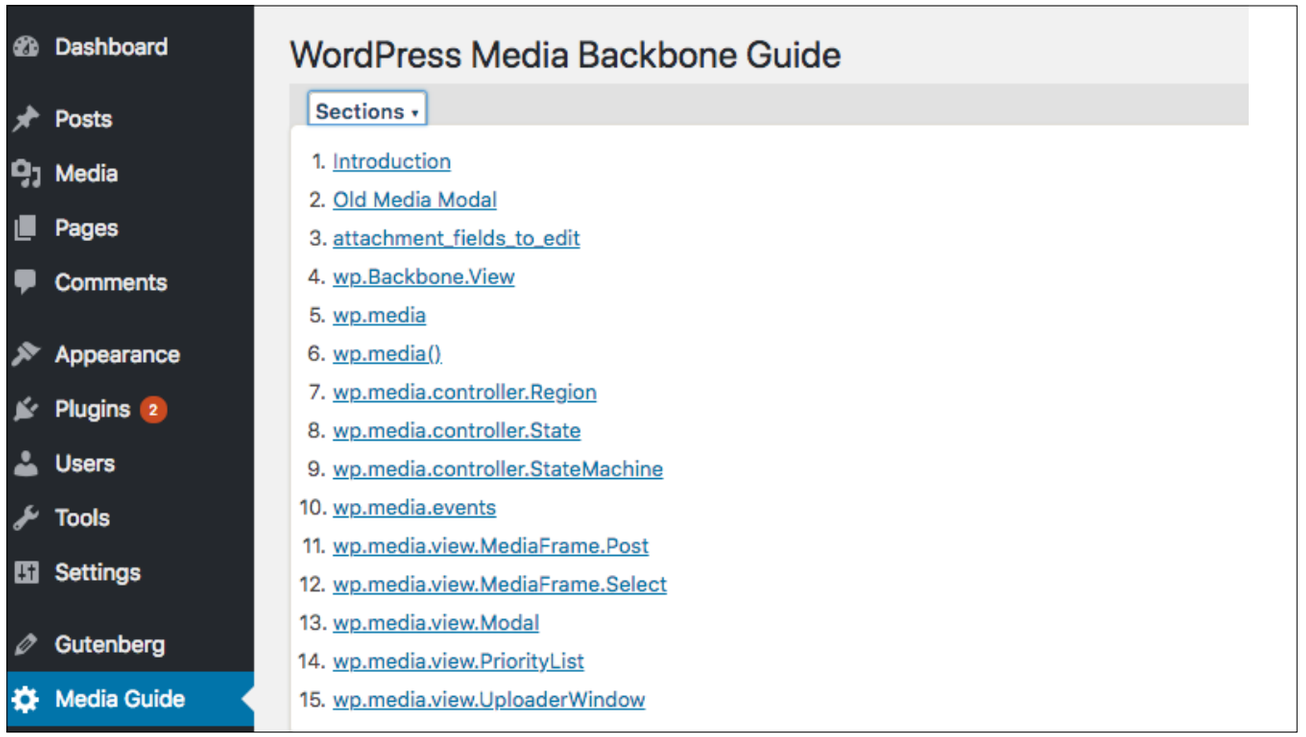
Media Guide Plugin

github.com/ericandrewlewis/
wp-media-javascript-guide

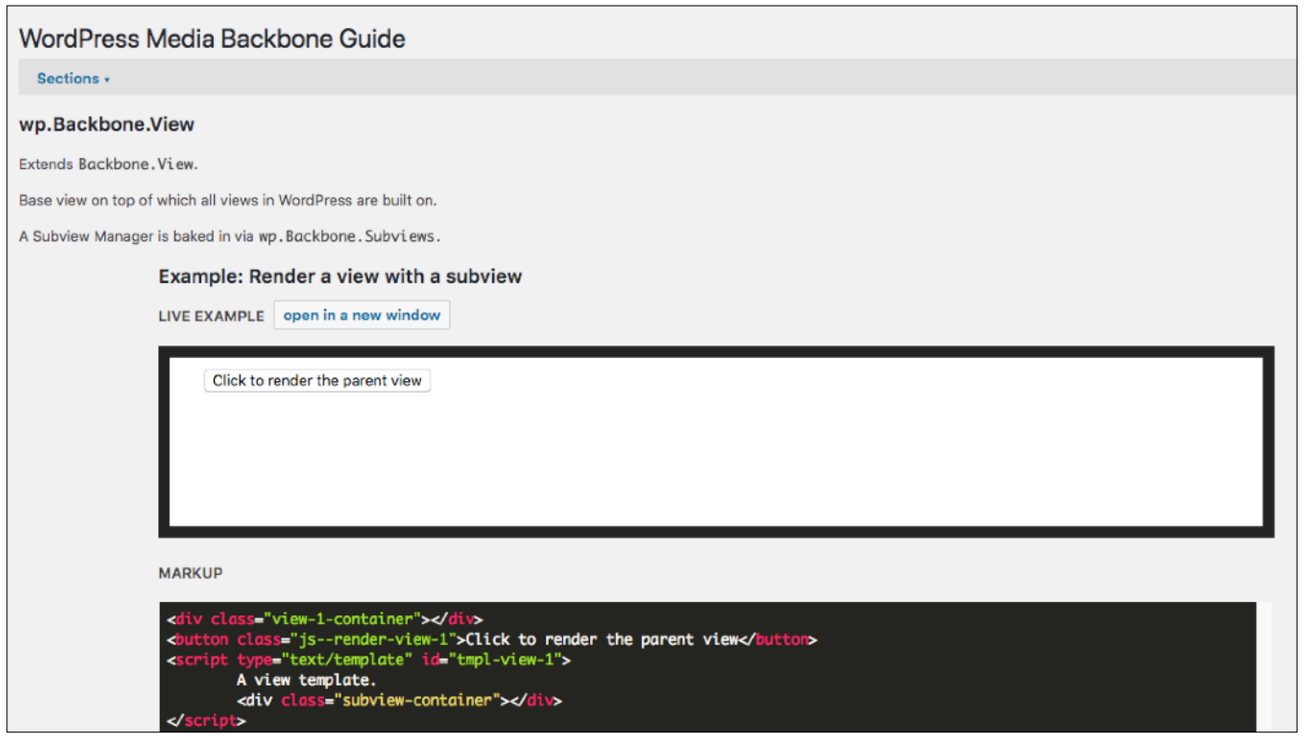
My favorite guide to wp.media is this interactive plugin by Eric Lewis. Eric also gave a talk at WordCamp Philly 2014 you can find on wordpress.tv

— —

https://wordpress.tv/2014/09/25/eric-andrew-lewis-an-introduction-to-wp-media/



once you install the plugin, you will see a media guide in wp-admin with chapters covering the major wp.media components



And since the guide is a plugin, it includes live samples you can interact with like this demo showing how to add an image upload button

Attachment taxonomies

wordpress.org/plugins/attachment-taxonomies/

For a great example of extending wp.medfia with custom functionality, check out Attachment Taxonomies by Felix Arntz.

The plugin adds categories and tags to the WordPress media library and lets you filter by them.

```
wp.media.view.AttachmentFilters.Taxonomy = wp.media.view.AttachmentFilters.extend({
    id: 'media-attachment-taxonomy-filters',
    createFilters: function() {
        var filters = {};

        if ( this.options.queryVar && this.options.allLabel ) {
            filters.all = {
                text: this.options.allLabel,
                props: {},
                priority: 1
            };
            filters.all.props[ this.options.queryVar ] = null;
```

Looking quickly at how it works, we see that the plugin follows the standard pattern to extend the core media objects with custom functionality.

```
wp.media.view.AttachmentFilters.Taxonomy = wp.media.view.AttachmentFilters.extend({
    id: 'media-attachment-taxonomy-filters',
    createFilters: function() {
        var filters = {};

        if ( this.options.queryVar && this.options.allLabel ) {
            filters.all = {
                text: this.options.allLabel,
                props: {},
                priority: 1
            };
            filters.all.props[ this.options.queryVar ] = null;
```

