React Native on the Universal Windows Platform

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Microsoft

What is React?
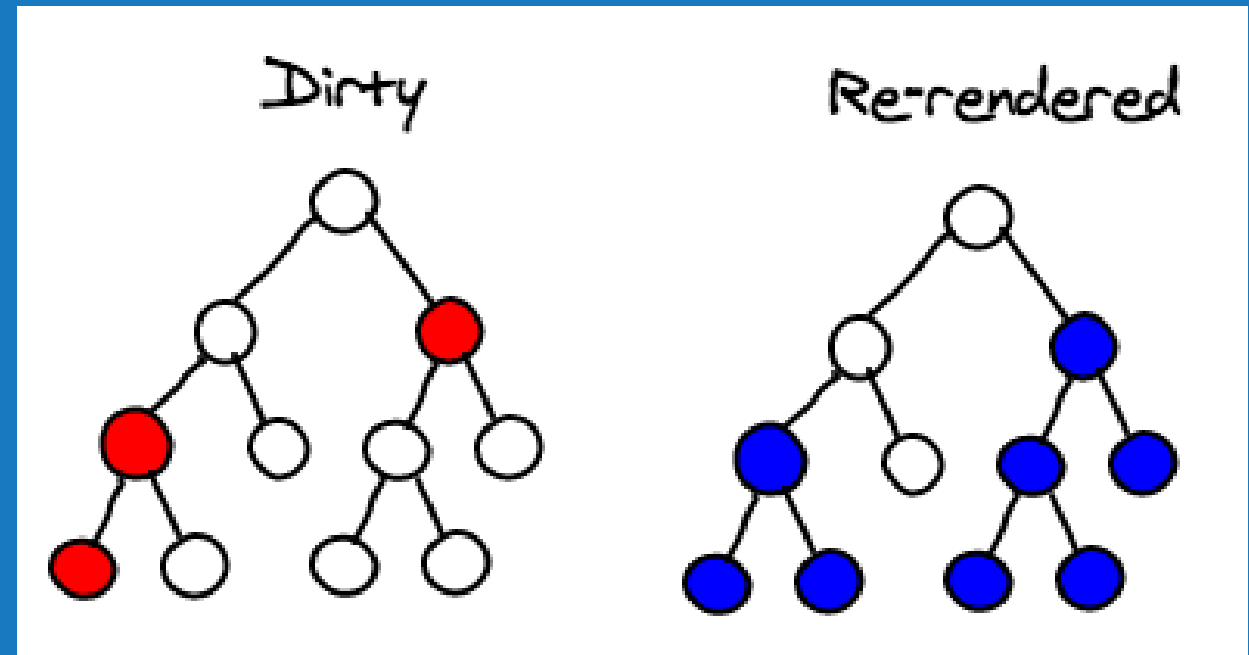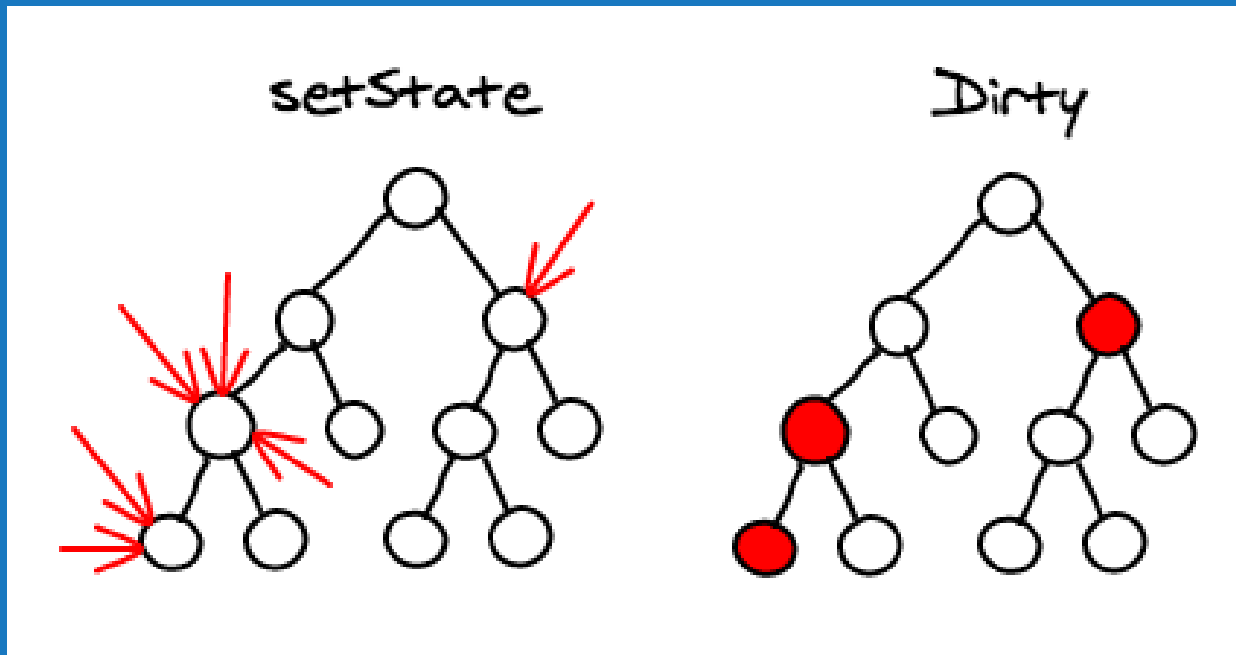
```
var HelloWorld = React.createClass({
  render: function() {
    return (
      <p>
        Hello, <input type="text" placeholder="Your name here" />!
        It is {this.props.date.toTimeString()}
      </p>
    );
  }
});


setInterval(function() {
  ReactDOM.render(
    <HelloWorld date={new Date()} />,
    document.getElementById('example')
  );
}, 500);
```

