

Cross-Platform Mobile Mapping with React Native

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Boundless

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What is React Native

- Created by Facebook and open sourced in 2013
- build mobile apps using Javascript only
- not a “mobile web app” or a “hybrid app”
- Supports both android and iOS platforms.



Who is using React Native

- Facebook
- AirBnb
- Instagram
- Walmart
- Tesla
- UberEATS



Advantages

- One codebase for two mobile platforms
- No knowledge of iOS/Android required
- Vibrant dedicated community
- Renders native views for improve performance
- Live code reloading during development.



Disadvantages

- Javascript
- Breaking change when upgrading major versions.
- Lagging platform SDK updates
- Debugging



How to get started

- MacOS

- brew install node
- brew install watchman

- Windows

- choco install nodejs.install
- choco install python2
- choco install jdk8
- Install React Native command line tools
 - npm install -g react-native-cli
- Install Xcode or Android Studio



Create & run

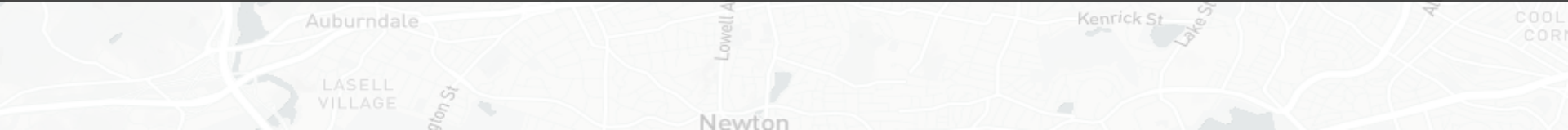
- Use terminal/command prompt to create and run RN apps
- Create app
 - `react-native init rnMapDemo`
- Run the app in the different
 - `cd rnMapDemo`
 - Android
 - `react-native run-android`
 - iOS
 - `react-native run-ios`





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Mapping in React Native





Mapping in React Native

- **react-native-maps**
- **Created by airbnb**
- **Officially supporting mapping library as of RN 0.44**
- **Native Map Component for iOS and Android**
- **iOS - Apple Maps and Google Maps**
- **Android - Google Maps**
- **Supports most native features**
- **Declarative mapping API**



Declarative API

```
import MapView from 'react-native-maps';

<MapView
  initialRegion={{
    latitude: 37.78825,
    longitude: -122.4324,
    latitudeDelta: 0.0922,
    longitudeDelta: 0.0421,
  }}
  >
  <MapView.Marker
    coordinate={{latitude: 37.78825, longitude: -122.4324}}
    title={"title"}
    description={"description"}
  />
</MapView>
```

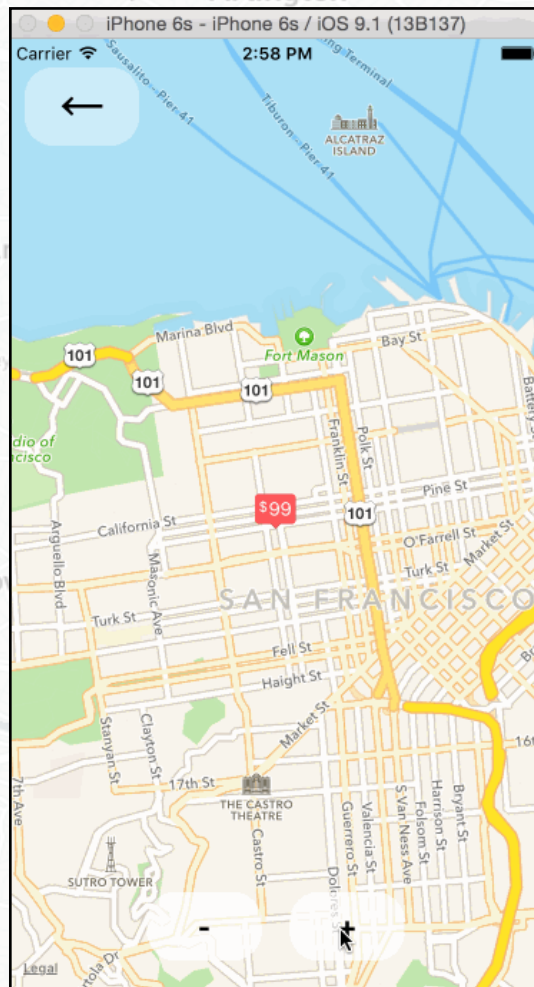




Markers

```
<MapView.Marker  
  coordinate={marker.latlng}  
  title={marker.title}  
  description={marker.description}  
/>
```

- Default pins, images, or custom React views
- Callouts with custom views
- Draggable

