

MONOREPOS

THE GOOD
THE BAD
AND THE UGLY

The plan

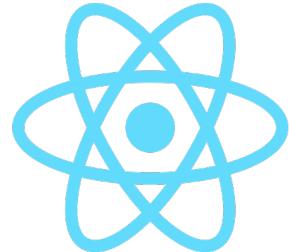
- The Good – why would I want one?
- The Bad – what's the catch?
- The Ugly – how do I get one?

**What is a
monorepo?**

**Contains multiple
packages or projects**

Examples

React



Branch: master ▾ react / packages /		Create new file	Upload files	Find file	History
	gaearon Split ReactDOM entry point (#17331) ...				● Latest commit b8f8258 2 hours ago
..					
	babel-plugin-react-jsx Modify Babel React JSX Duplicate Children Fix (#17101)				26 days ago
	create-subscription Update local package versions for 16.10 release				19 days ago
	eslint-plugin-react-hooks Update local package versions for 16.10 release				19 days ago
	jest-mock-scheduler chore: upgrade to jest 24 (#15778)				last month
	jest-react Update local package versions for 16.10 release				19 days ago
	legacy-events Move eventSystemFlags to last argument in event plugin extractors (#1...				last month
	react-art Update local package versions for 16.10 release				19 days ago
	react-cache Prefix mock Scheduler APIs with _unstable (#15999)				5 months ago
	react-debug-tools Rename createSyncRoot to createBlockingRoot (#17165)				18 days ago
	react-devtools-core DevTools standalone shell changes: (#17213)				10 days ago
	react-devtools-extensions docs: Fixed a typo in readme.md (#17119)				18 days ago

Babel

BABEL

Branch: master ▾ babel / packages /		Create new file	Upload files	Find file	History
	chrishinrichs and existentialism Fix: Don't call Object.keys on non-objects (#10482) (#10683)		✓ Latest commit 70c0ed5	2 days ago	
..					
	babel-cli	v7.7.0		5 days ago	
	babel-code-frame	v7.5.5		4 months ago	
	babel-core	v7.7.2		4 days ago	
	babel-generator	v7.7.2		4 days ago	
	babel-helper-annotate-as-pure	v7.7.0		5 days ago	
	babel-helper-bindify-decorators	v7.7.0		5 days ago	
	babel-helper-builder-binary-assignm...	v7.7.0		5 days ago	
	babel-helper-builder-react-jsx	v7.7.0		5 days ago	
	babel-helper-call-delegate	v7.7.0		5 days ago	
	babel-helper-create-class-features-p...	v7.7.0		5 days ago	
	babel-helper-create-regexp-features...	v7.7.2		4 days ago	
	babel-helper-define-map	v7.7.0		5 days ago	

**“Juggling a multimodule
project over multiple repos is
like trying to teach a newborn
baby how to ride a bike”**

Alternatives

- Monolith
- Multirepo

A photograph of a desert landscape at sunset. The sky is filled with warm orange and yellow hues. In the foreground, there are silhouettes of bare branches and small birds. The middle ground shows rolling hills and mountains. The text "THE GOOD" is overlaid in large, white, bold letters.

THE GOOD

Why would I **want** one?

- One development environment
- Common configuration
- Cross package changes
- Single culture

One development environment

- Everything in one place
- Backend and frontend
- Easy to get started

Common configuration

- Top level eslint/prettier/babel
- Less convention switching

Cross package changes

- One pull request for feature spanning multiple packages
- One review

Single culture

- Software is easy
- People are hard

A wide-angle photograph of a desert landscape at sunset. The sky is filled with warm, orange and yellow clouds. In the foreground, there are dry, brown grasses and shrubs. A range of mountains is visible in the middle ground, their peaks silhouetted against the bright sky. On the right side, several tall saguaro cacti stand against the horizon.

THE BAD

What's the **catch**?

