A JS APPROACH INTO MOBILE APP DEVELOPMENT AND REACT NATIVE

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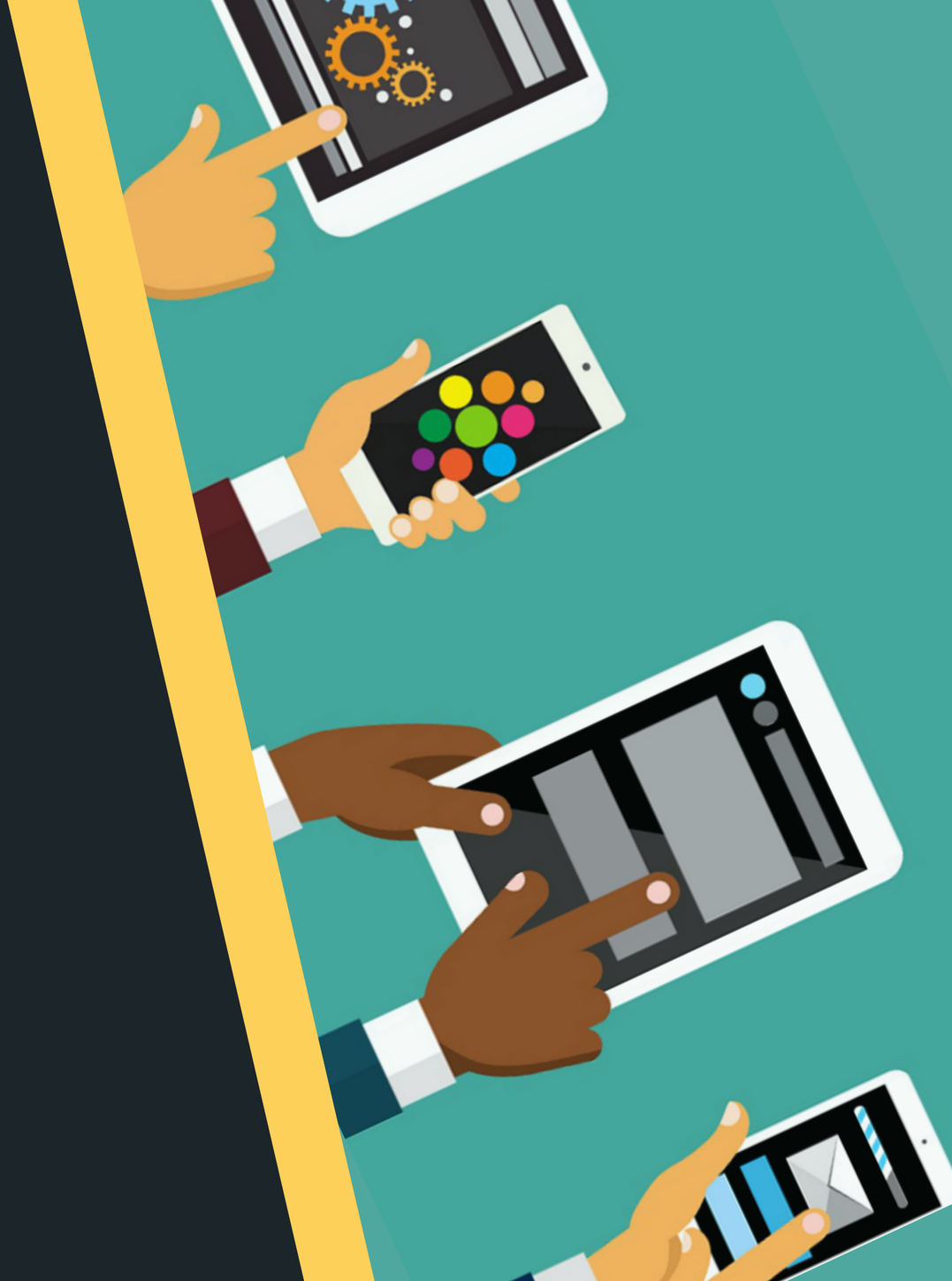
Frontend developer @ Logicea

@nikoskleidis



LOGICEA

A PEOPLE-FIRST TECHNOLOGY COMPANY

BASED IN ATHENS

HERAKLIO BRANCH OPENED THIS SUMMER

Always looking for new passionate people on

- Frontend dev - we just love React
- Backend dev - Java and Kotlin are our flavours
- Designer - Getting creative with UI/UX
- DevOps - Making sure everything runs smoothly

I HAVE A DREAM!