Here, the code extends the core media AttachmentsFilters view, replacing its createFilters method with one that includes support for the media categories and tags.

```
wp.media.view.AttachmentsBrowser = wp.media.view.AttachmentsBrowser.extend({
    createToolbar: function() {
        wp.media.view.AttachmentsBrowser.__super__.createToolbar.apply( this,

        var data = wp.media.taxonomies.data;

        for ( var i in data ) {
            this.toolbar.set( data[ i ].slug + 'FilterLabel', new wp.media.vie
                value: wp.media.taxonomies.l10n.filterBy[ data[ i ].slug ],
                attributes: {
                    'for': 'media-attachment-' + data[ i ].slugId + '-filters'
                },
                priority: -72
            }).render() );
            this.toolbar.set( data[ i ].slug + 'Filter', new wp.media.view.Att
                controller: this.controller,
```

the plugin then replaces the core AttachmentsBrowser view completely

```
wp.media.view.AttachmentsBrowser = wp.media.view.AttachmentsBrowser.extend({
    createToolbar: function() {
        wp.media.view.AttachmentsBrowser.__super__.createToolbar.apply( this,

        var data = wp.media.taxonomies.data;

        for ( var i in data ) {
            this.toolbar.set( data[ i ].slug + 'FilterLabel', new wp.media.vie
                value: wp.media.taxonomies.l10n.filterBy[ data[ i ].slug ],
                attributes: {
                    'for': 'media-attachment-' + data[ i ].slugId + '-filters'
                },
                priority: -72
            }).render() );
            this.toolbar.set( data[ i ].slug + 'Filter', new wp.media.view.Att
                controller: this.controller,
```

notice how this replaces the original object, instead of creating a new object

```
this.toolbar.set( data[ i ].slug + 'FilterLabel', new wp.media.view.Label({
    value: wp.media.taxonomies.l10n.filterBy[ data[ i ].slug ],
    attributes: {
        'for': 'media-attachment-' + data[ i ].slugId + '-filters'
    },
    priority: -72
}).render() );
this.toolbar.set( data[ i ].slug + 'Filter', new wp.media.view.AttachmentFilters.Taxonomy({
    controller: this.controller,
    model: this.collection.props,
    priority: -72,
    queryVar: data[ i ].queryVar,
    terms: data[ i ].terms,
    id: 'media-attachment-' + data[ i ].slugId + '-filters',
    allLabel: wp.media.taxonomies.l10n.all[ data[ i ].slug ]
}).render() );
```

the AttachmentsBrowser view now adds the Taxonomy AttachmentFilters View we created in the previous step

ok, time for another breather

wp.heartbeat

Periodic data transmission between client and server.
Use for locking, progress updates & semi live data.

wp.heartbeat lets you constant communication between the client and the server

its Used for post locking and auto saves in core

its great when you want to display regular updates to users, for example an import progress bar, or a dashboard of scores or traffic.

wp.heartbeat

```
> wp.heartbeat
< ▼ {hasFocus: ƒ, connectNow: ƒ, disableSuspend: ƒ, interval
    ▶ connectNow: ƒ connectNow()
    ▶ dequeue: ƒ dequeue( handle )
    ▶ disableSuspend: ƒ disableSuspend()
    ▶ enqueue: ƒ enqueue( handle, data, noOverwrite )
    ▶ getQueuedItem: ƒ getQueuedItem( handle )
    ▶ hasConnectionError: ƒ hasConnectionError()
    ▶ hasFocus: ƒ hasFocus()
    ▶ interval: ƒ interval( speed, ticks )
    ▶ isQueued: ƒ isQueued( handle )
```

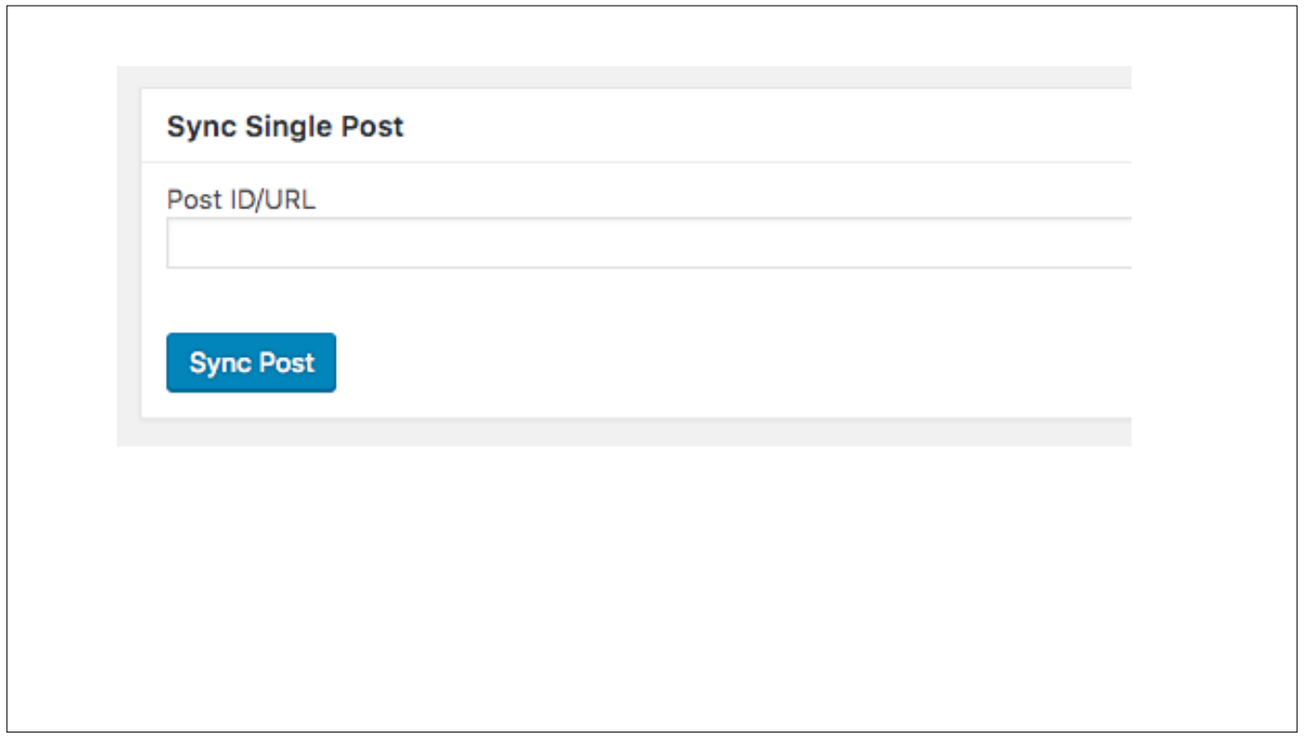
like its name suggests, the heartbeat occurs at a steady pass, transmitting data back and forth between the client and the server

by default the heartbeat runs once every 60 seconds, and you can adjust the frequency with a filter

each heartbeat can send data to or from the server from one or more apps that have connected to the heartbeat

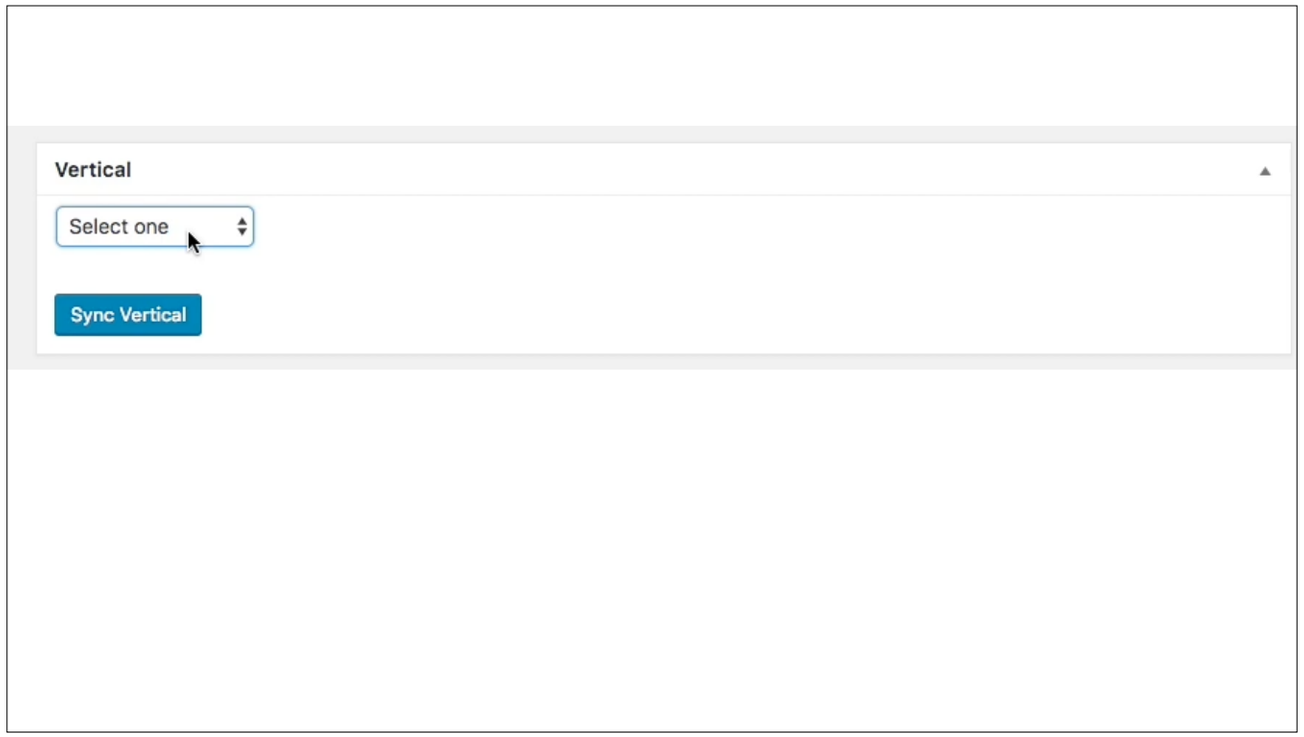
developer.wordpress.org/plugins/javascript/heartbeat-api/

heartbeat is well documented and very useful, but please note that some hosts disable the heartbeat api because it consumes additional resources



In this example, we extended the PMC importing tool with a batch mode that asynchronously imports a group of posts in a category or vertical.

