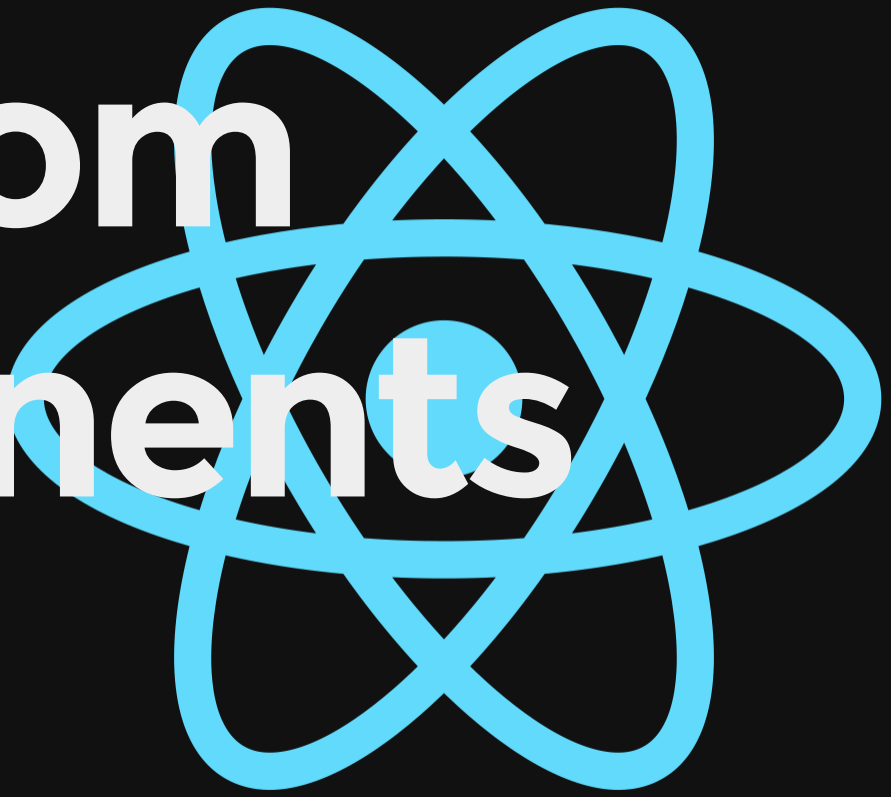
React-Native custom components



Who are you?

Jeremy Grancher

- Front-end developer since 4 years
- iOS developer for a year ¯_(ツ)_/¯
- Enjoying work at Holler
- Loving kittens and Game of Thrones

http://twitter.com/jgrancher

http://github.com/jgrancher

What are you talking about?

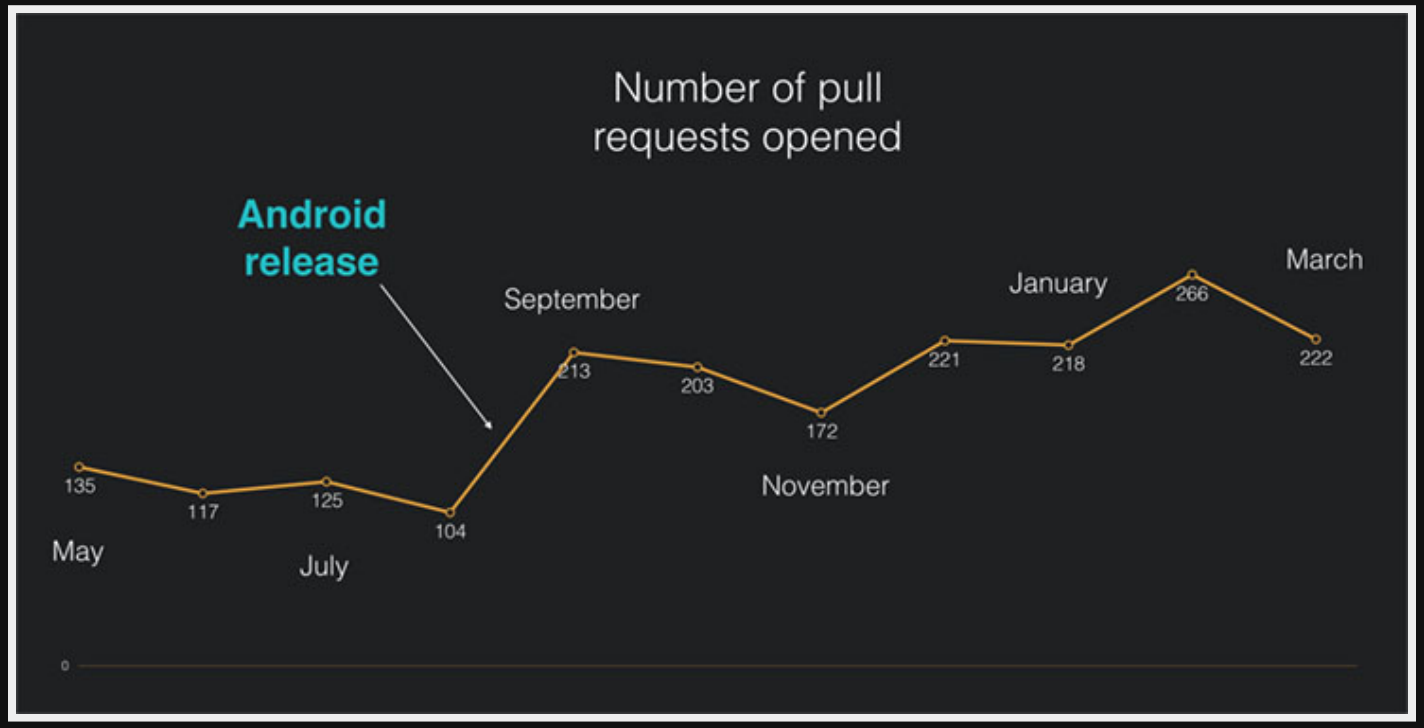
- The current state of the React-Native components
- The need of creating a native component
- How to do it
- Lessons learned from creating react-native-sketch

