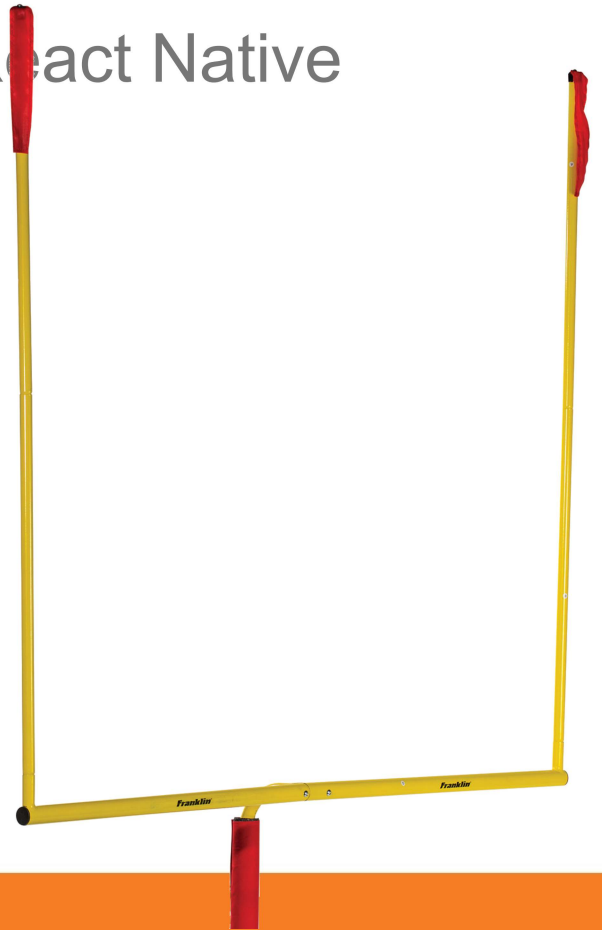
The Big Picture

Develop Intelligence

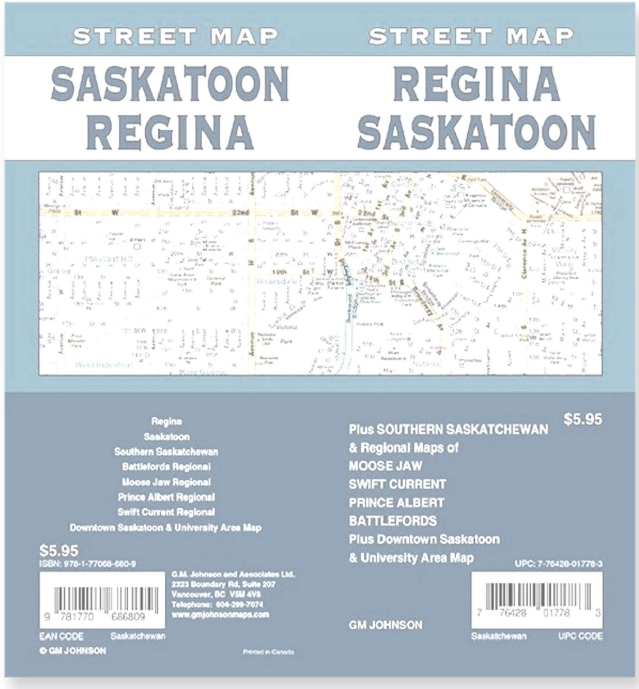
Goals

1. Explain the difference between React and React Native
2. Lorem ipsum



Roadmap

1. History
2. Comparisons
3. Architecture



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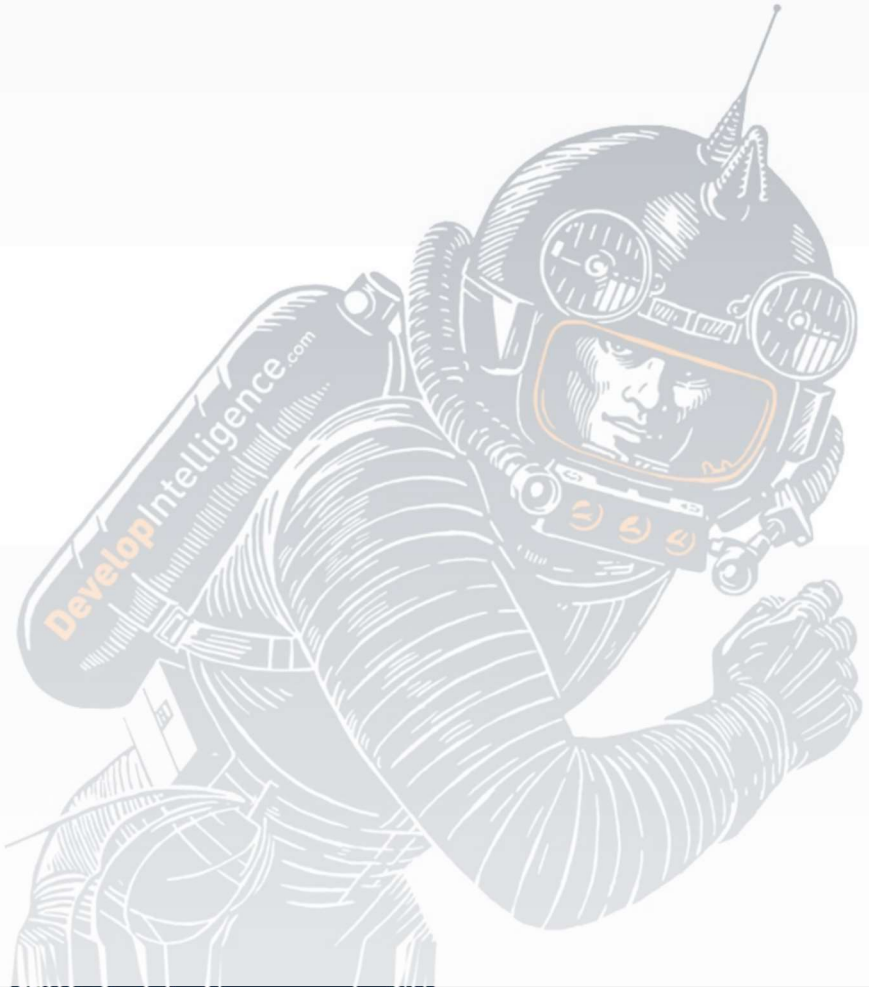
History



Motivation

Develop Intelligence

The biggest mistake we made as a company was betting too much on HTML as opposed to native.

-- Mark Zuckerberg, 2012

Motivation (Continued)

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- Users like apps
  - 92% use apps and social media weekly
  - 8% use web browsers weekly
- Users like
  - Installing things
  - Native performance
  - Native look and feel