PMC tool: https://github.com/Penske-Media-Corp/pmc-theme-unit-test



the user selects the category to begin the sync which can several minutes to complete

the code uses heartbeat to transmit progress updates from the server to the client

the process is happening in the background so i can leave this page and when i return the progress updates will continue

```
/**
 * Init the Heartbeat API
 */
PMC_Sync.prototype.initHeartBeat = function() {
    api.heartbeat.interval( 'fast' );
    $( document ).on( 'heartbeat-send', _.bind( this.heartBeatSend, this ) )
    $( document ).on( 'heartbeat-tick', _.bind( this.heartBeatTick, this ) )
};
```

here is the code that sets up the main events we need to handle to use heartbeat - there are two main events we need to listen for - heartbeat send and heartbeat tick

```
/**
 * Callback to send data to the server.
 *
 * 'this' is bound to the instance of PMC_Sync
 * @see initHeartBeat
 * @param e
 * @param data
 */
PMC_Sync.prototype.heartBeatSend = function( e, data ) {
    data.sync_type = this.properties.type;
};
```

with our heartbeat send method, we attach any data we need to send to the server - in this case, the sync type data point

```
/**
 * Callback to check the heartbeat.
 * @param e
 * @param data
 */
PMC_Sync.prototype.heartBeatTick = function( e, data ) {
    if ( true === this.properties.doingSync ) {
        if ( true === data.in_progress ) {
            window.console.log( 'Tick data', data );
            this.properties.sync_data = data;
            // Update the progress bar which will trigger the text update.
            var value = ( this.properties.sync_data.processed.length / this.properties.sync_data.total ) * 100;
            $( this.DOMElements.progressBar ).progressbar( 'value', value );
        } else {
            // We have no data, wait for next tick.
            if ( false === data.in_progress ) {
                this.syncingComplete( data );
            } else {
                console.log( 'Data not available, waiting for next tick', data );
            }
        }
    }
};
```

here is the haerBeatTick method which handles data returned from the server

```
 * @param data
 */
PMC_Sync.prototype.heartBeatTick = function( e, data ) {
    if ( true === this.properties.doingSync ) {
        if ( true === data.in_progress ) {
            window.console.log( 'Tick data', data );
            this.properties.sync_data = data;
            // Update the progress bar which will trigger the text upd
            var value = ( this.properties.sync_data.processed.length /
            $( this.DOMElements.progressBar ).progressbar( 'value', va
        } else {
            // We have no data, wait for next tick.
            if ( false === data.in_progress ) {
                this.syncingComplete( data );
            } else {
                console.log( 'Data not available, waiting for next tic
            }
        }
    }
};
```

the progress data from the heartbeat is attached to the event, and is used to update the progress bar

```php
function setup() {
    $n = function( $function ) {
        return __NAMESPACE__ . "\\$function";
    };

    add_filter( 'heartbeat_received', $n( 'filter_heartbeat_received'), 10, 2 );
}

/**
 * Filter the spread sync heartbeat response.
 * @param $response
 * @param $data
 *
 * @return mixed
 */
function filter_heartbeat_received( $response, $data ) {
    if ( isset( $data['sync_type'] ) ) {
        $current_vertical_sync = get_option( 'active_'. sanitize_key( $data['sync_type'] ) . '_sync', false ); //
        @codingStandardsIgnoreLine.
        if ( ! $current_vertical_sync ) {
            return $response;
        }
        $response['total'] = count( $current_vertical_sync['to_sync'] ) + count( $current_vertical_sync['processed'] );
        $all_data          = array_merge( $response, $current_vertical_sync );
        return $all_data;
    }

    //
    if ( isset( $data['spreadSyncing'] ) ) {
        $current_spread_status = get_option( 'fivethirtyeight_' . $data['spreadSyncing'] );
        $current_spread_sync_status = get_option( 'active_spread_sync' );
        if ( ! $current_spread_status ) {
            return $response;
```

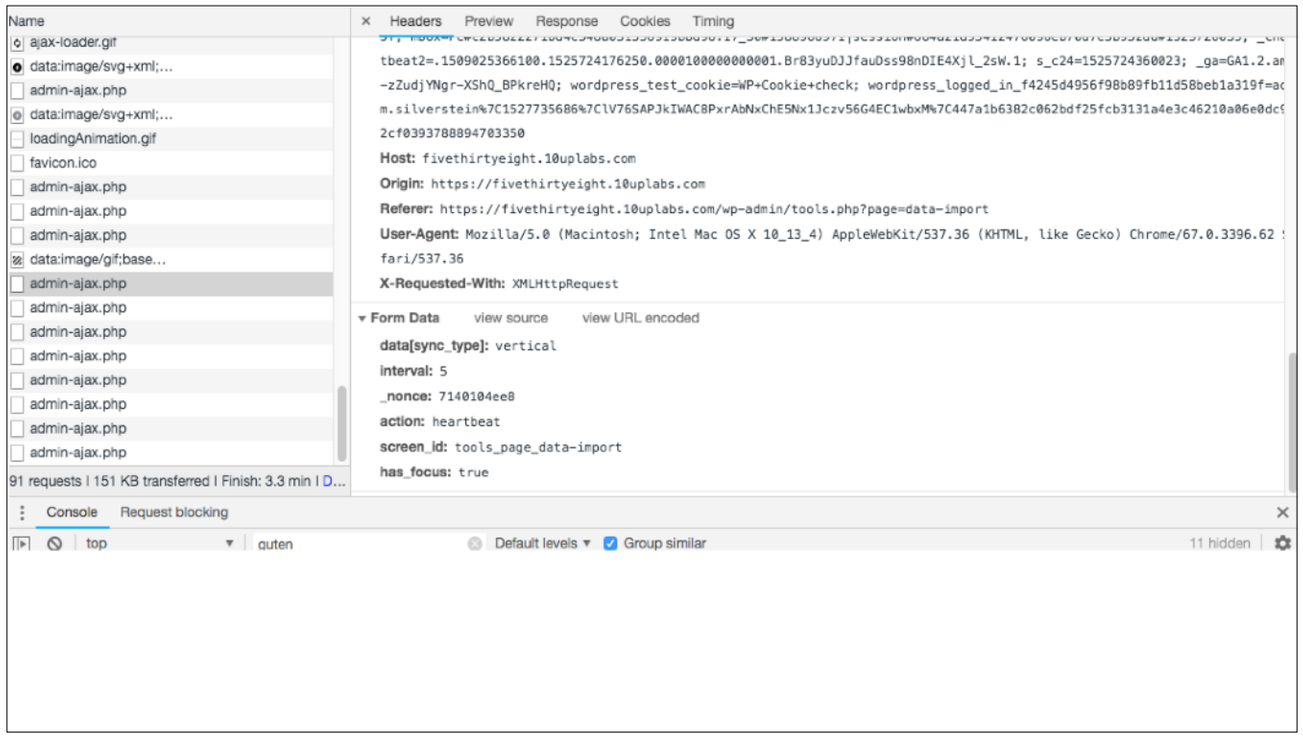
lets take a look at how that data is attached

```php
function setup() {
    $n = function( $function ) {
        return __NAMESPACE__ . "\\$function";
    };

    add_filter( 'heartbeat_received', $n( 'filter_heartbeat_received' ) );
}

/**
 * Filter the spread sync heartbeat response.
 * @param $response
 * @param $data
 *
```