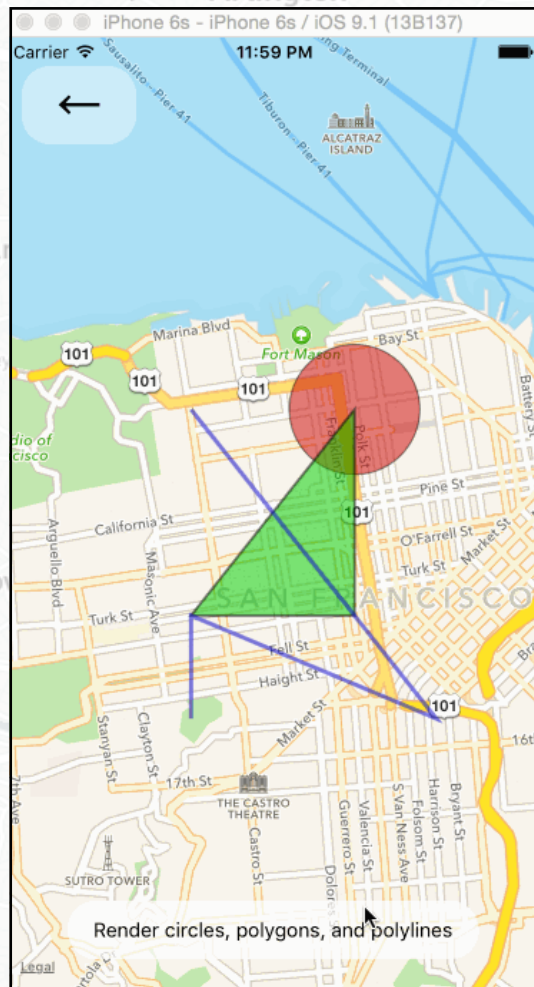




Overlays

```
<MapView.Polygon  
  coordinates={polygon.coordinates}  
  fillColor={'#f00'}  
/>
```

- Polygon
- Polyline
- Circle





Map Events

```
<MapView  
  onRegionChange={this.onRegionChange}  
/>
```

- The MapView component has several events that can be subscribed to
- MapView can animate to a specified region or location

The screenshot shows an iPhone map of San Francisco with a yellow route highlighted. A code inspector overlay is visible at the bottom, displaying the following events:

```
Carrier 11:56 PM  
GOLDEN GATE BRIDGE  
ALCATRAZ ISLAND  
101 $99 101 80  
SAN FRANCISCO  
1 1  
The Presidio of San Francisco  
Bay St  
25th Ave  
Lincoln Way  
7th Ave  
17th St  
Castro St  
Guerrero St  
Mission St  
3rd St  
Sunset B  
Legal  
280
```

Map::onRegionChangeComplete

```
{  
  "longitudeDelta": 0.1311852509767846,  
  "latitude": 37.78548533047537,  
  "longitude": -122.4324,  
  "latitudeDelta": 0.08667400753619603  
}
```

Map::onRegionChange

```
{  
  "longitudeDelta": 0.1311852509767846,  
  "latitude": 37.788249999999998,  
  "longitude": -122.4324,  
  "latitudeDelta": 0.09219999999979223  
}
```

Map::onRegionChange

```
{  
  "longitudeDelta": 131.8359407689422,  
  "latitude": 29.999999999999998,  
  "longitude": -40.00000000000001,  
  "latitudeDelta": 92.7391051968495  
}
```

Map::onRegionChange

```
{  
  "longitudeDelta": 131.8359407689422,  
  "latitude": 29.999999999999998,  
}
```