We will build a mobile app that will {dream.idea}!

And we will make {dream.money}$$$

But I am just a web developer...

AS A WEB DEVELOPER

NOT SO SKILLED ON SOME AREAS

I don’t know Java or Kotlin

I don’t know C# or Swift

I don’t know how the inner mechanics of the mobiles

I don’t know how to talk to hardware

AS A WEB DEVELOPER

BUT I AM SKILLED ON SOME OTHER

I know how to build user interfaces

I am experienced on great tools - eg. Chrome console

I know the cross platform pains - Internet explorer

I can be creative with animations

Give me a sec to check what is out there...

PWA

PROGRESSIVE WEB APP

PWA PROS

FAST
Accelerated page load

INTEGRATED
Feels more app like

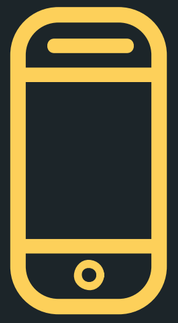
DEVELOPMENT SAVINGS
Runs on both iOS and Android

RELIABLE
Can provide offline access

ENGAGING
Can send push notifications

SELF-UPDATES
Doesn’t go through the stores

PWA CONS



LESS RESPONSIVE

Than native apps

NOT DISCOVERABLE

No presence on the stores

HIGH BATTERY USAGE

Drains a device battery faster than a native app

UNEXPECTED BEHAVIOUR

Deletes user cached files after a few weeks of inactivity

LIMITED HARDWARE ACCESS

Hardware features like Bluetooth, NFC and Face ID are not available or limited

HYBRID

A LITTLE BIT OF BOTH WORLDS

HYBRID PROS

HARDWARE ACCESS
Using third party wrappers

SEARCHABLE
Store presence

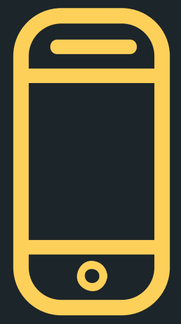
DEVELOPMENT SAVINGS
Runs on both iOS and Android

DEVELOPER EXPERIENCE
Most of the testing is done on a browser

EXPECTED VISUAL BEHAVIOUR
WebView under the hood

EASIER UPDATE PROCESS
HTML, CSS updates can be updated on the fly

HYBRID CONS



LESS RESPONSIVE

Than native apps

SLOWER

Building on top of WebView comes with a cost

DIFFERENT DESIGN

Android and iOS require different approaches when it comes to meeting the user needs

NEED FOR NATIVE APP DEVELOPERS

Platform specific problems require platform specific experts!

NATIVE-LIKE

NO WEBVIEW!

NATIVE-LIKE APPS

NO WEB VIEW NEEDED

Apps render native components depending on the platform they are deployed in

CUSTOM COMPONENTS

Each framework exposes its own components that devs use like HTML elements

THE JS WE KNOW

Most of the application logic is written in JS. Platform specific code is limited

A BRIDGE IS REQUIRED

JS code needs to communicate with native code. A bridge is required for this purpose