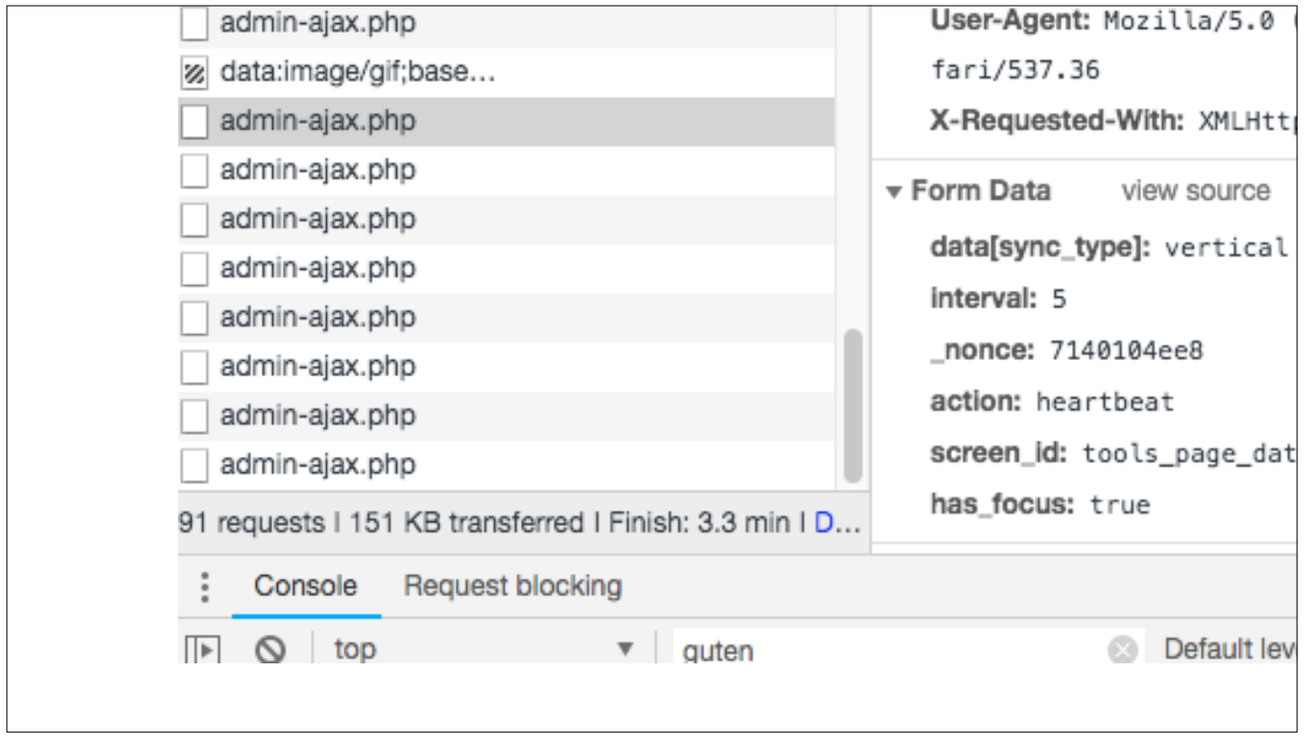
we attach a callback to the heartbeat received filter

```php
/**
 * Filter the spread sync heartbeat response.
 * @param $response
 * @param $data
 *
 * @return mixed
 */
function filter_heartbeat_received( $response, $data ) {
    if ( isset( $data['sync_type'] ) ) {
        $current_vertical_sync = get_option( 'active_'. sanitize_key( $c
        @codingStandardsIgnoreLine.
        if ( ! $current_vertical_sync ) {
            return $response;
        }
        $response['total'] = count( $current_vertical_sync['to_sync'] )
        $all_data          = array_merge( $response, $current_vertical_s
        return $all_data;
    }
```

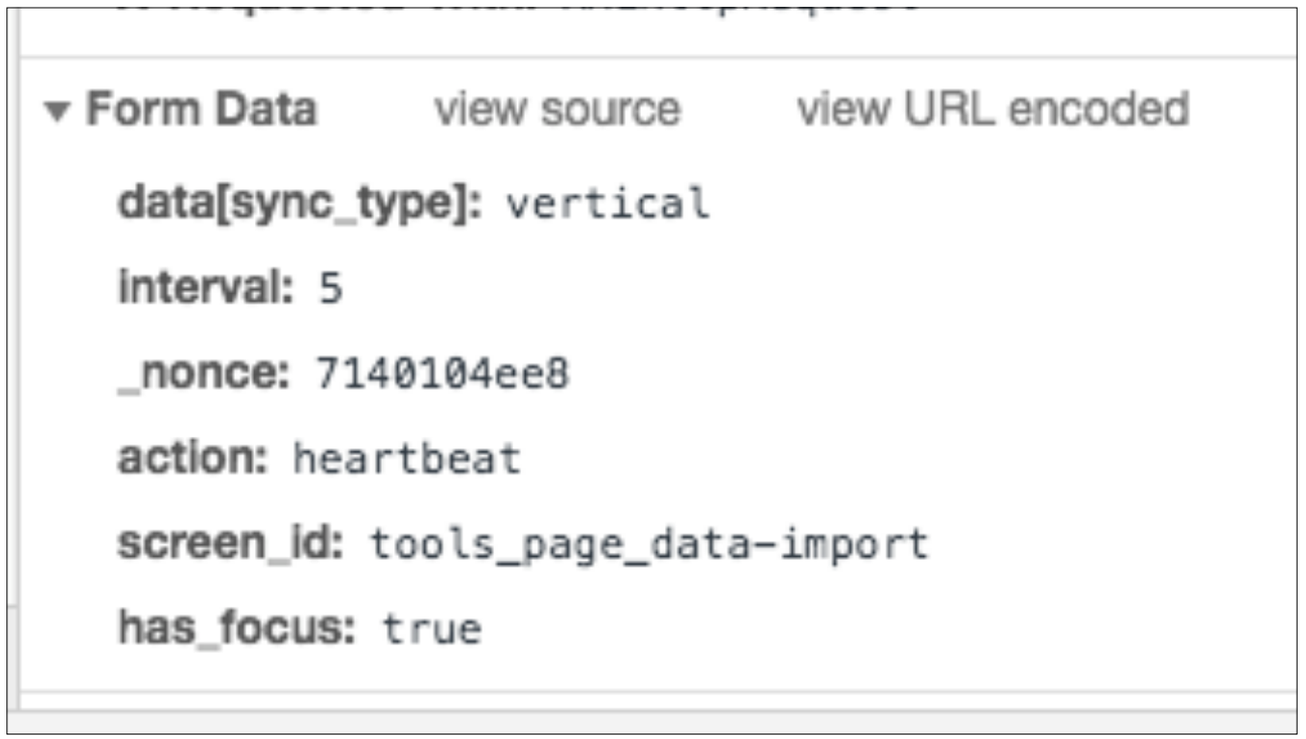
then when we see the sync type is passed, we return the appropriate data from the callback



here is how this looks in the browser… after starting the sync, the heartbeat begins receiving progress updates which are reflected in the UI



because we want pretty real time updates, we set the rate at high or every 5 seconds



every heartbeat we send includes the sync_type data point that will tell our back end code what data we want back

```
  imported: []
  in_progress: true
  objectId: "67"
  objectName: "Sports"
▶ processed: [182641]
  server_time: 1527649346
  started: 1527649337
  sync_type: "vertical"
▶ to_sync: [182591, 182523, 182515, 182505, 182284, 182426, 182328, 182297, 182252, 182226, 182088, 182096,…
  total: 30
  updated: []
  wp-auth-check: true
```


each response includes the list of processed and unprocessed post ids, so we can update the progress bar

wp.customize

Create live preview features for website customization.

The customizer lets you create rich curation and website setting adjustment interfaces that include live previewing. the customizer has always had a robust PHP API. Now we also have a full JavaScript API

https://developer.wordpress.org/themes/customize-api/the-customizer-javascript-api/