The {this.state.components}

Good pun, eh?

The growth

Rapid adoption...



Pull requests / month over the year

The growth

...and still ongoing

The spread doesn't slow down

The growth

The core components are awesome...

- ActivityIndicatorIOS
- DatePickerIOS
- DrawerLayoutAndroid
- Image
- ListView
- MapView
- Modal
- Navigator
- NavigatorIOS
- PickerIOS
- Picker
- ProgressBarAndroid
- ProgressViewIOS
- RefreshControl
- ScrollView
- SegmentedControlIOS
- Slider
- SliderIOS
- StatusBar
- Switch
- TabBarIOS
- TabBarIOS.Item
- Text
- TextInput
- ToolbarAndroid
- TouchableHighlight
- TouchableNativeFeedback
- TouchableOpacity
- TouchableWithoutFeedback
- View
- ViewPagerAndroid
- WebView

The Growth

...and still evolving

NavigationExperimental Browse files

```
Summary:
A new API to unify internal navigation. Also addresses a highly-rated community 'pain':
https://productpains.com/post/react-native/better-navigator-api-and-docs/

Offers the following improvements:

- Redux-style navigation logic is easy to reason about
- Navigation state can be easily saved and restored through refreshes
- Declarative navigation views can be implemented in native or JS
- Animations and gestures are isolated and now use the Animated library

public

Reviewed By: hedgerwang

Differential Revision: D2798048

fb-gh-sync-id: 88027ef9ead8a80afa38354252bc377455cc6dbb
```

master (#1) v0.27.0-rc2 ... 0.22.0-rc

ericvicenti committed with facebook-github-bot-9 on Feb 6 1 parent 2f73ad0 commit a3085464f6ea36fc6b53cd0c711c048ffb1516f9

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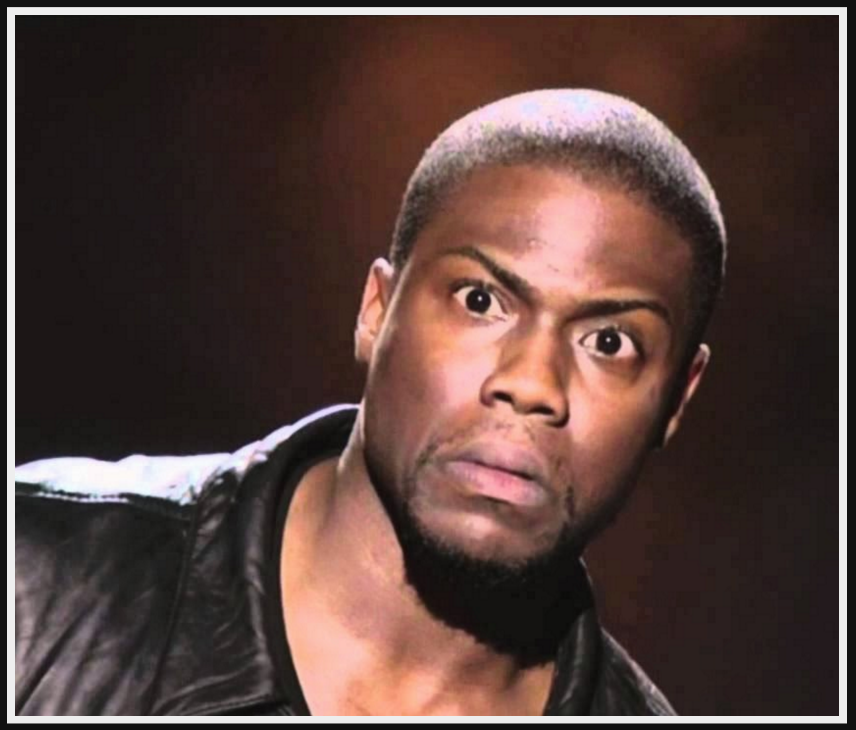
The Growth