Overview

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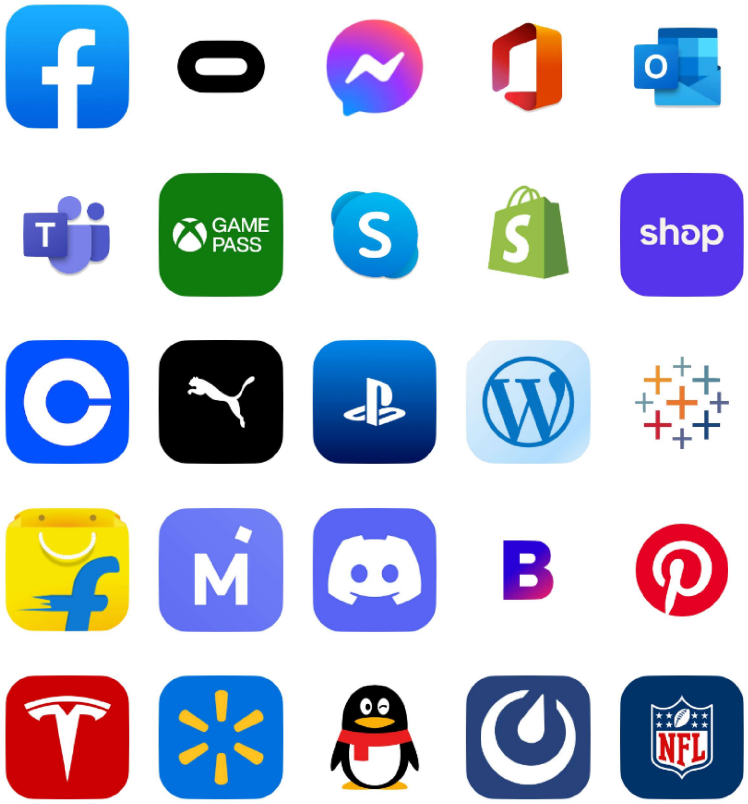
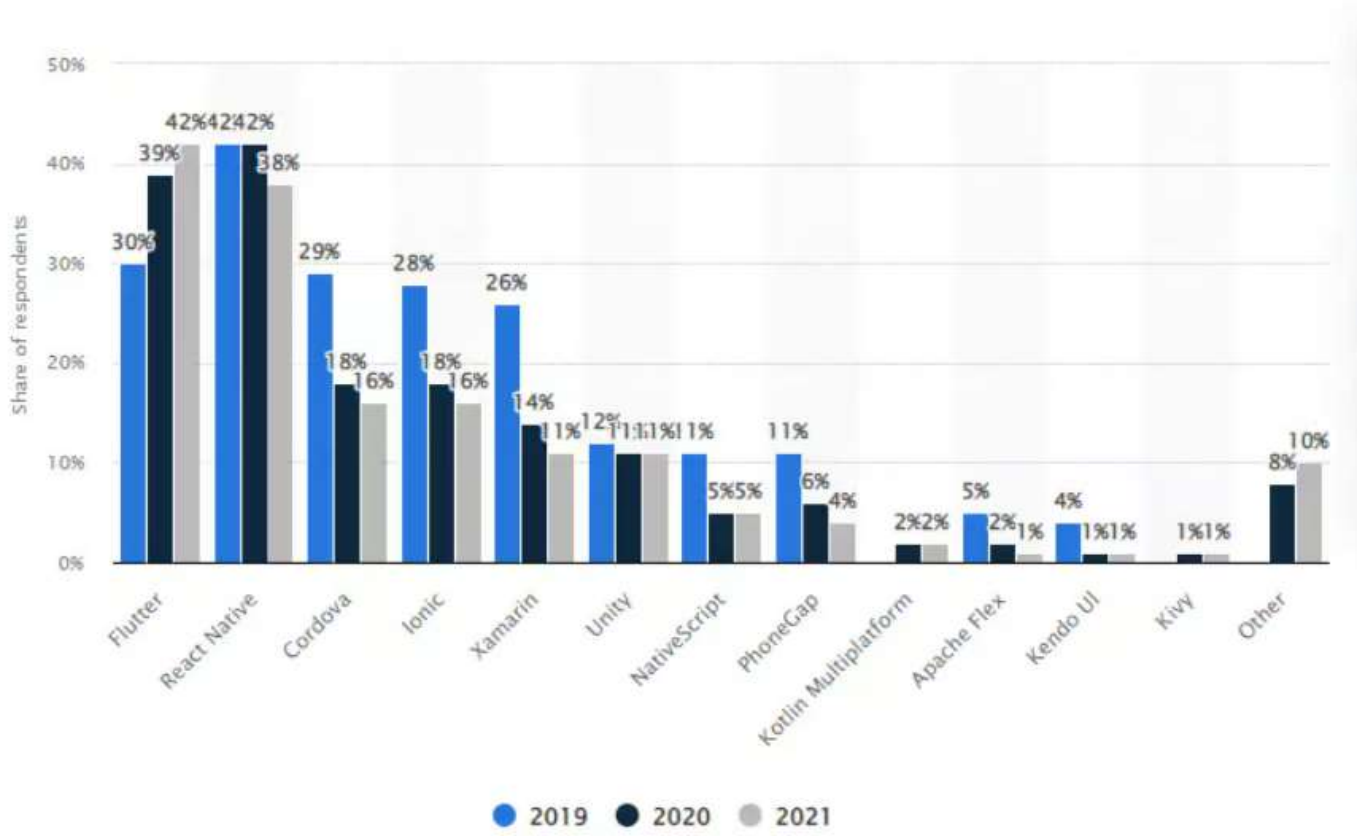
- Facebook project, ~2015
- Mismatch between web and native
- No HTML or CSS