wp.customize

developer.wordpress.org/themes/customize-api/the-customizer-javascript-api/

make.wordpress.org/core/2017/11/01/improvements-to-the-customize-js-api-in-4-9/

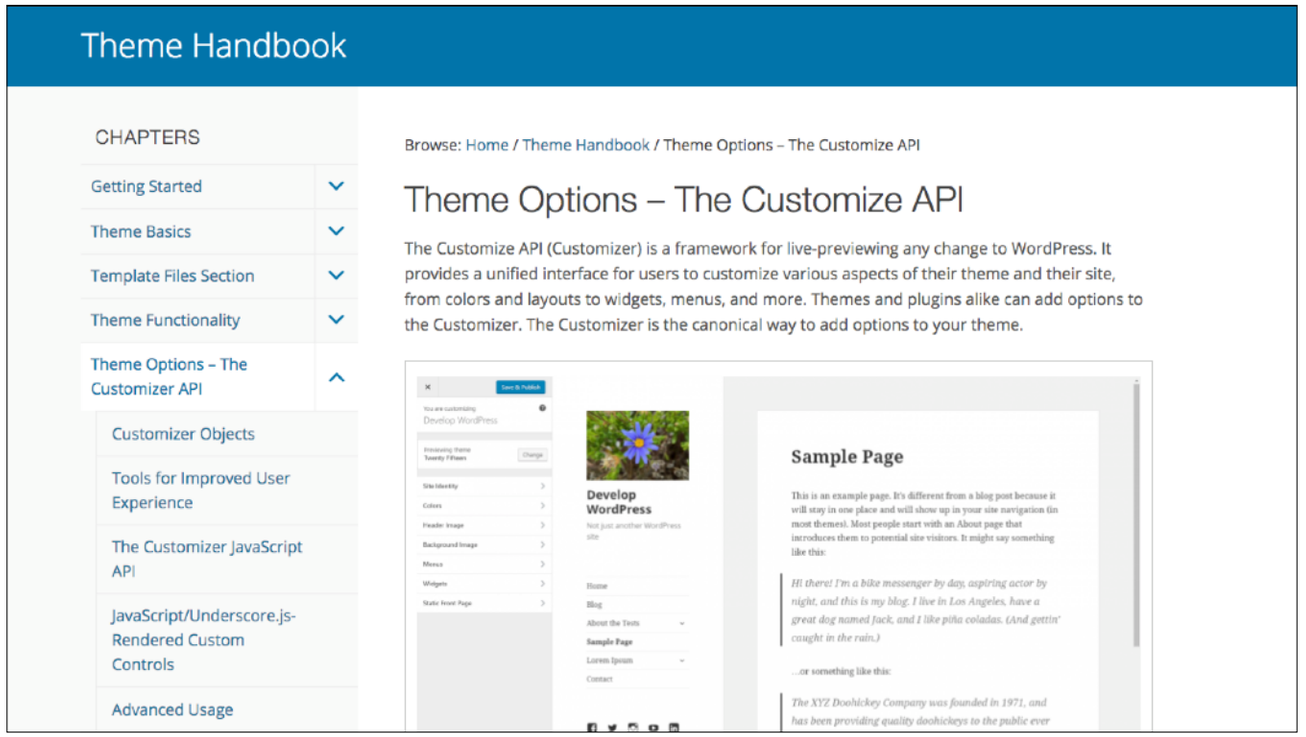
github.com/xwp/wp-customize-featured-content-demo

Since WordPress 4.9 you can now do everything in the customizer. controls, sections, panels are now fully manageable in JavaScript - which enables more dynamic interactions

— —

Weston wrote up a detailed blog post about using JavaScript to work with the customizer and I'll share a link in my slides

https://make.wordpress.org/core/2017/11/01/improvements-to-the-customize-js-api-in-4-9/



Fortunately the customizer APIs are very well documented and there are great examples of how to use it for a variety of use cases

Add Controls in JavaScript

```
var setting = new wp.customize.Setting( ‘foo', value, {
    transport: ‘postMessage',  /* ... */
} );

wp.customize.control.add(
    new wp.customize.Control( 'foo', { /* … */ } )
);
```

You can Create controls, sections, and panels and manage them fully in JavaScript

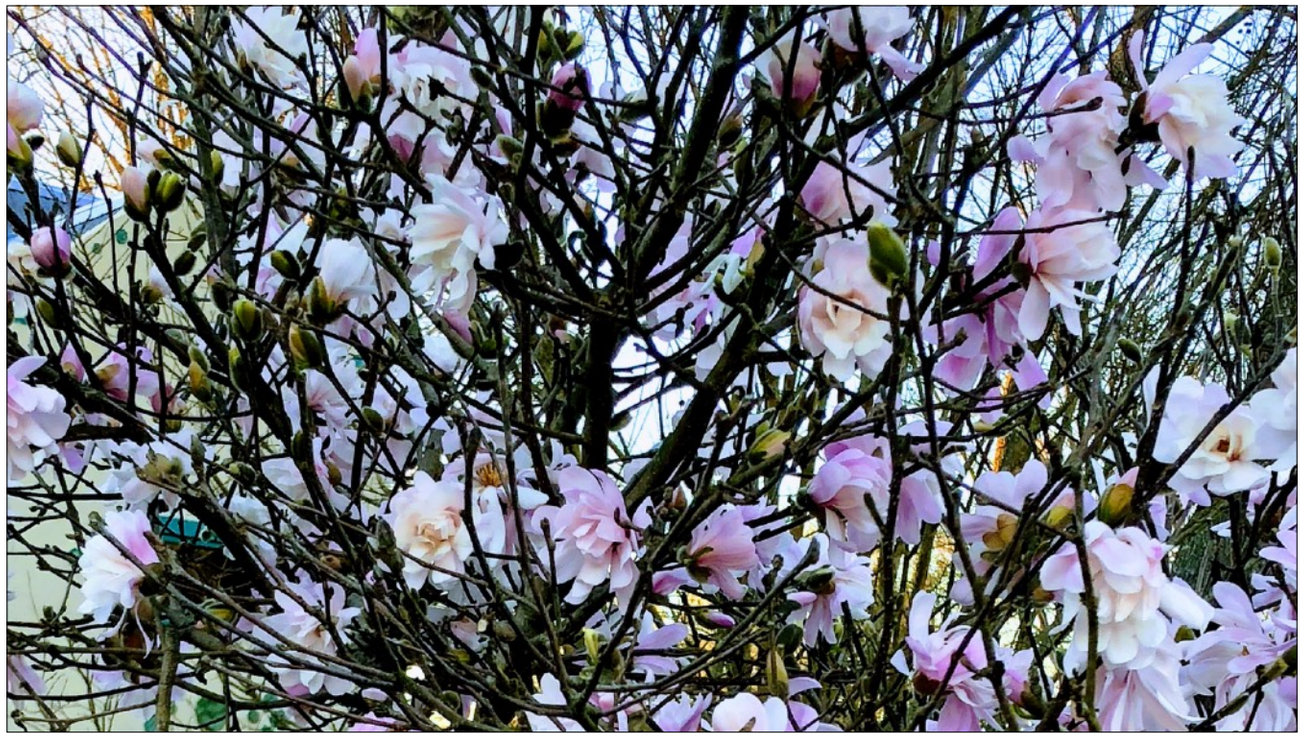
this means you can add custom controls as you need them, for example when the user navigates to a page in a specific category

wp.ajax

lkwdwrd.com/using-wp-ajax-async-requests/

wp.ajax may be getting a little old in, but it is still a reliable useful tool in the WordPress context. a simple helper lets you interact with wp_ajax callbox you have added in PHP.

Lukes Woodward’s tutorial is still the best source of information on wp.ajax



time for another breather

wp.api

Helper client to quickly interact with the REST API;
automatically creates Backbone models and collections
for API endpoints, including custom post types.

wp-api is great when you need top quickly interact with the REST API, especially if you want to leverage Backbone models and collections to manage your data

Enqueue

```
wp_enqueue_script( 'wp-api' );
```

All you do is enqueue it or make it a script dependency. It works by parsing the api schema to determine what routes are available.

Set up a post model

```
var post = new wp.api.models.Post( { 'id': 1 } );
```

Here is all the code I need to set up a post model

Request the post

```
post.fetch();
```

and since this is Backbone, a simple fetch command loads the post from the REST API endpoint.

```
> post.attributes
< ▼Object {id: 1, date: "2017-02-16T04:06:43", date_gmt: "2017-02-16
    author: 1
  ▶ categories: Array(1)
    comment_status: "open"
  ▶ content: Object
    date: "2017-02-16T04:06:43"
    date_gmt: "2017-02-16T04:06:43"
  ▶ excerpt: Object
    featured_media: 0
    format: "standard"
  ▶ guid: Object
    id: 1
    link: "http://demo.localhost/2017/02/16/hello-world/"
  ▶ meta: Array(0)
    modified: "2017-02-16T04:06:43"
    modified_gmt: "2017-02-16T04:06:43"
    ping_status: "open"
    slug: "hello-world"
    sticky: false
  ▶ tags: Array(0)
    template: ""
  ▶ title: Object
```

Here is the data returned by the REST API, now stored in the post model's attributes

```
post.set( 'title', 'Updated title!' );
post.save();
```

Updating posts is just as easy using cookie based authentication assuming you are already logged into WordPress. The wp.api client automatically adds the required **nonce authorization headers** when making these requests

```php
register_post_type(
	'books',
	array(
		'label'               => 'Books',
		'show_in_rest'        => true,
		'public'              => true,
		'publicly_queryable' => true,
	)
);
```

This works with custom post types and registered meta as well, as long as you set show_in_rest to true - for example given this books custom post type

```
var book = new wp.api.models.Books();
book.fetch();
```

You can now fetch from the books model

```
var posts = new wp.api.collections.Posts();
posts.fetch().done() {
    // Do something with the collection.
}
```