Some explanation:

- The first commit code
- On the docs: Navigator comparison
- First look: React-Native Navigator Experimental

The Growth

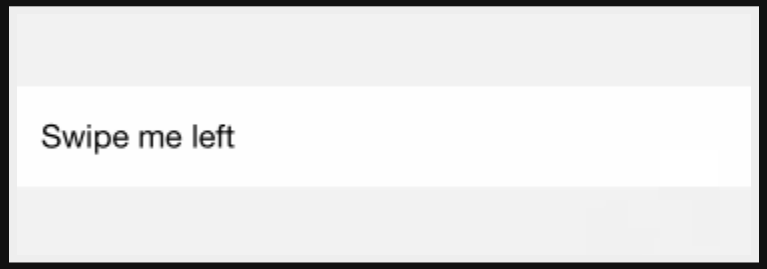
New features and enhancements

- Animated: Implement toJSON method of Animated (`17f0807`) - **@wusuopu**
- Make RefreshControl properly controlled by JS (`9aa37e8`) - **@janicduplessis**
- Add SwipeableListView (`052cd7e` `9b1a3c7` `2a7f6ae`) - **@fred2028**
- Expose a new prop `transition` for scene renderer. (`55c3086`) - **@hedgerwang**
- Add support for custom files in BugReporting (`610cfdc`) - **@lexs**
- Add "Open file" button to elements inspector (`f203c5d`) - **@frantic**
- Add `transform-react-jsx-source` to react-native preset (`858643d`) - **@frantic**
- Fork NavigationAnimatedView to NavigationTransitioner (`7db7f78`) - **@hedgerwang**
- Merge rnpm into react-native (`149d0b9`) - **@grabbou** 🎉

RNPM though.

The Growth

Experimental swipeable list view?

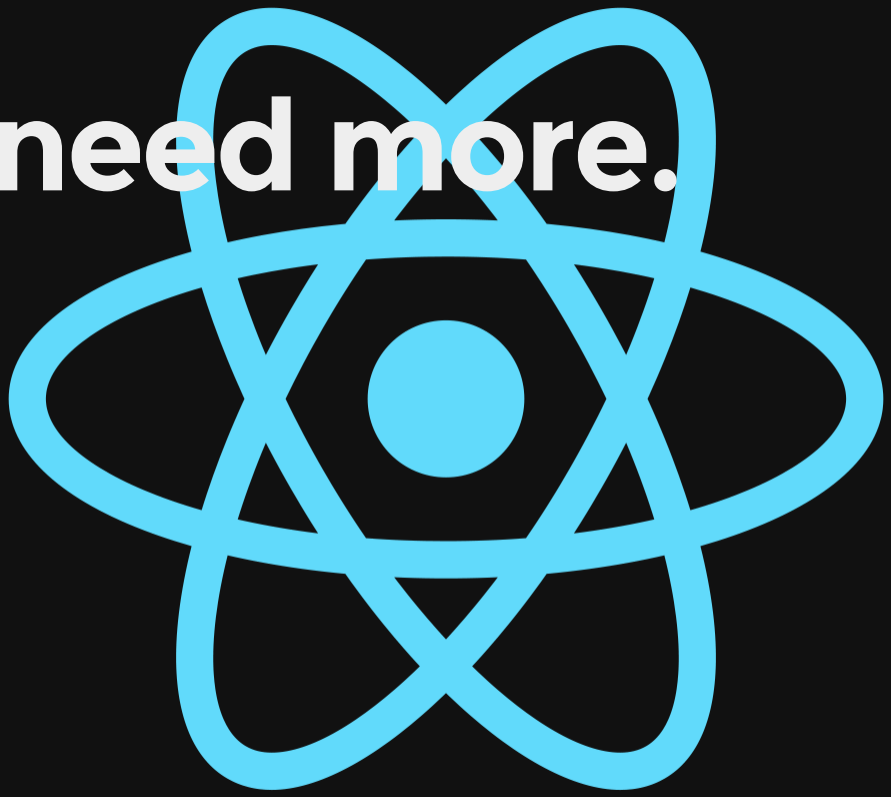


Capture from react-native-swipeable

So, I get your point.
React-Native by itself is great.

- Solid built-in components list
- Overwhelming community
- Moves and evolves quickly
- Prioritized features requests in Product Pain

But you might need more.



