Bundling

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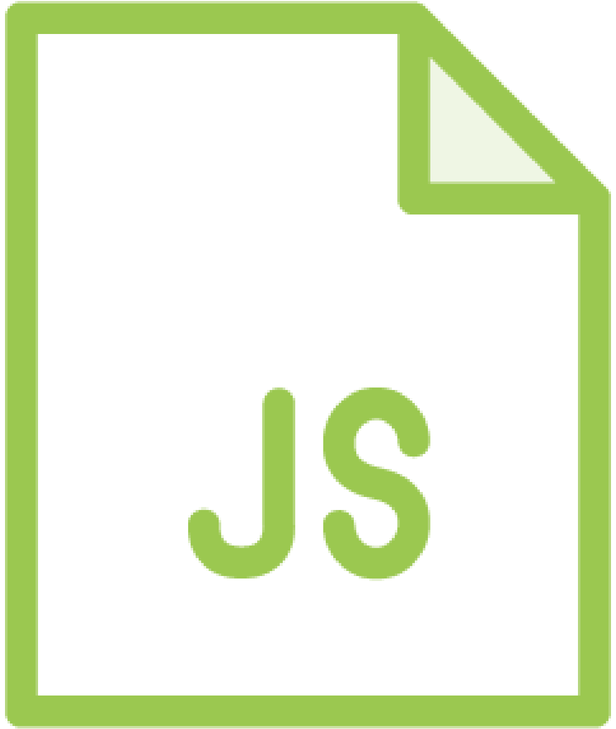
Why Bundle?



CommonJS doesn’t work in web browsers

Package project into file(s)

Improve Node performance

Here’s the plan

Module formats

Bundlers

Implement ES6 modules and bundling

Select a Module Format

5 Module Formats

IIFE

Asynchronous Module Definition (AMD)

CommonJS (CJS)

Universal Module Definition (UMD)

ES6 Modules

```
myGlobal;

(function() {
  //my code here
})();

define([‘jq’], function(jq) {});

var jquery = require(‘jquery’)

import jQuery from ‘jquery’
```

- Global
- IIFE
- AMD

The past

- CommonJS
- ES6 Module

Why Use ES6 Modules?

Standardized

Statically analyzable

- Improved autocomplete
- Intelligent refactoring
- Fails fast
- Tree shaking

Easy to read

- Named imports
- Default exports

Selecting a Bundler

The First Popular Bundler...