Collections of every object type are available as well

```
post.getCategories();
post.getTags();
post.getAuthorUser();
post.getFeaturedMedia();
post.getRevisions();
post.getDate();
```

post models also include helpers to get related data when it is available

wp.apiRequest

```
wp.apiRequest(
    {
        path: `/wp/v2/${ basePath }/${ post.id }`,
        method: 'PUT',
        data: toSend
    } ).then( ( newPost ) => {
```

wp.apiRequest is a simple Lower level helper for making rest api requests. it returns a promise and is perfect for sending requests right to the api. like the wp.api client it handles nonces for cookie based authentication automatically

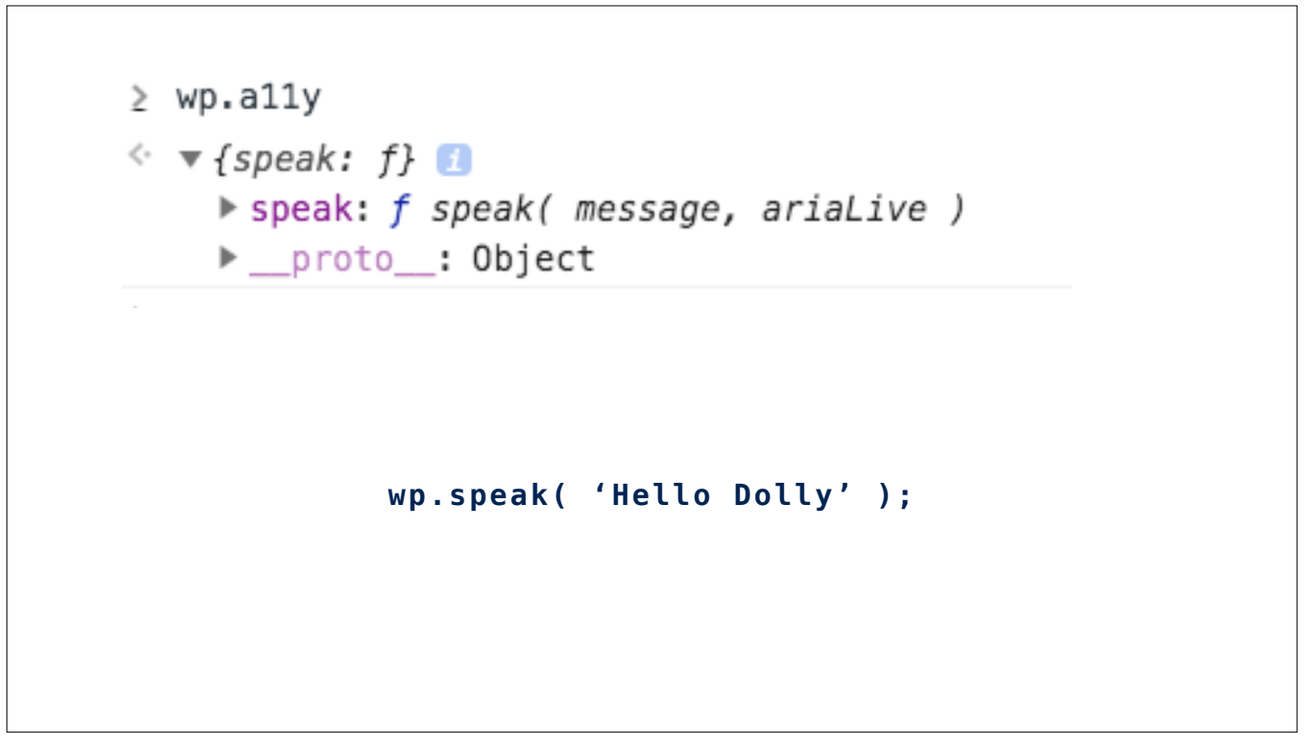
wp.utils.WordCounter, wp.sanitize, wp.a11y

There are many smaller utility objects available in WordPress including WordCounter for counting words, characters or sentences.

wp.sanitize helps make it safer to output html in JavaScript (but has some limitations)

stripTags strips HTML tags

stripTagsAndEncodeText strips tags and converts HTML entities



wp.a11y has only one method - its speaks the message you pass it to assistive screen readers.

announcing inline updates that may not be apparent to screen readers is critical in javascript apps when some asynchronous event occurs - for example when an auto search return additional results.

WordPress NPM Packages

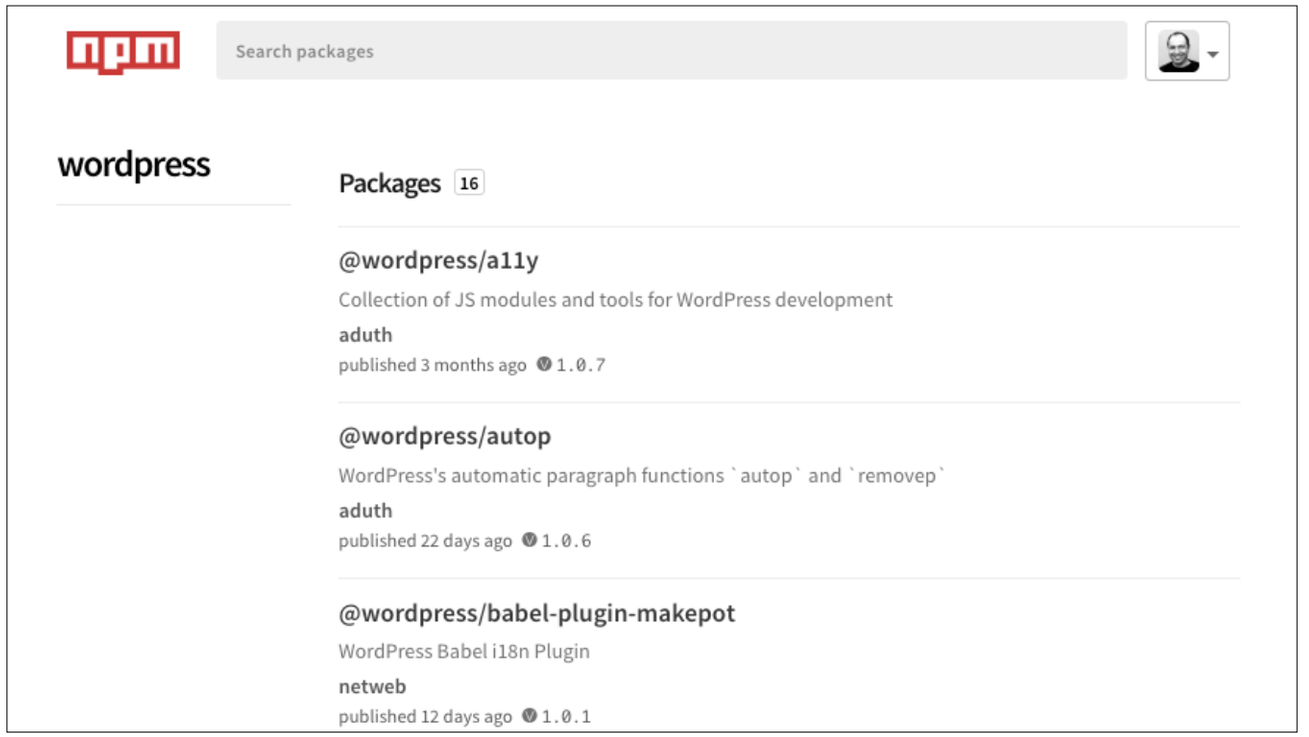
let move on to NPM and we will circle back to wp.wordCount.

we have been moving code that are useful to wordpress developers into npm packages