- Bigger repository
- Longer build times
- Broken master
- Tooling less mature
- Fewer resources
- Incompatible culture

Bigger repository



Bigger repository

Example: VFS for Git and the Windows repository

Here's a comparison of some common Git actions on the Windows repository with Azure DevOps.

Action	Without VFS for Git	With VFS for Git
Clone (Bare)	12+ hours	4-5 minutes
Checkout	3 hours	30 seconds
Status	10 minutes	3 seconds
Commit	30 minutes	6 seconds

Longer build times



Broken master



Tooling **less** mature

- Tools assume things that don't hold for monorepos
- Continuous Integration tools are tricky

Fewer resources

- Sometimes you're on your own

Incompatible culture

- Requires trust
- Having your own repository can free you from bureaucracy
- Quality of code reviews
- Shared ownership

A photograph of a desert landscape at sunset. The sky is filled with warm, orange and red hues, with darker clouds on the horizon. In the foreground, there's a large, leafless tree with many branches. The ground is covered in dry, brown vegetation. The overall atmosphere is moody and cinematic.

THE UGLY

How do I get a monorepo?



Incremental migration

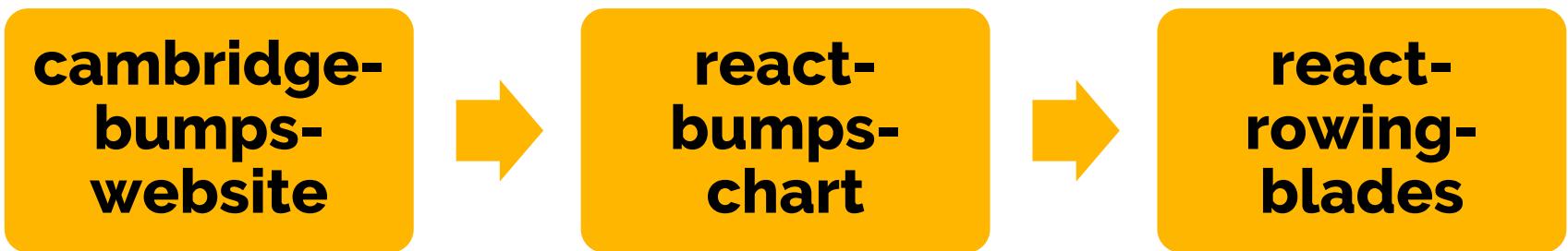
- Monolith -> monorepo
- Multirepo -> monorepo



Incremental migration



Demo





Yarn workspaces

- Run `yarn install` once to install dependencies for multiple packages



Why would you want to do this?

- Your dependencies can be linked together
- More latitude to optimize dependencies
- Single lockfile



Lerna

- Optimizes managing multi-package repositories with git and npm



Lerna

- Manages
 - Testing
 - Building
 - Versioning
 - Releasing

Lerna

- To make this really useful we create top level scripts

In conclusion

**Is it right for me or
my team?**

Technical

```
68
69  . . . init: function() {
70    . . . this.stage.elem.id = this.stage.w;
71    . . . this.ctx = this.stage.elem.getContext('2d');
72
73    . . . for (var i = 0; i < grid.c; i++) {
74      . . .   for (var j = 0; j < grid.r; j++) {
75        . . .     this.circles.push(new Circle(i * gr
76
77      . . .   };
78    . . . };
79
80    . . . this.update();
81  },
82  . . . update: function() {
83    . . .   var self = this;
84    . . .   window.requestAnimationFrame(function() {
85    . . .     self.update();
86
87    . . .     var now = new Date().getTime();
88    . . .     var dt = now - (this.time || now);
89    . . .     this.time = now;
90
91    . . .     this.circlesNum = i
92    . . .     var = this.c
93
94  }
95
96  . . .
```

Cultural



Technical

- Tooling

Cultural

- Shared ownership

THANKS

MONOREPOS

THE GOOD

THE BAD

AND THE UGLY