Native Users

- Microsoft
- Facebook



Market Share



Market Share

Platform	Market Share %
React Native	42
Flutter	39
Cordova	18

Targets

- Free, in the box
  - iOS -
  - Android -
- From Microsoft
  - Windows
  - OSX
- Web - Community project
- Also: **Android TV**, **tvOS**

Hello World

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```
1  import { useState } from 'react';
2  import { StyleSheet, Text, View, Button } from 'react-native';
3
4  export default function App() {
5    const [clicks, setClicks] = useState(0);
6    return (
7      <View style={styles.container}>
8        <Text>Hello World</Text>
9        <Text>Clicks: {clicks}</Text>
10       <Button title='Increment' onPress={()=>setClicks(clicks+1)}/>
11     </View>
12   );
13 }
```

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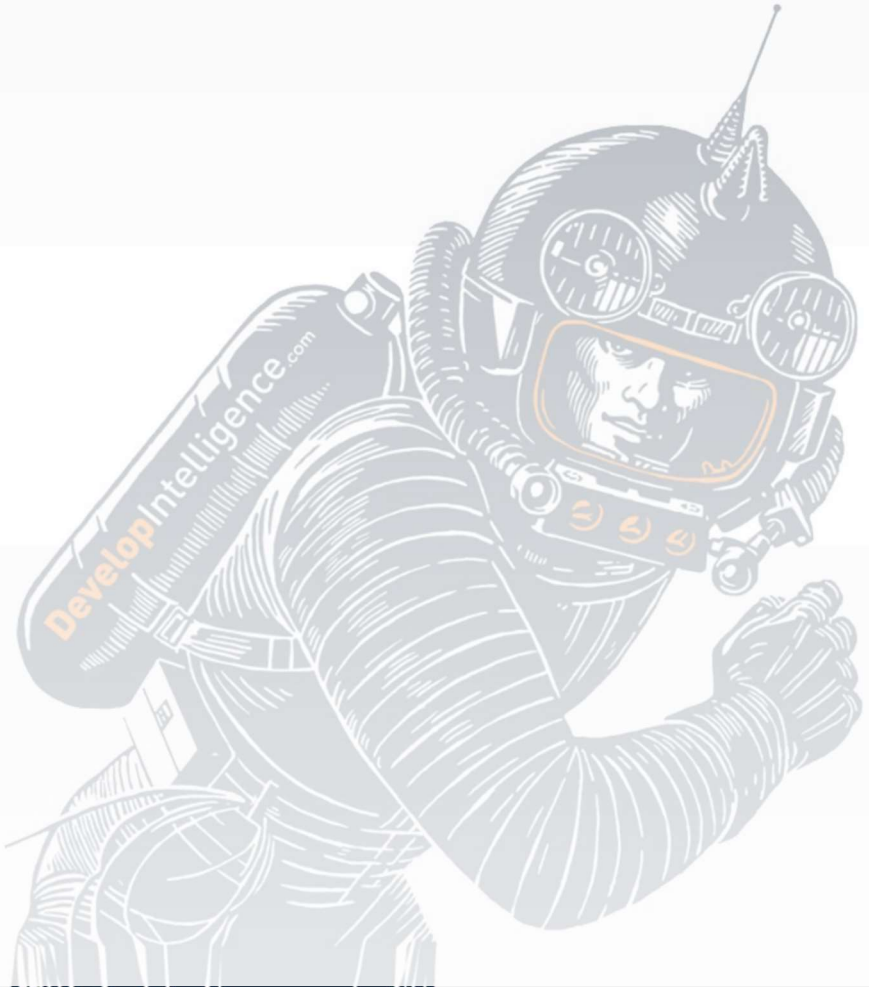