What is React?

setState Dirty Dirty Re-rendered
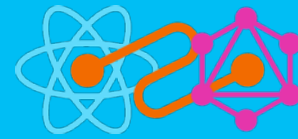
What is React Native?

"React Native enables you to build world-class application experiences on native platforms using a consistent developer experience based on JavaScript and React."

What is React Native?

"Write once, run anywhere"
"Learn once, write anywhere"

Horizontal Platform

APIs and Paradigms

Tools and Languages
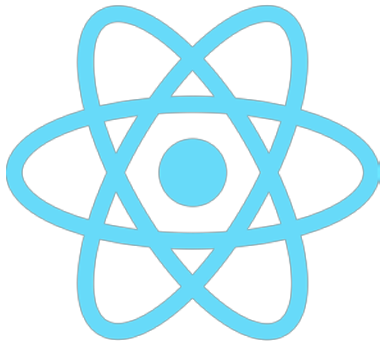
Code (80%)

React

Flux

React Native

iOS | Android | UWP | ... | **Web**

Share when possible, go native when necessary

Mobile Cross-Platform Options

React Community

- 275,000+ users of React Chrome Extension

- 30,000+ GitHub stars

  ★ Star 31,217
  👥 704 contributors

- 700+ React Native contributors

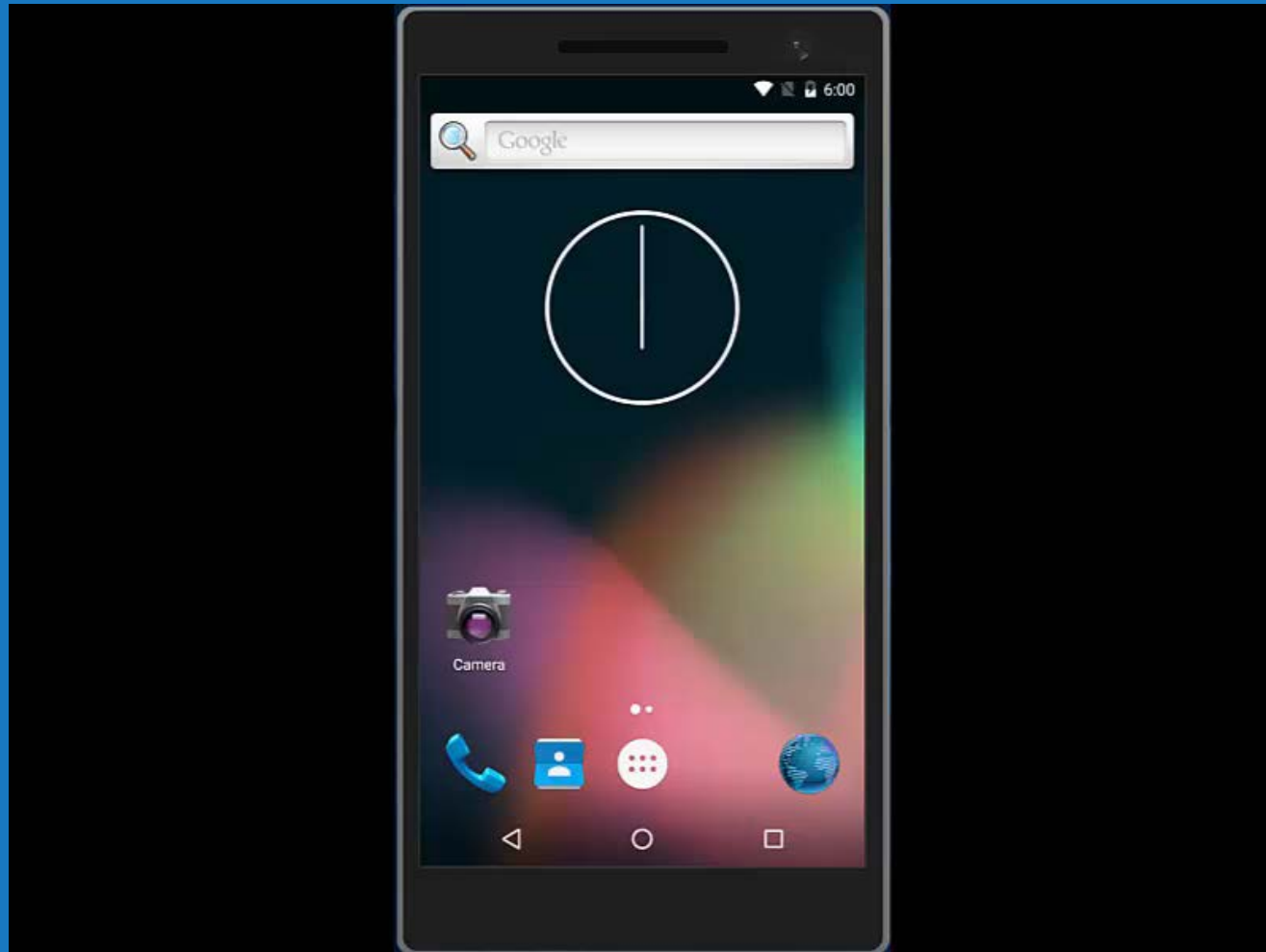- 500+ Third Party Modules @ http://react.parts
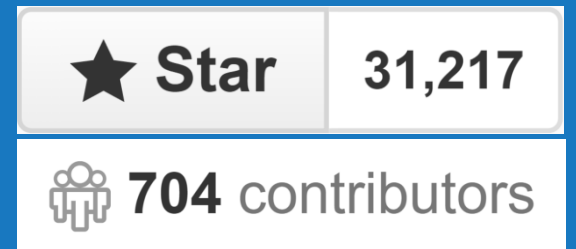
What is React Native?

- Native Views
- Asynchronous Execution
- Touch Handling
- Flexbox & Styling
- Extensibility
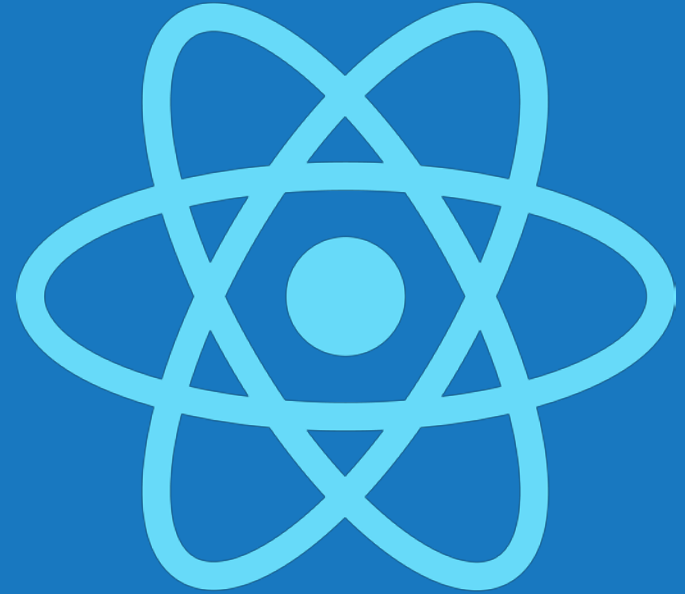
React Native Demo

Windows 10

What language will be used?