React Native

POWERED BY FACEBOOK

#deleteFacebook

Started in an internal hackathon in 2013. Released to the public at March 2015

STRONG COMMUNITY

GitHub stats

> 2k Contributors

> 80k Stars

> 275k Used by

> 18k Commits

POPULAR APPS

Instagram

Skype

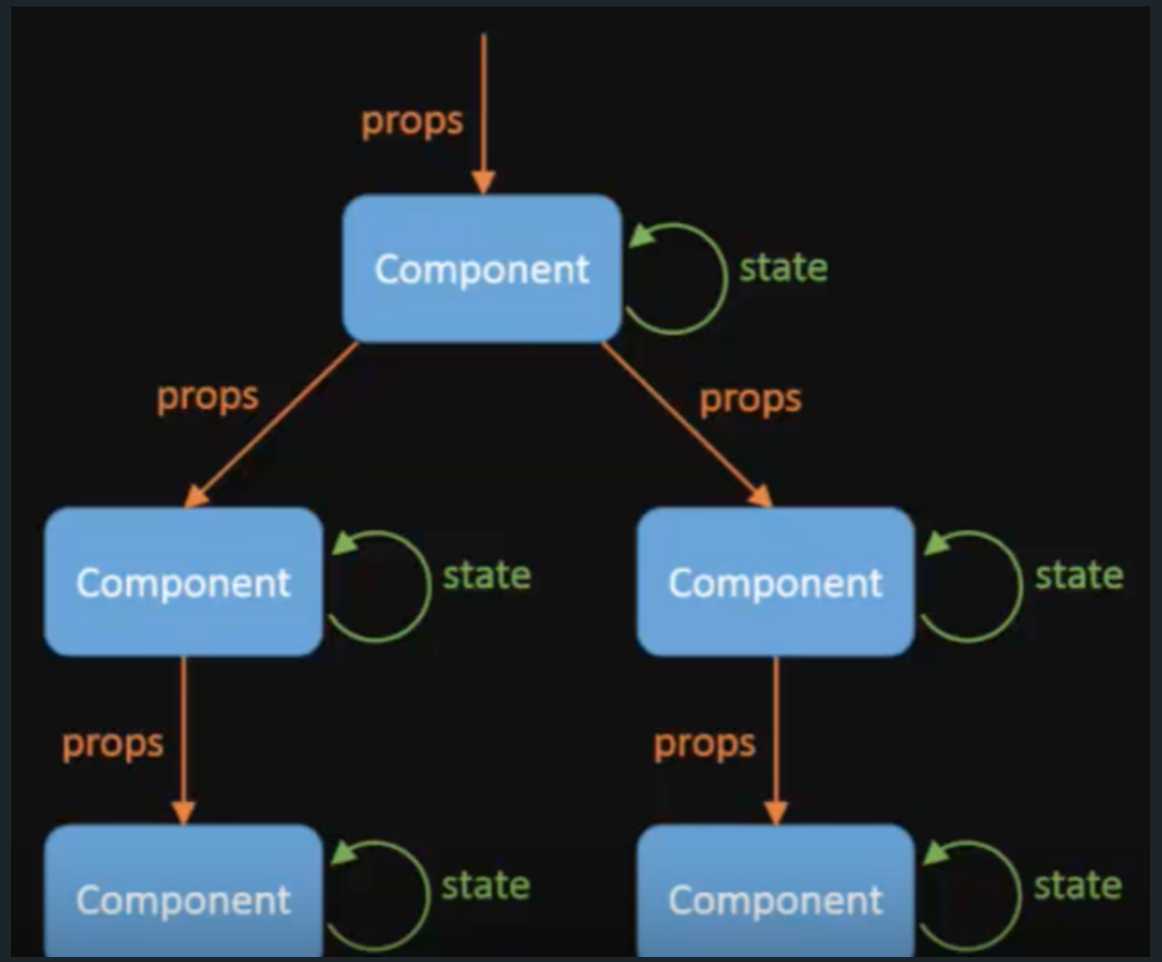
Walmart

Bloomberg

Baidu

REACT NATIVE
DATA FLOW

Unidirectional data flow
ui = fn(state)