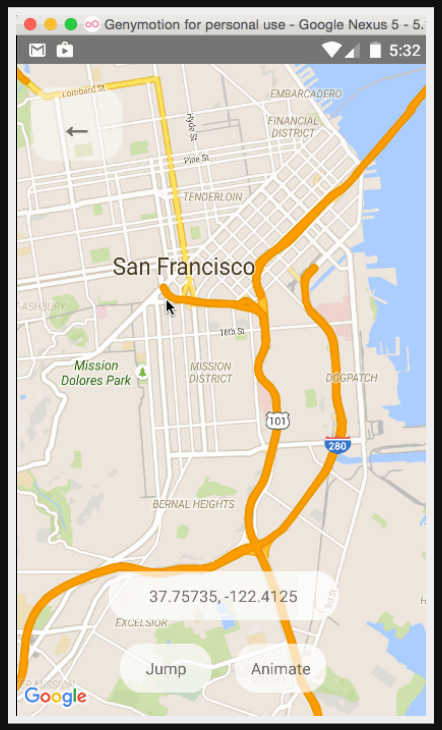
The expansion

Some important components have been built by the community...

<Camera /> component by Loch Wansbrough - ★1130

The expansion

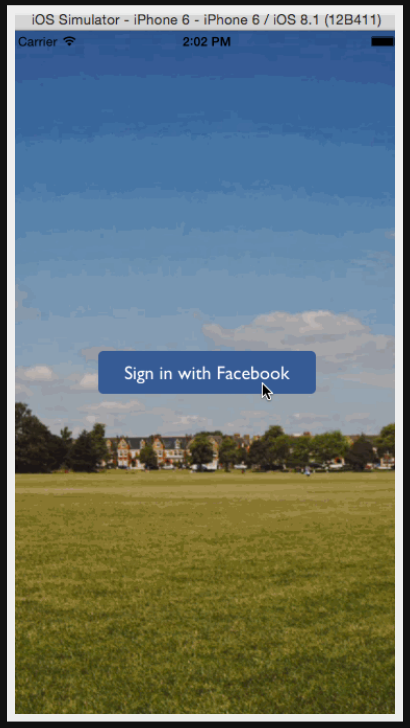
Some important components have been built by the community...



<Maps /> component by Leland Richardson - ★912

The expansion

Some important components have been built by the community...



<Video /> component by Brent Vatne - ★689

The expansion

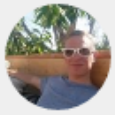
Some important components have been built by the community...

```
var RNFS = require('react-native-fs');

// Create a path you want to write to
var path = RNFS.DocumentDirectoryPath + '/test.txt';

// Write the file
RNFS.writeFile(path, 'Hello React-Native Sydney!', 'utf8')
    .then((success) => console.log('Valar Morghulis!'))
    .catch((err) => console.log('You know nothing.', err.message));
```

A file-system access by Johannes Lumpe - ★349

The expansion

...and will stay that way.



mkonicek REP · Software Engineer at Facebook

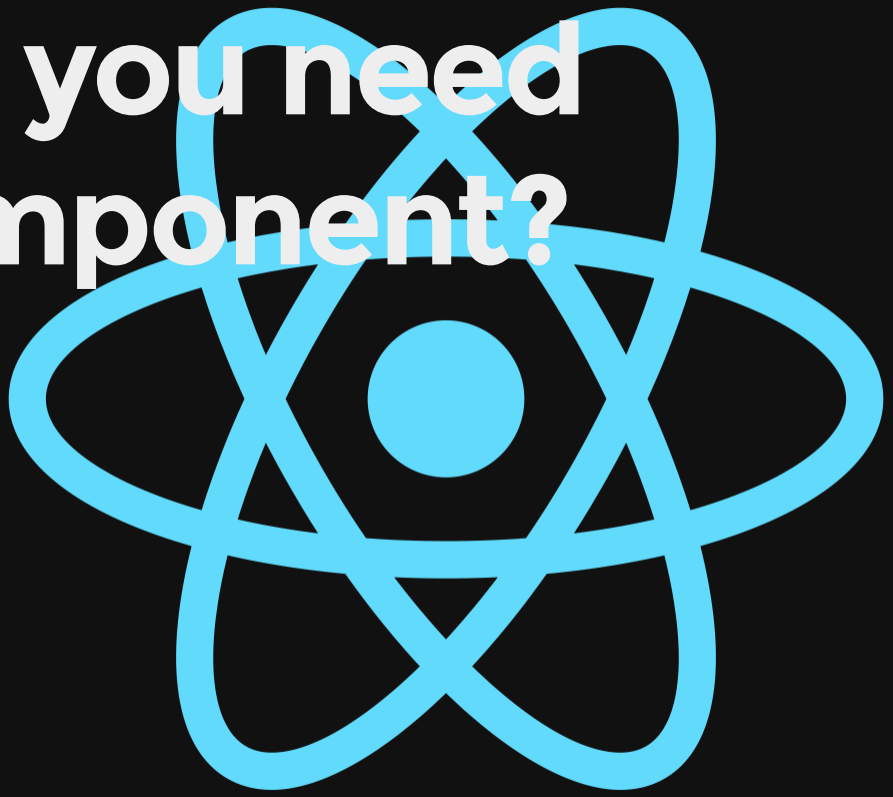
Can't promise we'll be looking into adding `<Camera>` soon. I think it is great people publish community modules and not everything necessarily needs to be part of the core.