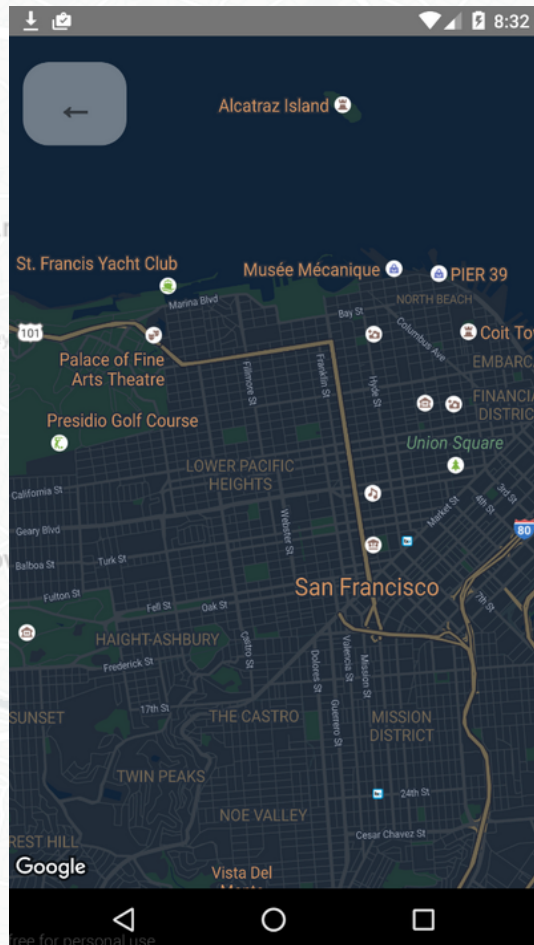


Map Styles

```
import MapView, { PROVIDER_GOOGLE } from
'react-native-maps';

// The generated json object
const mapStyle = [ ... ];

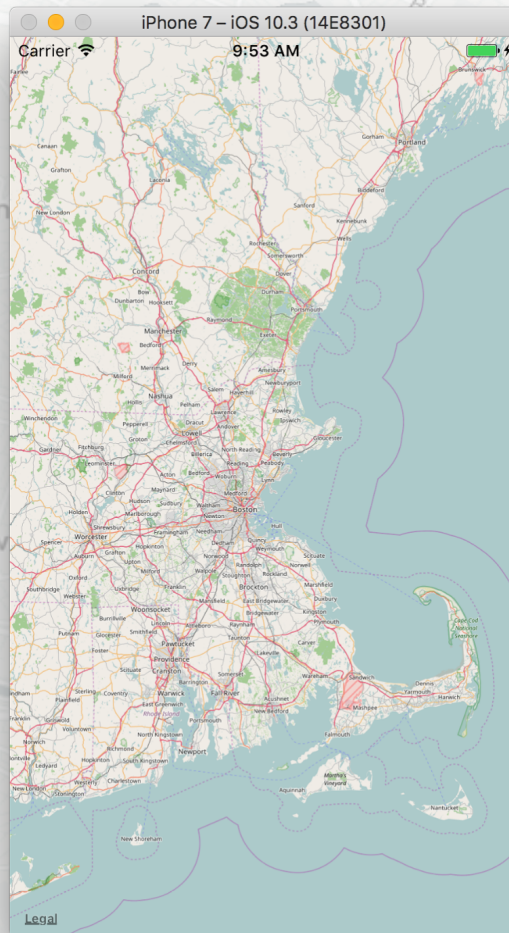
<MapView
  provider={PROVIDER_GOOGLE}
  customMapStyle={mapStyle}
/>
```





Tile Overlays

```
<MapView>  
  <MapView.UrTile  
    urlTemplate={'http://  
c.tile.openstreetmap.org/{z}/{x}/{y}.png'}  
  />  
</MapView>
```





Drawbacks

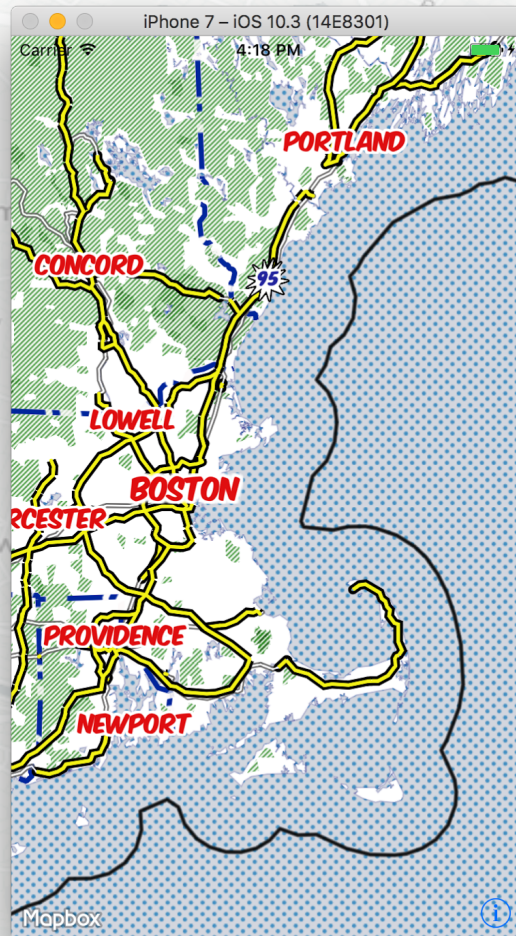
- Performance
- Offline support
- Javascript ...





react-native-mapbox-gl

- Alternative to react-native-maps
- Experimental
- Vector tiles
- Five default map styles
- Supports markers, polygons, polylines
- Supports offline maps





Boundless Mobile

- SpatialConnect
- A collection of libraries that makes it easier for developers to write apps that connect to multiple spatial data stores online and offline.
- Enables disconnected data collection
- Native iOS and Android SDKs
- Able to communicate with React Native
- Display, query, edit geospatial layers
- View offline maps stored in geopackages





More information

<https://github.com/airbnb/react-native-maps>

<https://github.com/mapbox/react-native-mapbox-gl>

<https://github.com/boundlessgeo/spatialconnect-ios-sdk>