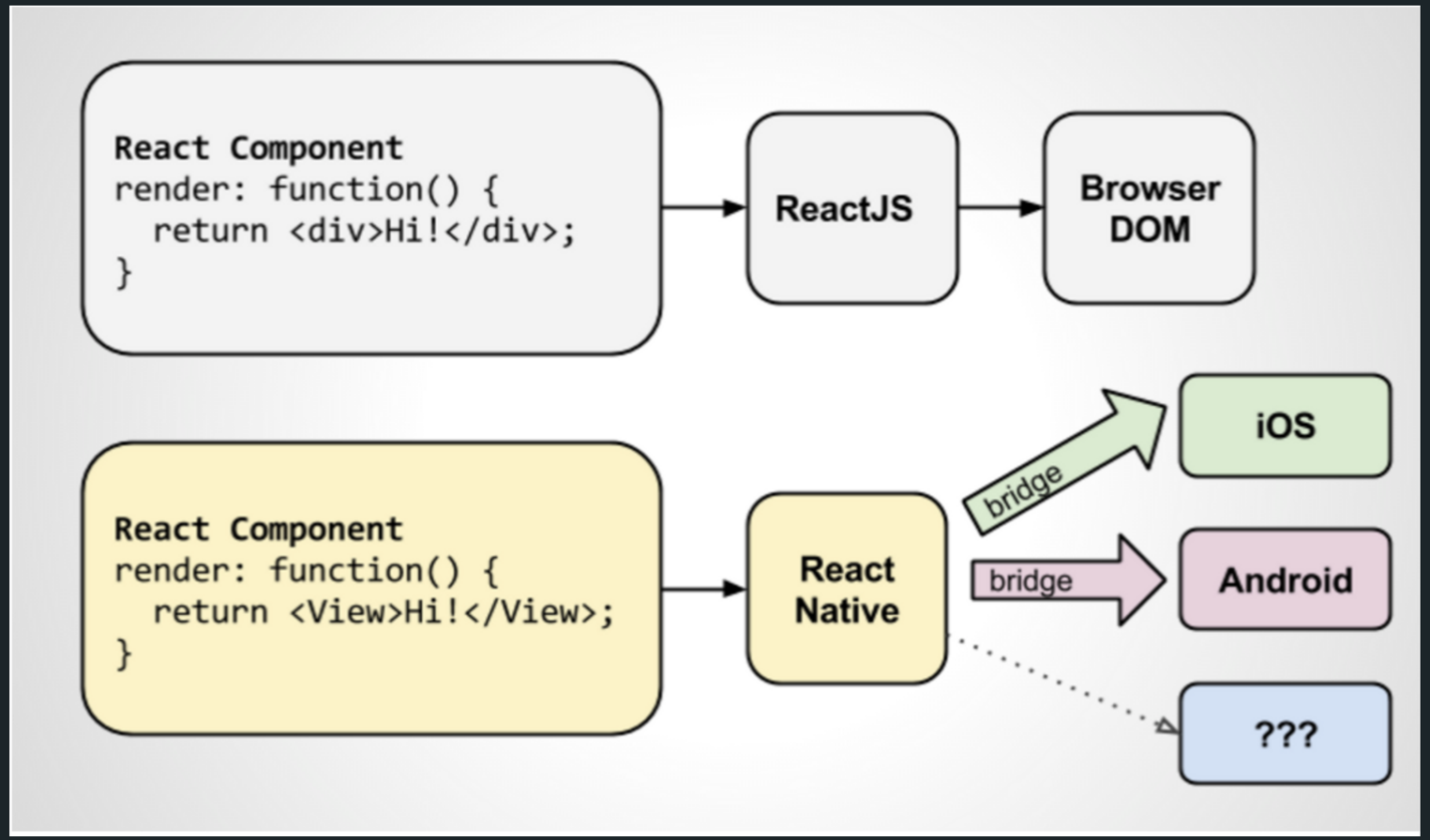
REACT NATIVE
ELEMENTS

Elements are similar to HTML

•	• <View>
• <img>	• <Image>
• , <p>	• <Text>
• ,	• <ListView>

REACT NATIVE
RENDERING

Depends on the platform



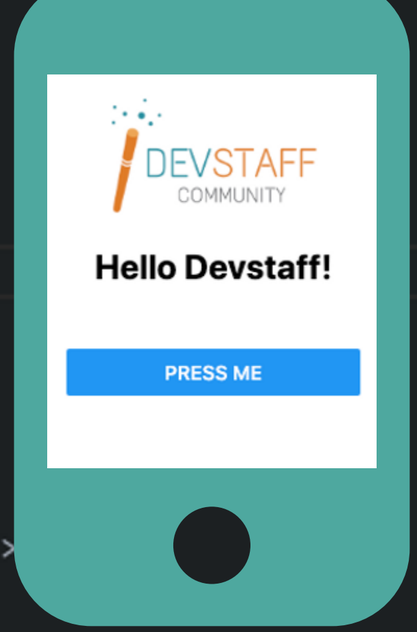
REACT NATIVE
JSX

Example

```
import React from "react";
import { Button, Image, StyleSheet, Text, View } from "react-native";

const logoUri = `

function App () {
  return (
    <View style={styles.app}>
      <View style={styles.header}>
        <Image
          source={{ uri: logoUri }}
          resizeMode="contain"
          style={styles.logo}
        />
        <Text style={styles.title}>Hello Devstaff!</Text>
      </View>
      <Button onPress={() => {}} title="Press me" />
    </View>
  );
}
```



REACT NATIVE
STYLING

Based on Flexbox

```
22  const styles = StyleSheet.create({
23    app: {
24      marginHorizontal: "auto",
25      maxWidth: 500,
26      flex: 1,
27      flexDirection: "column",
28      justifyContent: 'flex-start'
29    },
30    logo: {
31      height: 80
32    },
33    header: {
34      padding: 20
35    },
36    title: {
37      fontWeight: "bold",
38      fontSize: "1.5rem",
39      marginVertical: "1em",
40      textAlign: "center"
```

REACT NATIVE
NETWORK

New fetch API supported

```
async function getMoviesFromApi() {
  try {
    let response = await fetch(
      'https://facebook.github.io/react-native/movies.json',
    );
    let responseJson = await response.json();
    return responseJson.movies;
  } catch (error) {
    console.error(error);
  }
}
```