Can you report the bugs you found on https://github.com/timmh/react-native-camera?

November 17, 2015

¯_(ツ)_/¯

So, when will you need a custom component?



The customisation

When you need a wrapper not found in...

- The core components (UIKit classes: View, Button, TabBar...)
- The community components (Camera, Maps, ActionSheet, FileSystem...)

Bad luck.

You'll have to build that logic in Objective-C / Java yourself...

Noooooooo

Catelyn Stark didn't know anything about iOS development.

The customisation

... or...

- You have built a native iOS / Android component that you want to use in JS without reimplementing the logic.

Lucky you.

Because react-native will let you create a bridge for it.

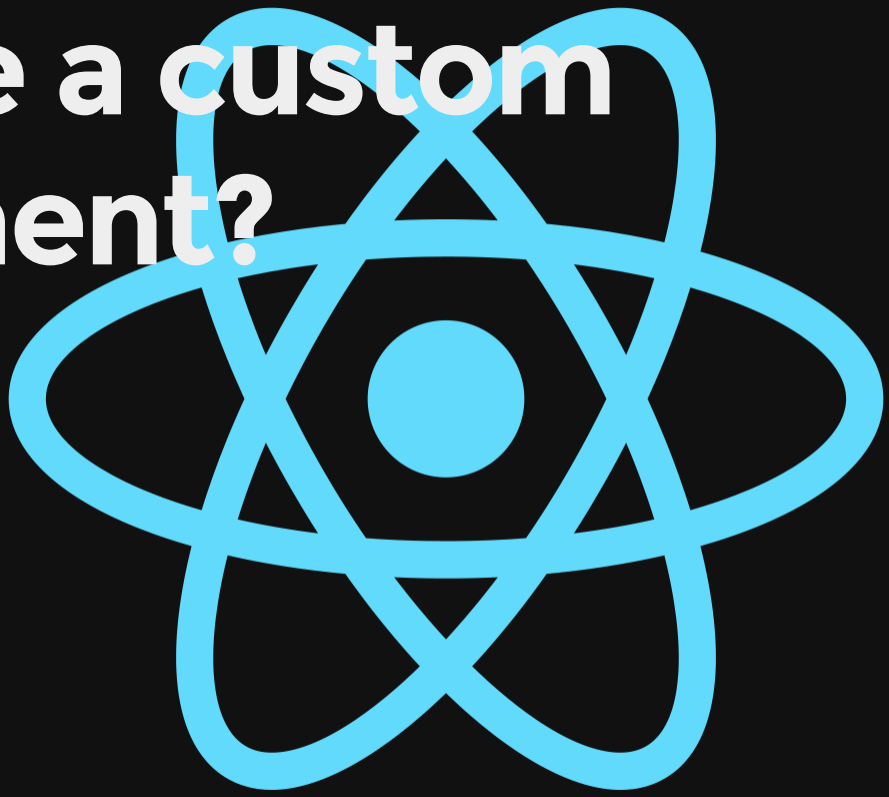

HERE'S A BRIDGE
NOW GET OVER IT
quickmeme.com

The customisation

A native component *can* be...