- Framework Extensibility

- Platform Symmetry

- Native Performance

What native view framework will be used?

- Web View?

- Windows.UI.Composition?

- Windows.UI.Xaml.UIElement ✓

```csharp
public interface IViewManager
{
    string Name { get; }

    void UpdateProperties(
        FrameworkElement viewToUpdate,
        ReactStylesDiffMap props);

    FrameworkElement CreateView();

    void OnDropViewInstance(
        FrameworkElement view);

    void UpdateExtraData(
        FrameworkElement root,
        object extraData);

    void ReceiveCommand(
        FrameworkElement view,
        int commandId,
        JArray args);
}
```

What JavaScript runtime will be used?

- JavaScriptCore?

- Chakra ✔

```
var globalObject = JavaScriptValue.GlobalObject;
var requireFunction = globalObject.GetProperty(
    JavaScriptPropertyId.FromString("require"));
var moduleName =
    JavaScriptValue.FromString("MyModule");
var module = requireFunction.CallFunction(
    globalObject,
    moduleName);


var value = JavaScriptValue.CreateObject();
value.SetProperty(
    JavaScriptPropertyId.FromString("foo"),
    JavaScriptValue.FromInt32(42),
    true);

JavaScriptContext.RunScript(
    "var myModule = require('MyModule'); " +
    "var value = { 'foo': 42 };");
```

How are the native threads managed?

```csharp
private readonly taskScheduler =
    new LimitedConcurrencyTaskScheduler(1);

private readonly taskFactory =
    new TaskFactory(taskScheduler);

public async void RunOnQueue(Action action)
{
    await taskFactory.StartNew(() =>
    {
        try
            action();
        catch (Exception ex)
            ShowRedBoxException(ex);
    });
}
```

```csharp
private readonly actionObservable =
    new Subject<Action>();

private readonly subscription =
    actionObservable
        .ObserveOnDispatcher()
        .Subscribe(action =>
        {
            try
                action();
            catch (Exception ex)
                ShowRedBoxException(ex);
        });

public async void RunOnQueue(Action action)
{
    actionObservable.OnNext(action);
}
```

How are native modules registered?

```csharp
class ClipboardModule : NativeModuleBase
{
 public override string Name
        {
            get
            {
                return "Clipboard";
            }
        }


[ReactMethod]
public void setString(string text)
        {
            RunOnDispatcher(() =>
            {
var package = new
DataTransfer.DataPackage(text);
DataTransfer.Clipboard.SetContent(package);
```

```csharp
class FooViewManager : SimpleViewManager<Canvas>
{
    public override string Name => "Foo";

    [ReactProp("Bar")]
    public void SetBar(string qux)
    {
        /* ... */
    }


    protected override Canvas CreateViewInstance(
            ThemedReactContext reactContext)
    {
        return new Canvas();
    }
}
```