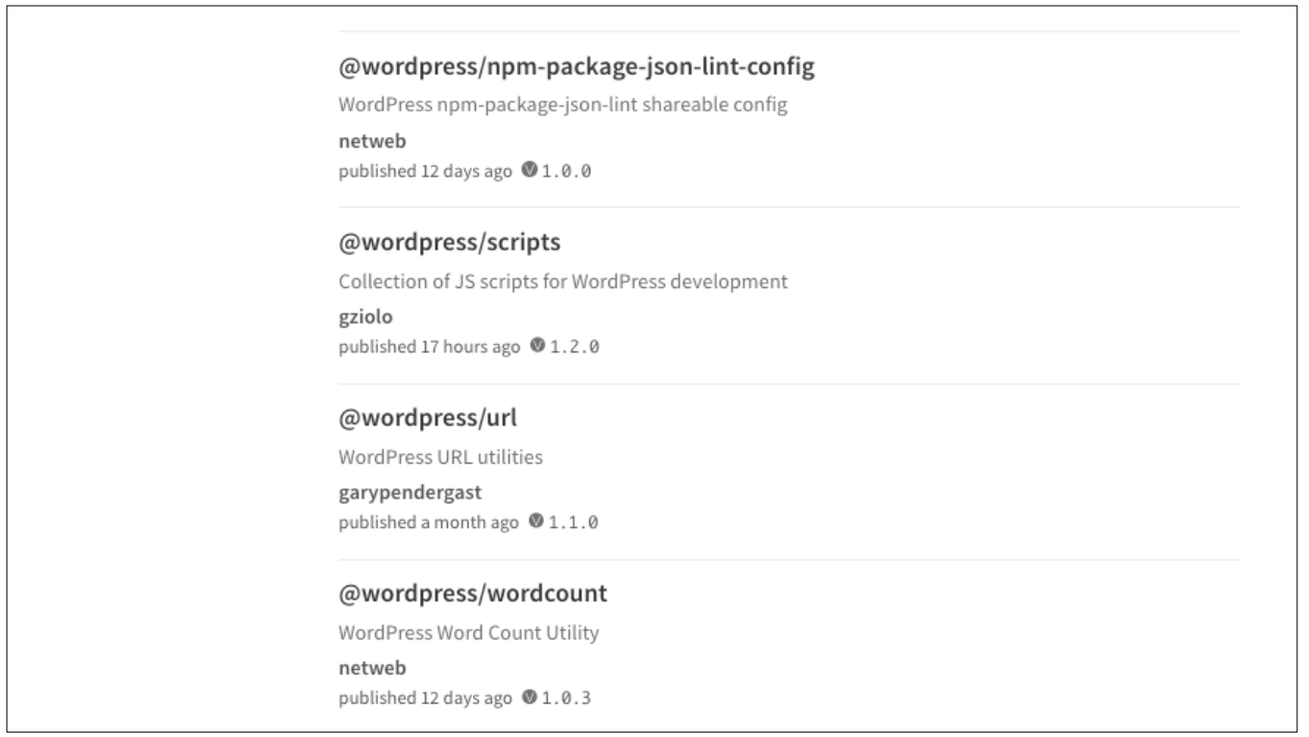
packages are the new way of incorporating external modular code in JavaScript the old way was putting everything on a wp global

npmjs.com/org/wordpress

imagine a future app you are building that is no longer tied to wordpress,



you are building something with a purely JavaScript stack that works with WordPress, but might also work on a static site or a display kiosk.



as WordpPress packages become available on npm, you can include them directly into your JavaScript apps - making them more portable and not tied directly to running in WordPress

bundling from npm also moves you away from globals which represent a security vector because they can be tampered with.

Gutenberg packages

github.com/WordPress/gutenberg/issues/3955

gutenberg has begin the process of publishing their core apis to packages as well

- [x] `api-request` (#7018)
- [x] `blob` (#6973) - extracted from `utils`
- [ ] `blocks` - depends on `wp.shortcode` and `window._wpBlocks`
- [ ] `core-blocks`
- [x] `core-data` (#7222)
- [ ] `components`
- [ ] `editor`
- [ ] `edit-post`
- [x] `data` (#6828)
- [x] `date` (#6658)
- [x] `deprecated` (#6914) - extracted from `utils`
- [x] `dom` (#6758) - extracted from `utils`
- [x] `element` (#6756)
- [x] `library-export-default-webpack-plugin` (#6935)
- [x] `plugins` (#7235)
- [ ] ~~`utils`~~ - to be extracted into smaller packages
- [ ] `viewport` - depends on `components`

like everything Gutenberg, the project is proceeding at breakneck speed and some of the most important APIs like wp.data and wp.element are already available. using these packages means you can write javascript code that runs in both gutenberg and the classic editor

wp.wordcounter the old way:

PHP:

```
wp_enqueue_script( ‘script’, ‘wc.js’, array( ‘word-count’ ) );
```

JavaScript:

```
var counter = new wp.utils.WordCounter();
var numberOfWords = wp.count( 'Words to count', 'words', {} );
```

the old way of doing things is to use the dependency management built into wp_enqueue_script

first we add the script dependency to make sure the word count global is available when our JavaScript loads, then we use the global directly

wp.wordcounter the new way:

PHP: No PHP!

Command Line:

```
npm install @wordpress/wordcount –save
```

JavaScript:

```
import { count } from '@wordpress/wordcount';
const numberOfWords = count( 'Words to count', 'words', {} );
```

the modern approach requires no PHP. instead, we add the wordpress/wordcount package to our project from the command line. then in our javascript we can import and use the count method directly. no more depending on the wp global

wp.hooks

A lightweight & efficient EventManager for JavaScript.

Ok, one final major api that is now available as a package and has been getting use and testing in Gutenberg

wp.hooks aims to be the equivalent to the php hooks we have currently in wordpress core

```
npm install @wordpress/hooks --save
```

You can add wp.hooks to your project by importing it from npm

```
npm install @wordpress/hooks --save
```

```
import { createHooks } from '@wordpress/hooks';

myObject.hooks = createHooks();
myObject.hooks.addAction(); //etc...
```

You can add wp.hooks to your project by importing it from npm

- `addAction( 'hookName', 'functionName', callback, priority )`
- `addFilter( 'hookName', 'functionName', callback, priority )`
- `removeAction( 'hookName', 'functionName' )`
- `removeFilter( 'hookName', 'functionName' )`
- `removeAllActions( 'hookName' )`
- `removeAllFilters( 'hookName' )`
- `doAction( 'hookName', arg1, arg2, moreArgs, finalArg )`
- `applyFilters( 'hookName', content, arg1, arg2, moreArgs, finalArg )`
- `doingAction( 'hookName' )`
- `doingFilter( 'hookName' )`
- `didAction( 'hookName' )`
- `didFilter( 'hookName' )`
- `hasAction( 'hookName' )`
- `hasFilter( 'hookName' )`

wp.hooks has all the same functions that you are familiar with in wordpress php hooks. you have add action and do action, add filter and apply filter, along with helpers like remove action and has action

```php
/**
 * Adds the hook to the appropriate hooks container.
 *
 * @param {string}   hookName  Name of hook to add
 * @param {string}   namespace The unique namespace identifying the callback in the form `vendor/plugin/function`.
 * @param {Function} callback  Function to call when the hook is run
 * @param {?number}  priority  Priority of this hook (default=10)
 */
return function addHook( hookName, namespace, callback, priority = 10 ) {
```

these all work pretty much as you would expect them to if you are familiar with core php hooks - one difference is we currently require a namespace when adding a hook, which you need if you want to remove a hook later.

```
function addBackgroundColorStyle( props ) {
        return Object.assign( props, { style: { backgroundColor: 'red' } } );
}

wp.hooks.addFilter(
        'blocks.getSaveContent.extraProps',
        'my-plugin/add-background-color-style',
        addBackgroundColorStyle
);
```

hooks are now an experimental API in Gutenberg Filters let you extend block.

in this example I’m using the blocks.getSaveContent.extraProps
 to attach an additional style to all blocks

dropping this code into your console you will see all the block backgrounds turn red

withFilters

`withFilters` is a part of Native Gutenberg Extensibility. It is also a React higher-order component.

Wrapping a component with `withFilters` provides a filtering capability controlled externally by the `hookName` .

Usage

```
/**
 * WordPress dependencies
 */
import { withFilters } from '@wordpress/components';

function MyCustomElement() {
        return (
                <div>
                        content
                </div>
        );
}

export default withFilters( 'MyCustomElement' )( MyCustomElement );
```

Any component can be made filterable by wrapping it in the `withFilters` higher order component in Gutenberg. Using filter is a great way to make your Gutenberg code more extensible.

Speaking of Gutenberg, lets talk about a couple of the major apis built in Gutenberg that are also becoming available as npm packages

everything in gutenberg has some documentation, and the gutenberg developer handbook is a great place to start learning

github.com/WordPress/gutenberg/tree/master/docs

block-api	Packages: Move element to packages maintained by Lerna (#6756)	27 days ago
blocks	Adding `ServerSideRender` information (#6838)	18 days ago
extensibility	Support opt-in visual styles for core blocks	11 days ago
outreach	Update meetups.md (#6829)	24 days ago
reference	Add support for Child Blocks (#6753)	15 days ago
block-api.md	Add API to configure icon colors (#7068)	7 days ago
blocks.md	Replace incorrect word in docs/blocks.md (#4235)	5 months ago
extensibility.md	Docs: Update folder structure and make all internal handbook links re...	2 months ago
final-g-wapuu-black.svg	Adds in logo by Cristel (#5202)	4 months ago
grammar.md	Docs: Auto-generate human-readable version of Gutenberg block grammar (...	16 days ago
language.md	Docs: Update folder structure and make all internal handbook links re...	2 months ago
manifest.json	Fix rich-text markdown source (#7085)	10 days ago
outreach.md	Update outreach.md	10 months ago
readme.md	Docs: Gutenberg is the "new" editor focus, rather than the "2017" foc...	27 days ago
reference.md	Docs: Update folder structure and make all internal handbook links re...	2 months ago
templates.md	Add `my_` prefix to callback function for registering post type (#5150)	3 months ago

The GitHub repository also has a wealth of information and major components include their own documentation. getting involved in testing and contributing to Gutenberg is a great way to learn modern javascript practices

wp.plugins

register custom fill components into specific slots in Gutenberg

an api for registering custom components into specific slots in the Gutenberg UI

Plugins API

The plugins API contains the following methods:

`wp.plugins.registerPlugin( name: string, settings: Object )`

This method registers a new plugin.