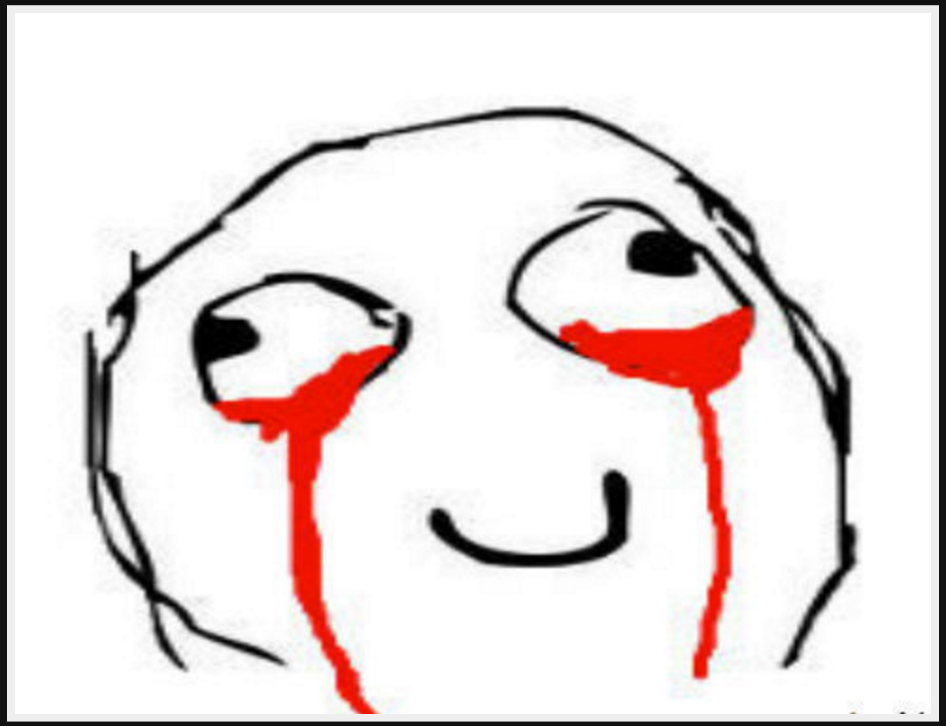
- A *"utility"* that plays with the platform API (ie. FileSystem)
- A *"UI component"* that renders a native view along with it (ie. Maps)

How to create a custom component?



DEMO

The iOS code explained



Creating a custom *utility* component

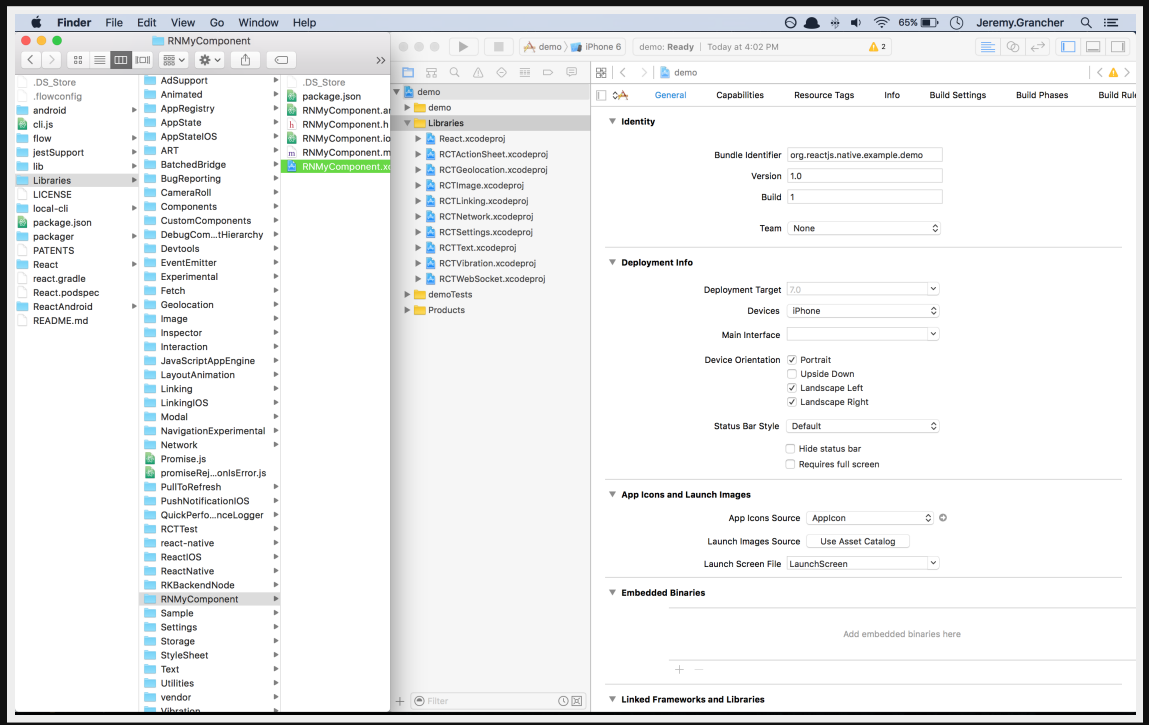
- In the root of your project, use this CLI command to generate your native component:

```
// In your react-native project
$ react-native new library --name MyComponent
```

That will create a sample component here:
./node_modules/react-native/Libraries/MyComponent