How are native modules registered?

```
public interface IReactPackage
{
    ReadOnlyList<INativeModule> CreateNativeModules(ReactContext reactContext);

    IReadOnlyList<IViewManager> CreateViewManagers(ReactContext reactContext);

    IReadOnlyList<Type> CreateJavaScriptModulesConfig();
}
```

```
public class MainReactPackage : IReactPackage
{
 public IReadOnlyList<IViewManager> CreateViewManagers(
            ReactContext reactContext)
        {
            return new List<IViewManager>
            {
                new ReactFlipViewManager(),
                new ReactProgressBarViewManager(),}
```
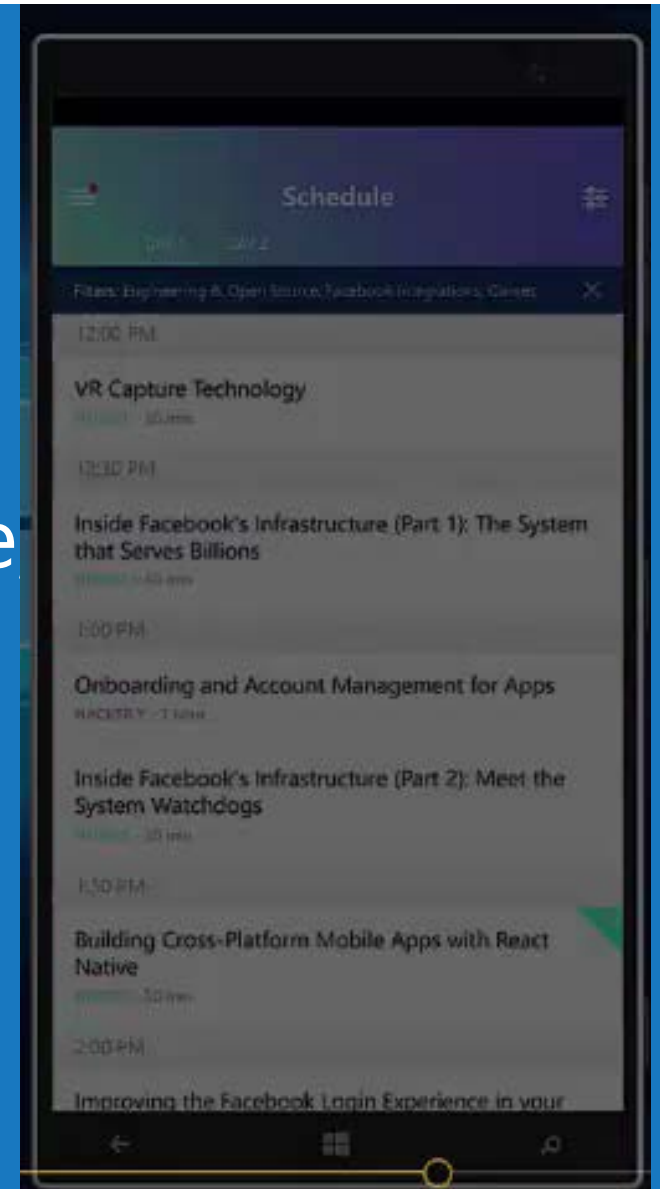
What is the native developer experience?
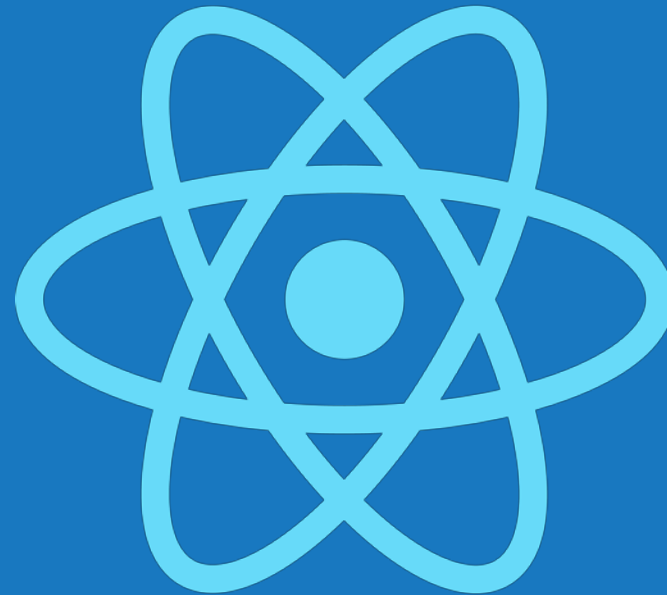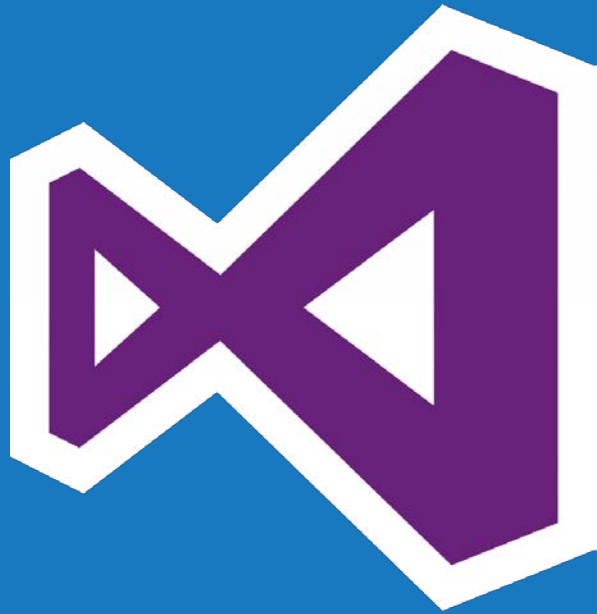
Bringing F8 App to Windows

