

Mapping

Mostly on iOS: MapKit and “other”



Justin Miller & Matt Blair

A Brief Nod To The Mac

- MapKit equivalent doesn't exist
- Some people have tried to adapt iOS route-me (third-party, more later)
- best solution is probably WebView
 - display web-based solutions
 - communicate with JavaScript
 - - [WebView stringByEvaluatingJavaScriptFromString:]



MapKit

- Apple's supplied mapping solution for iOS
- Available in iOS 3.0+
- `<MapKit.framework>`

Terms & Requirements

- Need to be online
- Implicitly agree to Google's terms

Map Kit Framework Reference

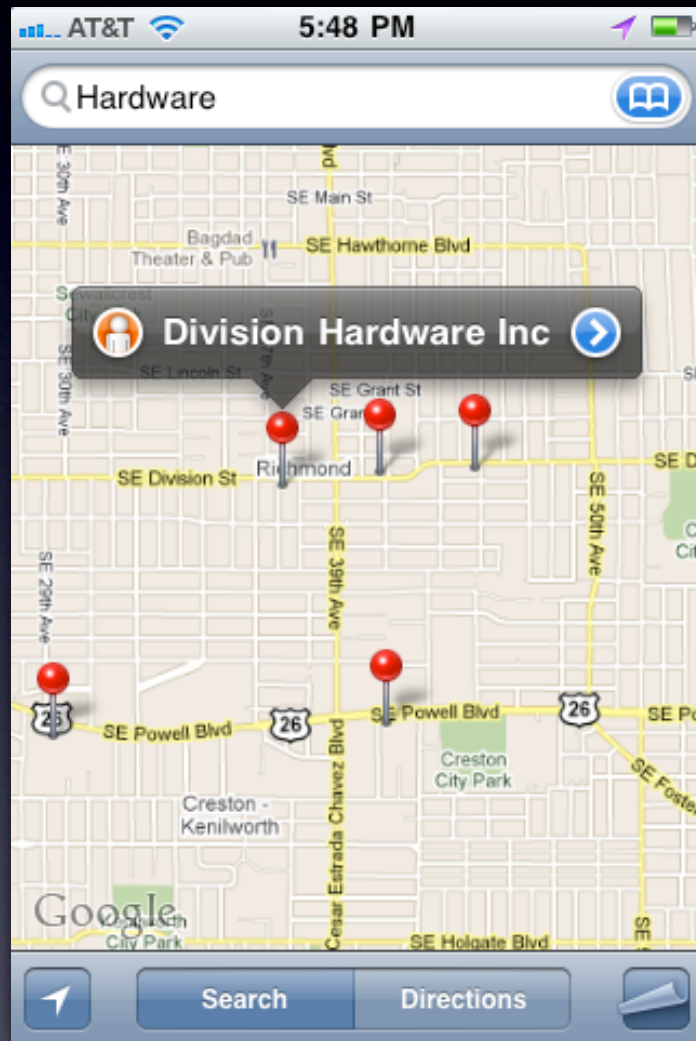
About the Map Kit Framework

The Map Kit framework provides an interface for embedding maps directly into your own windows and views. This framework also provides support for annotating the map, adding overlays, and performing reverse-geocoding lookups to determine placemark information for a given map coordinate.

Important: The Map Kit framework uses Google services to provide map data. Use of specific classes of this framework (and their associated interfaces) binds you to the Google Maps/Google Earth API terms of service. You can find these terms of service at <http://code.google.com/apis/maps/iphone/terms.html>.