First popular bundler

Utilizes and helped popularize AMD pattern

Bundlers

Browserify

Webpack

Rollup

JSPM

Browserify

The first bundler to reach mass adoption

Bundle npm packages for the web

Large plugin ecosystem

Webpack

Bundles more than just JS

Import CSS, images, etc like JS

Built in hot-reloading web server

Rollup

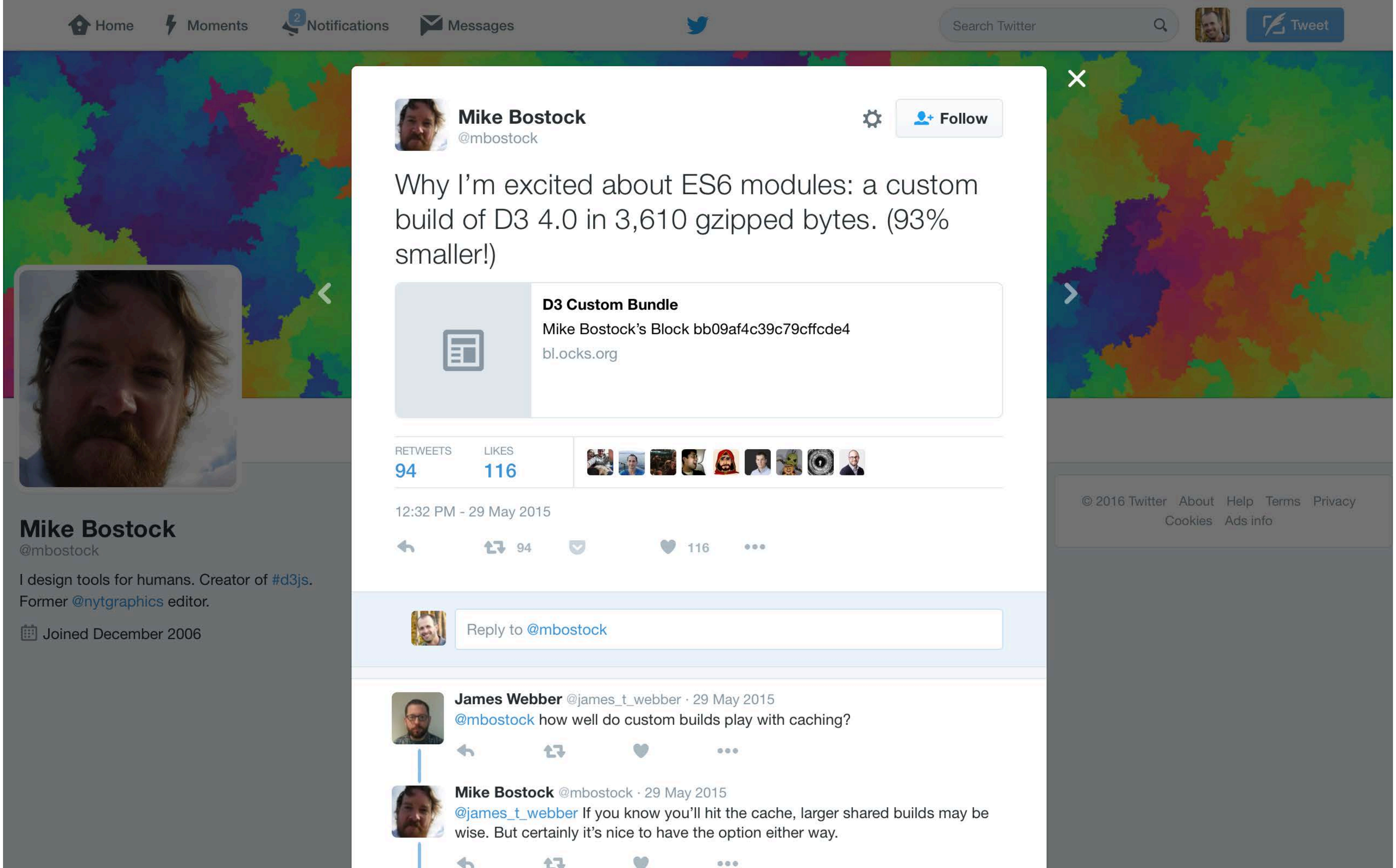
Tree shaking

Faster loading production code

Quite new

Great for library authors

No hot reloading and code splitting yet



Mike Bostock
@mbostock

Why I'm excited about ES6 modules: a custom build of D3 4.0 in 3,610 gzipped bytes. (93% smaller!)

D3 Custom Bundle
Mike Bostock's Block bb09af4c39c79cffcde4
bl.ocks.org

RETWEETS 94 LIKES 116

12:32 PM - 29 May 2015

94 116

Mike Bostock
@mbostock

I design tools for humans. Creator of #d3js. Former @nytgraphics editor.

Joined December 2006

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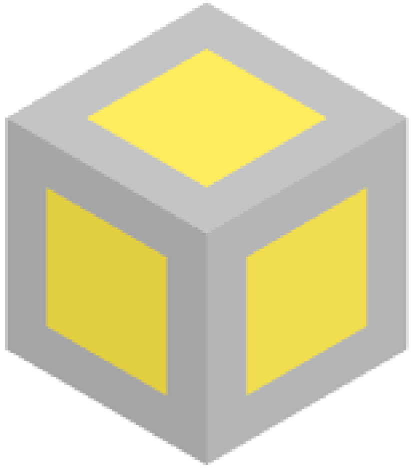
James Webber @james_t_webber · 29 May 2015
@mbostock how well do custom builds play with caching?

Mike Bostock @mbostock · 29 May 2015
@james_t_webber If you know you'll hit the cache, larger shared builds may be wise. But certainly it's nice to have the option either way.

JSPM



Uses SystemJS, a universal module loader

Can load modules at runtime

Has its own package manager

Can install from npm, git

Uses Rollup

Bundlers

Browserify	Webpack	Rollup	JSPM
Simple	Comprehensive	Tree-shaking Performance	Runtime loader Package manager

Why Webpack?

webpack
MODULE BUNDLER

Much more than just JS

- CSS
- Images
- Fonts
- HTML

Bundle splitting

Hot module reloading

Webpack 2 offers tree shaking

Demo

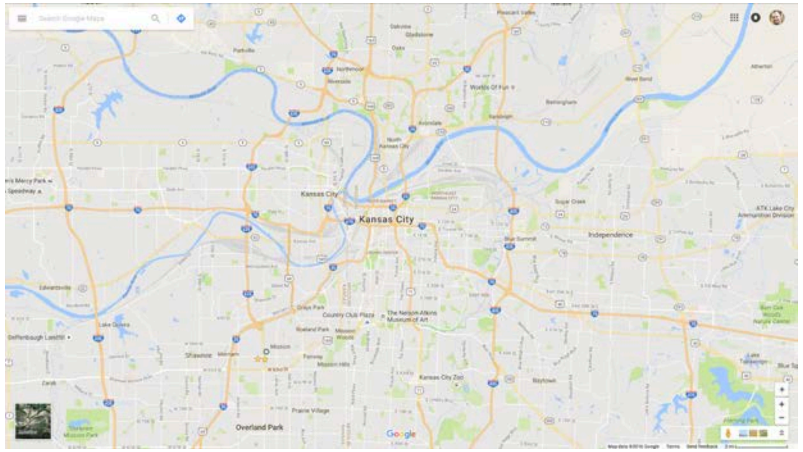
Set up Webpack

Sourcemaps

“How do I debug transpiled and bundled code?”

- Dev who hasn’t seen the beauty of sourcemaps

Sourcemaps



Maps code back to original source

Part of our build

Downloaded if you open developer tools

Demo

Debugging via Sourcemaps

Wrap Up

Module formats

- IIFE, AMD, UMD, CommonJS, ES6

Bundlers

- Browserify, Webpack, Rollup, JSPM

Implement ES6 modules and bundling

Debug via sourcemap

Next up: Linting