This method takes two arguments:

1. `name` : A string identifying the plugin. Must be unique across all registered plugins.
2. `settings` : An object containing the following data:
    - `render` : A component containing the UI elements to be rendered.

See the edit-post module documentation for available components.

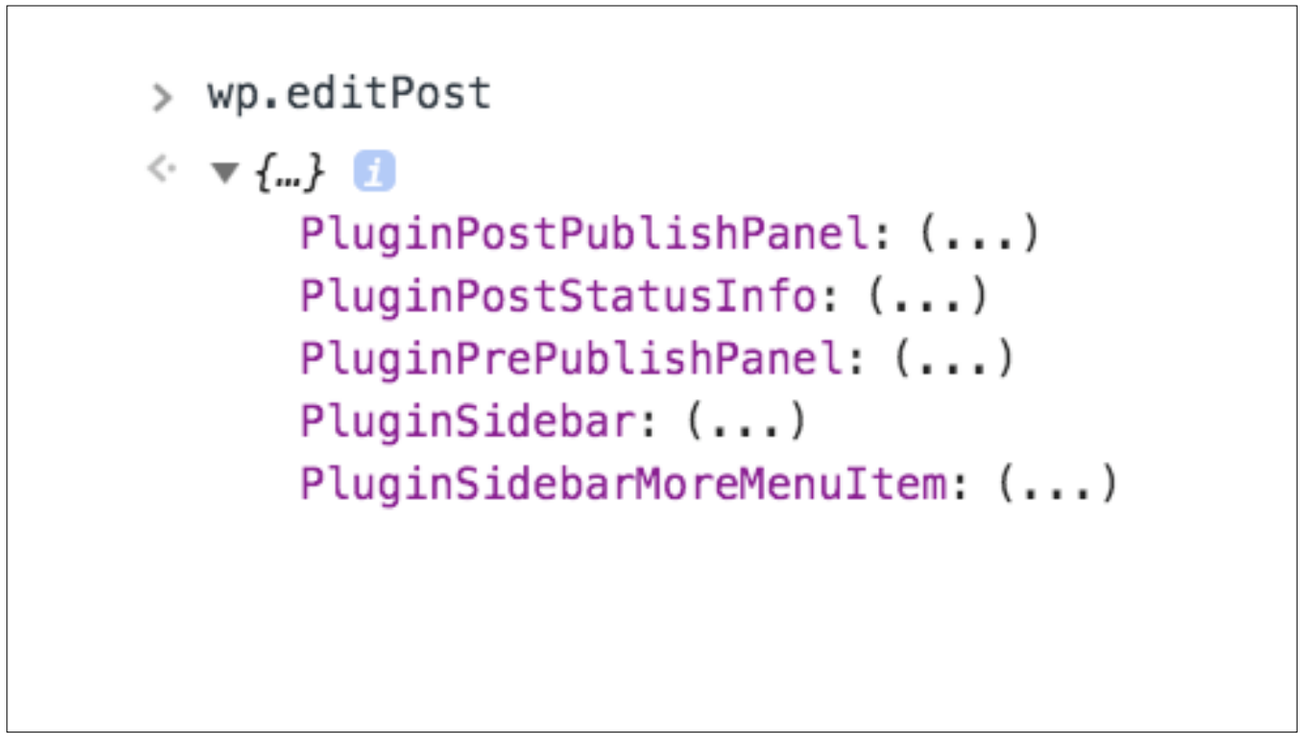
Example:

```
const { Fragment } = wp.element;
const { PluginSidebar, PluginSidebarMoreMenuItem } = wp.editPost;
const { registerPlugin } = wp.plugins;

const Component = () => (
```

you'll find documentation about using wp.plugins in the github repository, but it might be a bit out of date

```
const Component = () => (
	<Fragment>
		<PluginSidebarMoreMenuItem
			target="sidebar-name"
			icon="smiley"
		>
			My Sidebar
		</PluginSidebarMoreMenuItem>
		<PluginSidebar
			name="sidebar-name"
			title="My Sidebar"
		>
			Content of the sidebar
		</PluginSidebar>
	</Fragment>
);

registerPlugin( 'plugin-name', {
	render: Component,
} );
```

it allows you to render custom “fills” that get rendered into their correct location by Gutenberg. this is akin to how we would use a PHP action hook to output new UI elements in the classic editor.



The complete list of fills keeps changing, and you can find them in the console by examining the wp.editPost global while in Gutenberg

wp.data

Manage and interact with state.

wp data is the way you can manage and interact with data in Gutenberg, and in your own gutenberg plugins.

```
npm install @wordpress/data --save
```

this should look familiar by now, wp.data is just an npm install away, and you can use it to write code that works in gutenberg, and also works outside gutenberg, for example, on the front end.

Data

WordPress' data module serves as a hub to manage application state for both plugins and WordPress itself, providing tools to manage data within and between distinct modules. It is designed as a modular pattern for organizing and sharing data: simple enough to satisfy the needs of a small plugin, while scalable to serve the requirements of a complex single-page application.

The data module is built upon and shares many of the same core principles of Redux, but shouldn't be mistaken as merely *Redux for WordPress*, as it includes a few of its own distinguishing characteristics. As you read through this guide, you may find it useful to reference the Redux documentation — particularly its glossary — for more detail on core concepts.

Registering a Store

Use the `registerStore` function to add your own store to the centralized data registry. This function accepts two arguments: a name to identify the module, and an object with values describing how your state is represented, modified, and accessed. At a minimum, you must provide a reducer function describing the shape of your state and how it changes in response to actions dispatched to the store.

```
const { data, apiRequest } = wp;
const { registerStore, dispatch } = data;
```

wp.data will look familiar if you have used Redux, with a similar data flow. The wp.data API builds on this to provide a complete set of state management tools for developers

Riad Benguella

Thoughts and Projects

riad.blog/2018/06/07/efficient-client-data-management-for-wordpress-plugins/

The API is now solidifying, and for the latest information on wp.data, I recommend reading Riad Benguealla’s recent blog post

Riad explains the latest wp.data api features including how to retrieve, update and respond to changes in Gutenberg Data. Also, how to register a custom data “namespace” to store your own app’s data and finally how to use wp.data to fetch WordPress Data via the REST API.

wp.element

wp.element is, quite simply, an abstraction layer atop React

and with that we come to our final api of the talk, wp.element which is an abstraction layer atop React

```
npm install @wordpress/element --save
```

include it in your javascript app by importing it from npm. an application built to render with wp.element will function in both gutenberg and the classic editor, or anywhere!

```
<div id="greeting"></div>
<script>
function Greeting( props ) {
        return wp.element.createElement( 'span', null,
                'Hello ' + props.toWhom + '!'
        );
}

wp.element.render(
        wp.element.createElement( Greeting, { toWhom: 'World' } ),
        document.getElementById( 'greeting' )
);
</script>
```

here is a simple example of using wp.element. if you have used react before this will look familiar to you - its exactly like react and in fact calls react underneath the hood

```
<div id="greeting"></div>
<script>
function Greeting( props ) {
        return wp.element.createElement( 'span', null,
                'Hello ' + props.toWhom + '!'
        );
}

wp.element.render(
        wp.element.createElement( Greeting, { toWhom: 'World' } ),
        document.getElementById( 'greeting' )
);
</script>
```

importantly the createElement and Render methods map directly to those methods in react.

if you are new to react but know jQuery, this code is very similar to doing DOM construction and rendering using the $.html() function.

ok wrapping up I hope i’ve left you with a few takeaways:

WordPress comes with a large amount of built in JavaScript tools you can leverage in your plugins and themes

learning javascript deeply means learning the frameworks and build tools that make up the modern javascript ecosystem

leveraging npm , JavaScript apps can use a single codebase to build features that work inside and outside of WordPress

Get involved in contributing to Gutenberg to learn modern JavaScript deeply!

That’s all!

github.com/adamsilverstein/wceu2018

adam@10up.com • *@roundearth*

Thats all folks. I’m Adam Silverstein and I work for 10up where we make a better web thats maybe even fun. And yes, we are hiring!

I’ll be around later in the community room, so please come talk to me if you want to get involved in contributing to Gutenberg or have questions about what I covered.