Comparisons



Progressive Web Apps

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- Moving parts: Manifest, WebAssembly, Web workers
- No Apple app store
- Ratings
  - **Easy for web developers** ★ ★ ★ ★ ★
  - **Performance** ★ ★ ★ ★ ☆
  - **App Store** ★ ★ ☆ ☆ ☆
  - **Native Look and Feel** ★ ★ ☆ ☆ ☆
  - **Native APIs** ★ ☆ ☆ ☆ ☆

Compared with HTML5

- No HTML legacy elements like `<em>`

Compared with CSS

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- No selectors
- Strongly typed
- No inheritance *(well, not much)*

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Architecture

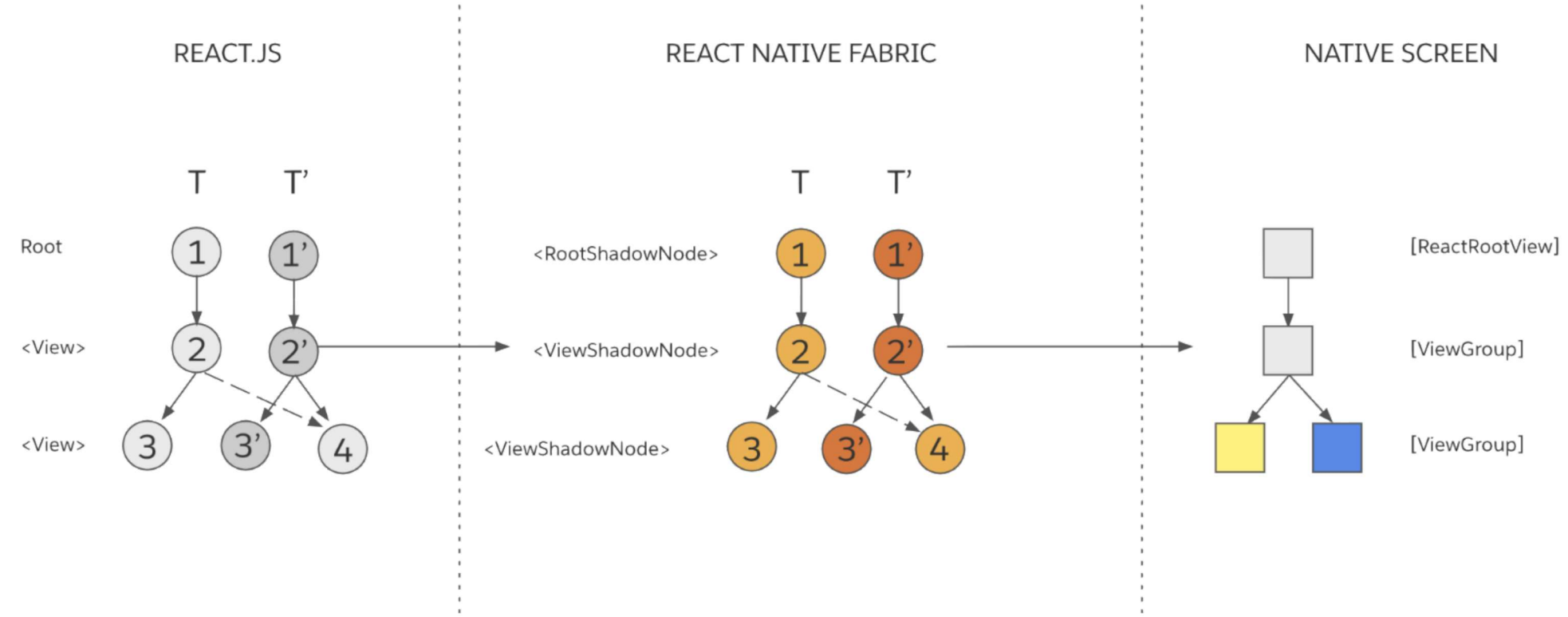
Overview

- **Background thread** runs Javascript
- **Native bridge** communicates

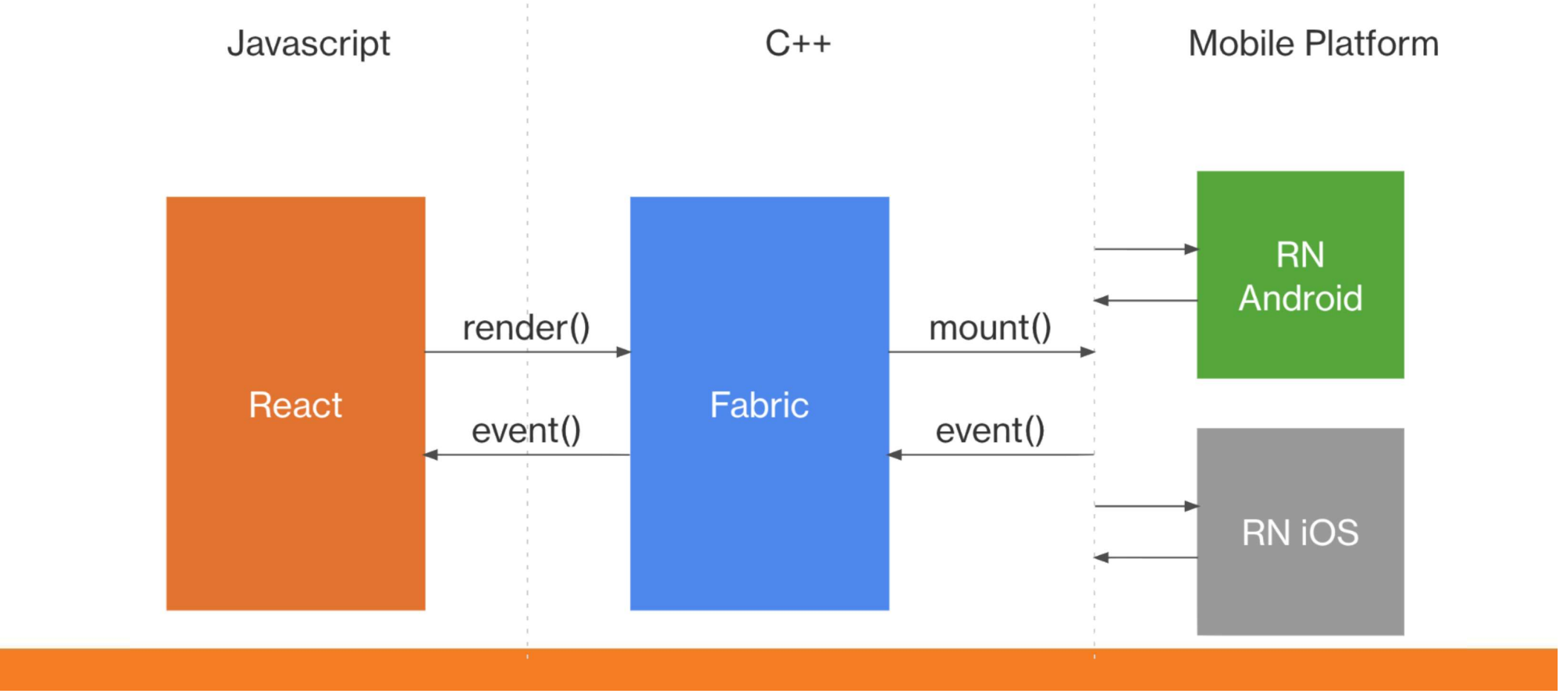
Rendering

- Fabric is the new native renderer.
  - Maps react components to host native controls
- Same process as React DOM
  - **Render -** Build shadow component tree in memory
  - **Reconcile -** Calculate changes to actual layout
  - **Commit -** Transform into host view tree

Rendering (cont...)



Interop


Javascript
C++
Mobile Platform
React
render()
event()
Fabric
mount()
event()
RN
Android
RN iOS

Building

- Metro is the build system
- Uses Babel

Javascript

- Hermes is React Native's Javascript engine
- Deploys with your package
- Uses AOT compilation
- Smaller than JavaScriptCore

Resources

- ReactNative.dev (It's actually good.)
- Awesome React Native
- Reddit.com/r/reactnative

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Review

1. Explain the difference between React and React Native
2. Lorem ipsum