Creating a custom *utility* component

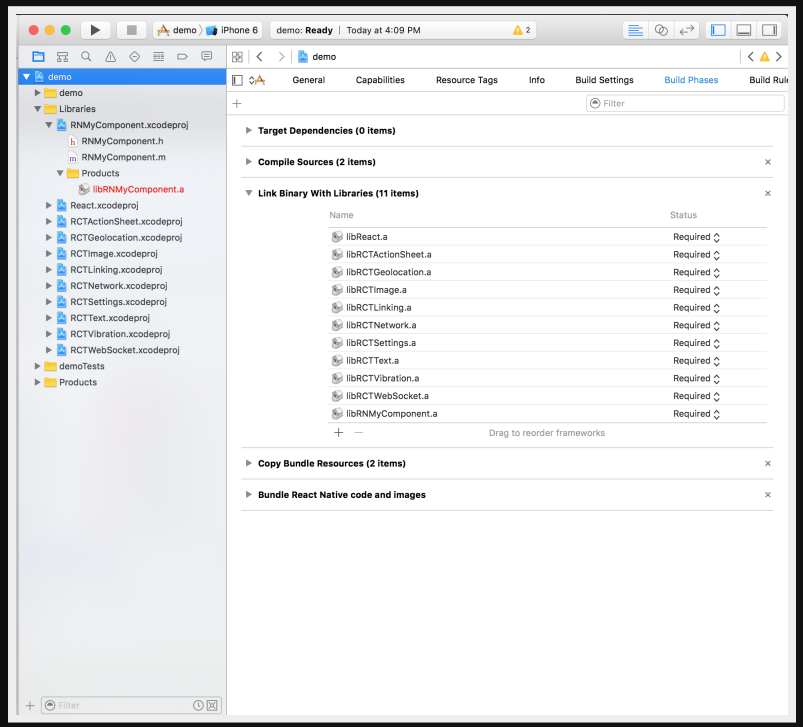
Then, you need link it to your application:



Drag and drop your component's .xcodeproj file into 'Libraries'

Creating a custom *utility* component

Finally, add your static library to the libraries linked to the binary.



Drag and drop your component's .a file into 'Build Phases'

Creating a custom *utility* component

The important things:

- The class has to extend the <RCTBridgeModule> protocol:

```
// MyComponent.h

#import "RCTBridgeModule.h"

@interface MyComponent : NSObject <RCTBridgeModule>
@end
```

That will *automagically* allow this class to access the React world.

Creating a custom *utility* component

The important things:

- The class has to call the RCT_EXPORT_MODULE() macro:

```
// MyComponent.m

@implementation MyComponent

RCT_EXPORT_MODULE(); // Default module name: Same as class name

@end
```

That will allow you to access, in JS, the module named:

```
<MyComponent />
```

Creating a custom *utility* component

The important things:

- The class has to call RCT_EXPORT_METHOD() macro if you want to call a method from your JS code.

```
// MyComponent.m

RCT_EXPORT_METHOD(doSomethingWithThatString:(NSString *)string)
{
    RCTLogInfo(@"A man needs a string: %@", string);
}
```

That will allow you to do, in JS:

```
MyComponent.doSomethingWithThatString('Hello');
```

Creating a custom *utility* component

We can *(we have to!)* finally wrap our module in a React component.

```
// MyComponent.ios.js
var NativeComponent = require('NativeModules').MyComponent;

var MyComponent = {
  declaringYourLoveTo: function(string) {
    // You can do a check here, pass a default parameter, etc...
    NativeComponent.doSomethingWithThatString(string);
  }
};

module.exports = MyComponent;
```

Finally, in *your* code:

```
MyComponent.declaringYourLoveTo('React Native');
```

Creating a custom *utility* component

A bit more...

- RCTConvert is your friend.

```
#import "RCTConvert.h"
// ...
RCT_EXPORT_METHOD(doSomethingWithThatColor:(NSString *)hexaColor)
{
    UIColor *color = [RCTConvert UIColor:hexaColor];
}
```

That will allow you to do, in JS:

```
MyComponent.doSomethingWithThatColor('#123456');
```

Creating a custom *utility* component

A bit more...

- The return type of bridge methods is always *void*.
- If you need to get some data from a native method, you'll have to use *Promises*, as the bridge is asynchronous.

```
RCT_EXPORT_METHOD(findSomethingAsynchronous,
                  resolver:(RCTPromiseResolveBlock)resolve
                  rejecter:(RCTPromiseRejectBlock)reject)
{
    NSArray *results = ...
    if (results) { resolve(results); }
    else {
        NSError *error = ...
        reject(@"no_results", @"There were no results", error);
    }
}
```

That will allow you to do, in JS:

```
MyComponent.findSomethingAsynchronous().then((r) => console.log(r));
```

Creating a custom *utility* component

Your module can also..