- 3 developers, 3 weeks

- Most time spent filling in missing modules...
  - SplitView, FlipView, Clipboard, AsyncStorage
  - react-native-fbsdk, react-native-share

- < 1 week for style adaptation only

Bringing F8 App to Windows

F8TabsView.windows.js

```
class F8TabsView extends React.Component {
  ...

  render() {
    return (
      <F8SplitView
        ref="splitView"
        paneWidth={290}
        panePosition="left"
        renderPaneView={this.renderPaneView}>
        <View
          style={styles.content}
          key={this.props.tab}>
         {this.renderContent()}
        </View>
      </F8SplitView>
    );
  }

  ...
}
```

F8TabsView.android.js

```
class F8TabsView extends React.Component {
  ...

  render() {
    return (
      <F8DrawerLayout
        ref="drawer"
        drawerWidth={290}
        drawerPosition="left"
        renderNavigationView={this.renderNavView}>
        <View
          style={styles.content}
          key={this.props.tab}>
         {this.renderContent()}
        </View>
      </F8DrawerLayout>
    );
  }

  ...
}
```

🔒 Microsoft Corporation [US] | microsoft.com/en-us/store/apps/f8-developer-conference/9nblggh4ntvn

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F8 Developer Conference

★★★★★

Free

The F8 app is finally here for Windows devices! To help you navigate the conference on April 12th and 13th, we've designed the app to be your personal guide to all things F8. Stay up to date all the latest
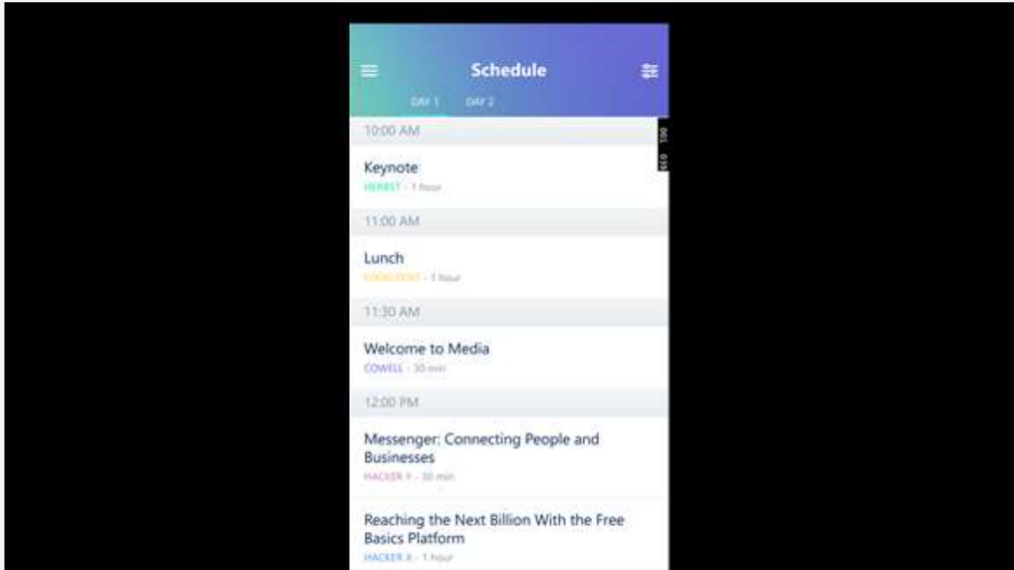
More

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What does this work on?

Content Rating: Everyone
Shares Info

Schedule

DAY 1   DAY 2

10:00 AM

Keynote
HERBST · 1 hour

11:00 AM

Lunch
FOOD FEST · 1 hour

11:30 AM

Welcome to Media
COWELL · 30 min

12:00 PM

Messenger: Connecting People and Businesses
HACKER F · 30 min

Reaching the Next Billion With the Free Basics Platform
HACKER X · 1 hour

mobile device

Cross Stack Engineering

React Native can transform product organizations.

What lies ahead?

Open Source

http://github.com/ReactWindows/react-native

http://github.com/ReactWindows/f8app

Thank you!

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Microsoft