- Raw XHR implemented if required
- WebSockets are supported

REACT NATIVE
STORAGE

Async storage

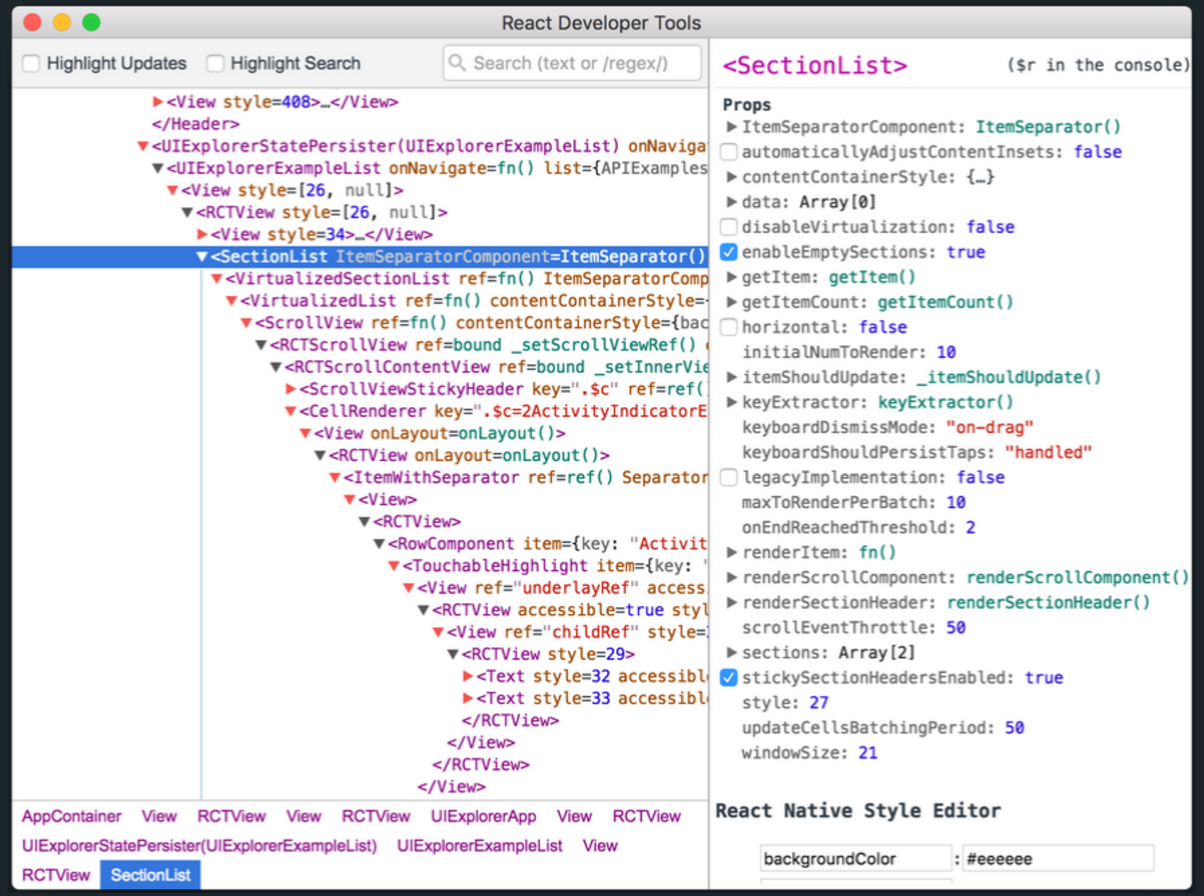
@react-native-community/async-storage

```
const storeData = async () => {
  try {
    await AsyncStorage.setItem('@devstaff_topic', 'Mobile app dev')
  } catch (e) {
    // saving error
  }
}
```