- Specify which thread its methods should be run on
- Export constants to JS
- Send events to JS

```objc
#import "RCTBridge.h"
#import "RCTEventDispatcher.h"

@implementation MyComponent
@synthesize bridge = _bridge;

- (void)methodThatSendsAnEvent
{
    [self.bridge.eventDispatcher sendAppEventWithName:@"CheeseReminder"
                                                  body:@{@"content": "I love cheese"}];
}

@end
```

```js
// In JS
NativeAppEventEmitter.addListener('CheeseReminder', (reminder) => {
    console.log(reminder.content);
});
```


PLEASE
MAKE IT STOP
memegenerator.net

Creating a custom *UI* component

A UI component is a custom component that *renders* something.

Same as before, but...

Creating a custom *UI* component

- You will create a new class that extends UIView.
- Your **manager** (kind of view controller, but singleton) has now to be a subclass of RCTViewManager.

```
// MyComponentManager.h

#import "RCTViewManager.h"

@interface MyComponentManager : RCTViewManager
@end
```

Creating a custom *UI* component

- The manager is responsible of the view.

```
// MyComponentManager.m

#import "MyComponentManager.h"
#import "MyComponentView.h"

@implementation MyComponentManager

RCT_EXPORT_MODULE()

- (UIView *)view
{
    return [[MyComponentView alloc] init];
}

...

// Your other RCT_EXPORT_METHOD methods here...

@end
```

Creating a custom *UI* component

- Use RCT_EXPORT_VIEW_PROPERTY() to set things in your view.

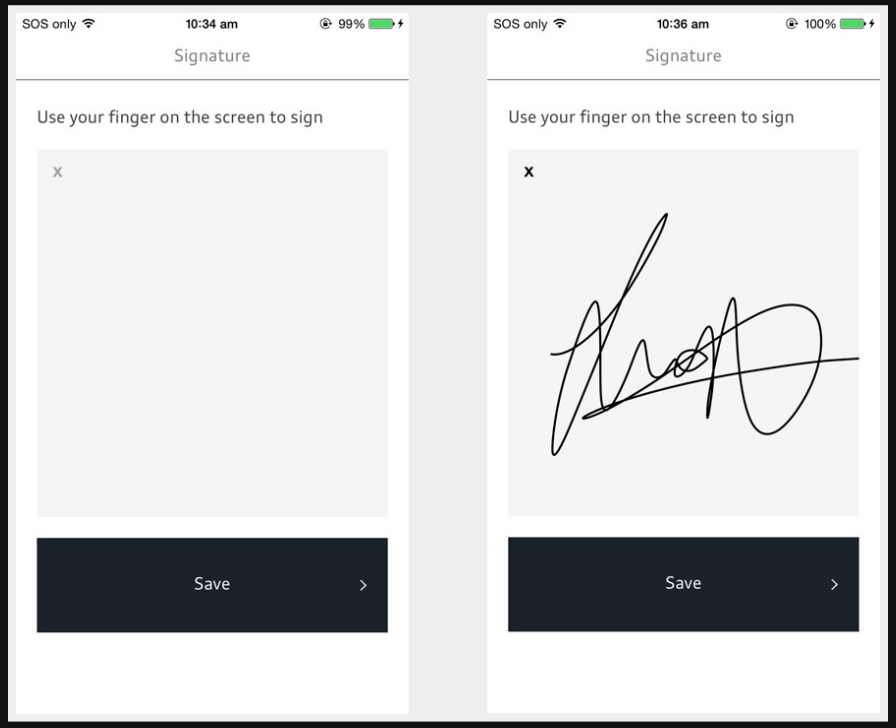
```
// MyComponentManager.m
RCT_EXPORT_VIEW_PROPERTY(lovingCheese, BOOL)
```

```
// MyComponentView.h
@interface MyComponentView: UIView

@property (nonatomic, assign) bool lovingCheese;

@end
```

```
// MyComponent.ios.js
MyComponent.propTypes = {
    lovingCheese: React.PropTypes.bool,
};
```

React-Native-Sketch

A react-native component for touch-based drawing.



React-Native-Sketch

Lessons learned by creating my own custom component:

- It's really cool to publish something to npm
- The frequent changes to the API forces you to be reactive
- It's harder than I thought to get feedbacks & contributions

Conclusion

- Custom components can solve a feature request uncovered. Yet.
- Facebook has created a ***great*** tool to allow us extend their tool.
- If you *have* to build your own, check the docs regularly.
- Don't be afraid of native code.

Resources

- Native Modules documentation
- Native UI Components documentation
- React-Native View Components (by Brent Vatne)
- Building Custom React Native Components From Scratch (by Jay Garcia)
- How to Bridge an Objective-C View Component (by Jason Brown)
- Awesome React-Native
- JS.Coach

Other components from the community

- react-native-activity-view
- react-native-custom-segmented-control
- react-native-device-info
- react-native-icons
- react-native-overlay
- react-native-search-bar
- react-native-sound

Merci.

@jgrancher

Link of this presentation: goo.gl/fpmXem

Questions?