- Is asynchronous
- Data is stored on the device

REACT NATIVE
DEBUGGING

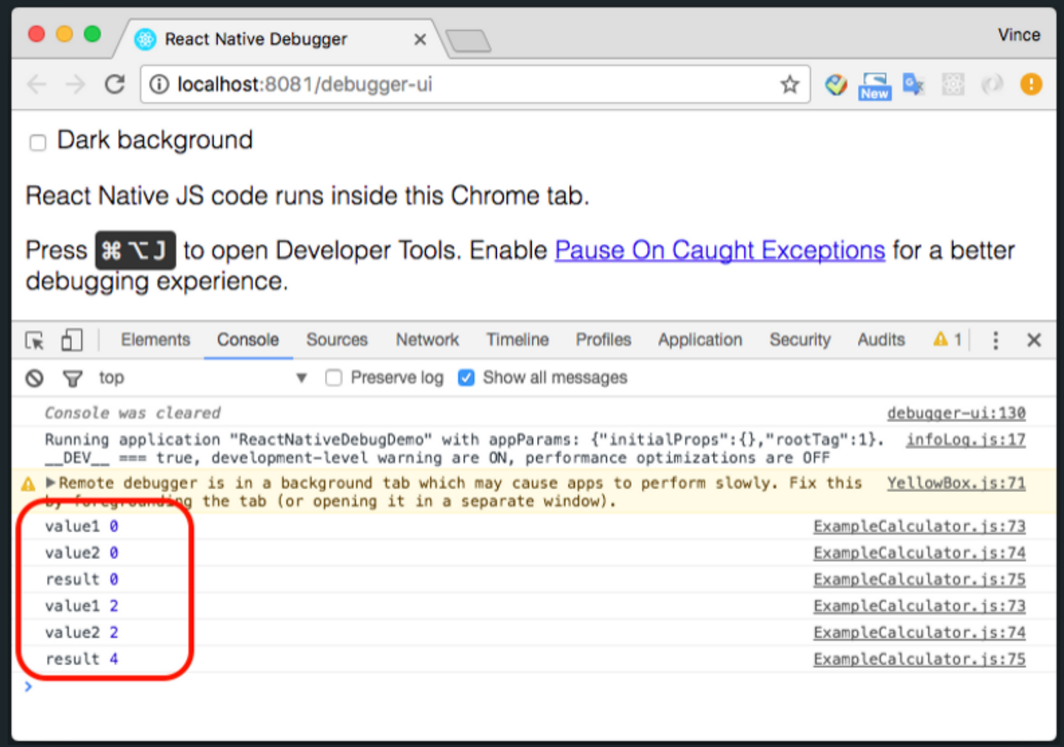
React Dev Tools



- Can view rendered tree
- Inspect element's props and state

REACT NATIVE DEBUGGING

Chrome Dev Tools



- Can console.log
- Use debugger and pause execution

REACT NATIVE SYSTEM REQUIREMENTS

- node.js and npm installed
- minimum JDK 8
- Xcode and Xcode Command Line Tools for iOS development
- Android Studio with built-in emulator for Android development

REACT NATIVE
INSTALLATION

1

npm install –g react-native-cli

2

react-native init DevstaffDemo &&
cd DevstaffDemo

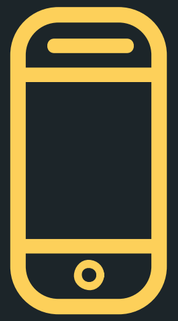
3

Open Android emulator and
react-native run-android
or
react-native run-ios — simulator=”iPhone X”

REACT NATIVE
PITFALLS

REACT NATIVE

PITFALLS



NOT 100% NATIVE

Performance just isn't like that of native apps

Simple apps would have no problems

Not suitable for heavy animations like games

NAVIGATION SOLUTIONS

React Navigation is the dominant solution. Deals with platform specific issues. eg header, drawers etc

NOT very customisable

Limited good alternatives

UPDATE PROCESS

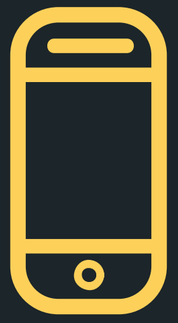
Version to version update is a bit of pain.

Attempts to make it easier:

https://react-native-community.github.io/upgrade-helper/

REACT NATIVE

PITFALLS



CROSS-PLATFORM DOES NOT MEAN SINGLE-PLATFORM

There are platform specific issues to address

eg elements rendering differently in Android and iOS

```
import {Platform, StyleSheet} from 'react-native';

const styles = StyleSheet.create({
  height: Platform.OS === 'ios' ? 200 : 100,
});
```

NEED FOR NATIVE APP DEVELOPERS

Platform specific problems require platform specific experts!

LARGE APP SIZE

The app size will increase greatly if you use too many third-party libraries and native components.

Inspired by React

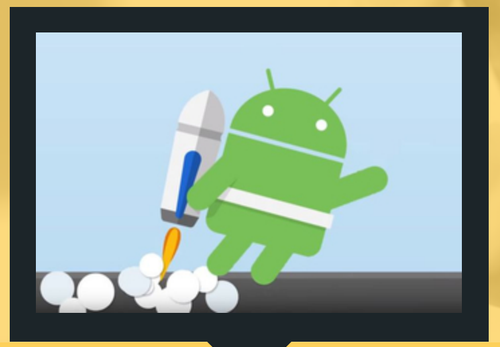
GOOGLE FLUTTER

UI Framework for cross platform apps

Dart used as main language

Unidirectional Data Flow

Hot Module Reload



JETPACK COMPOSE

UI framework for Android apps

Kotlin used as main language

Unidirectional Data Flow

Event handling similar to React

SWIFT UI

UI framework for iOS apps

Swift used as main language

Unidirectional Data Flow

THANK YOU FOR LISTENING