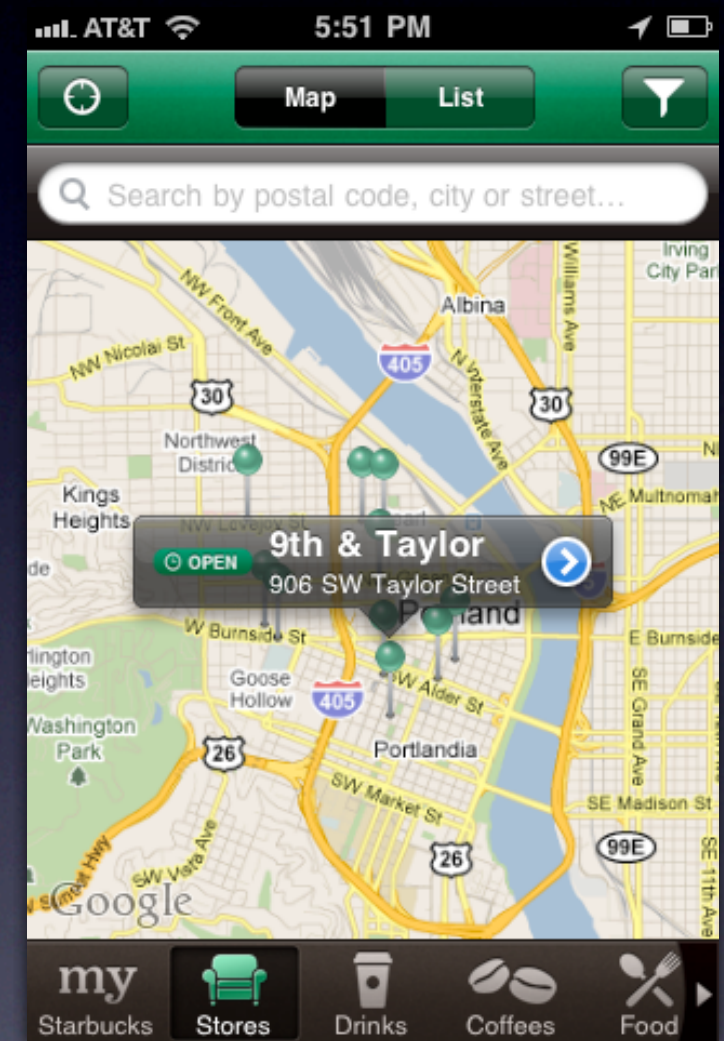
MKMapView



Maps

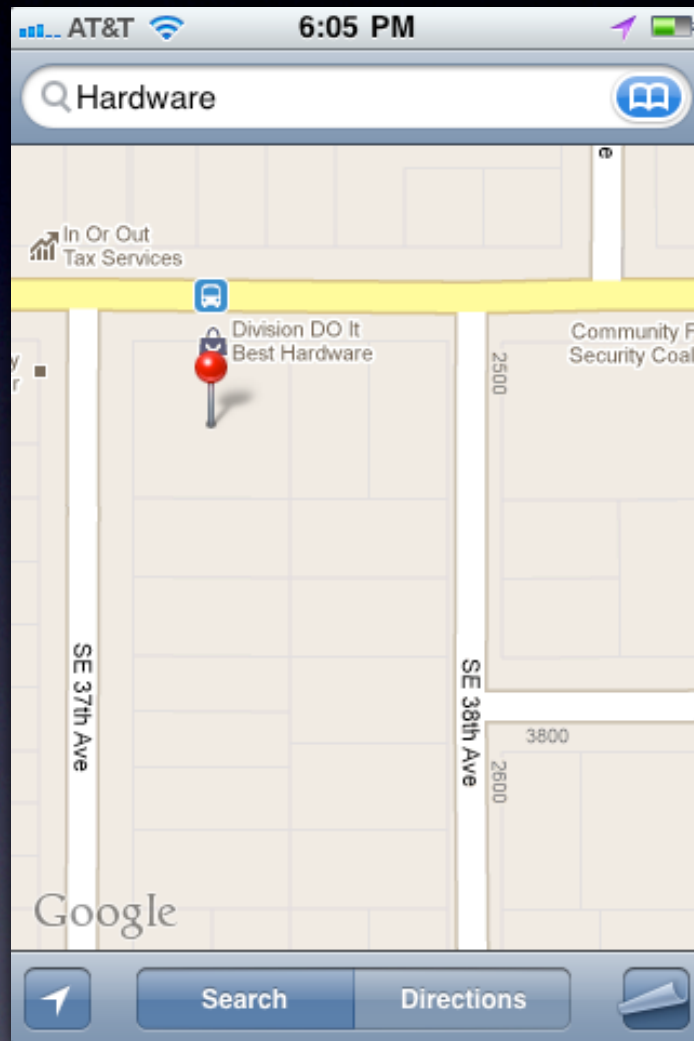


Twitter



Starbucks

MKMapType



Standard



Satellite



Hybrid

Geocoders

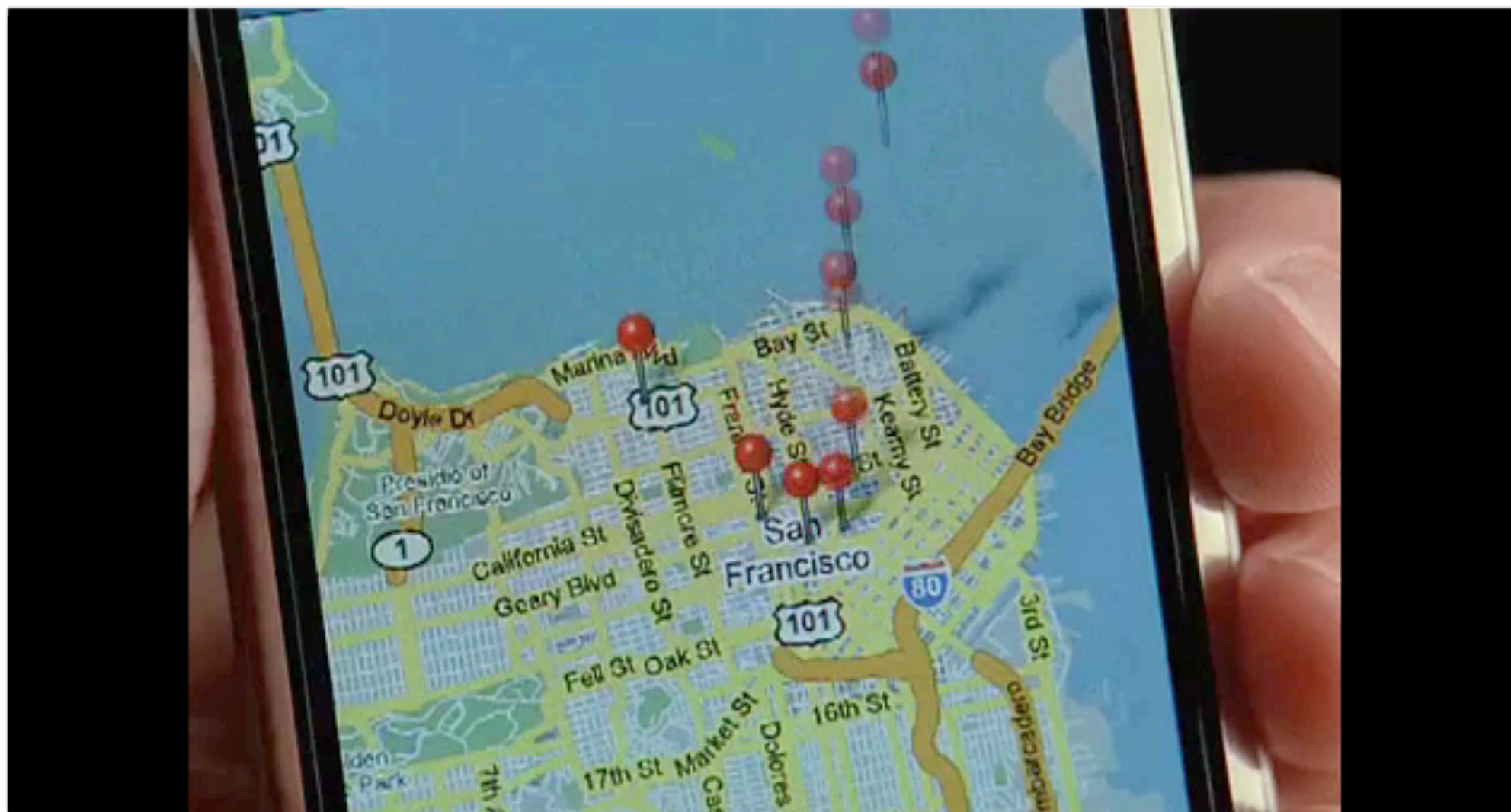
- Translate between address & lat/long point
- **MKReverseGeocoder** (from point)
- Forward geocoder (from address/search)
 - Google's HTTP/JSON API
 - Yahoo's HTTP/XML API
 - Watch out for throttling

Annotations & Views

- Think of annotations as abstract notes
- Annotation views display those notes
 - Smart display & memory usage
- Example:
 - `MKAnnotation`: “my house” at lat/long
 - `MKAnnotationView`: icon on map

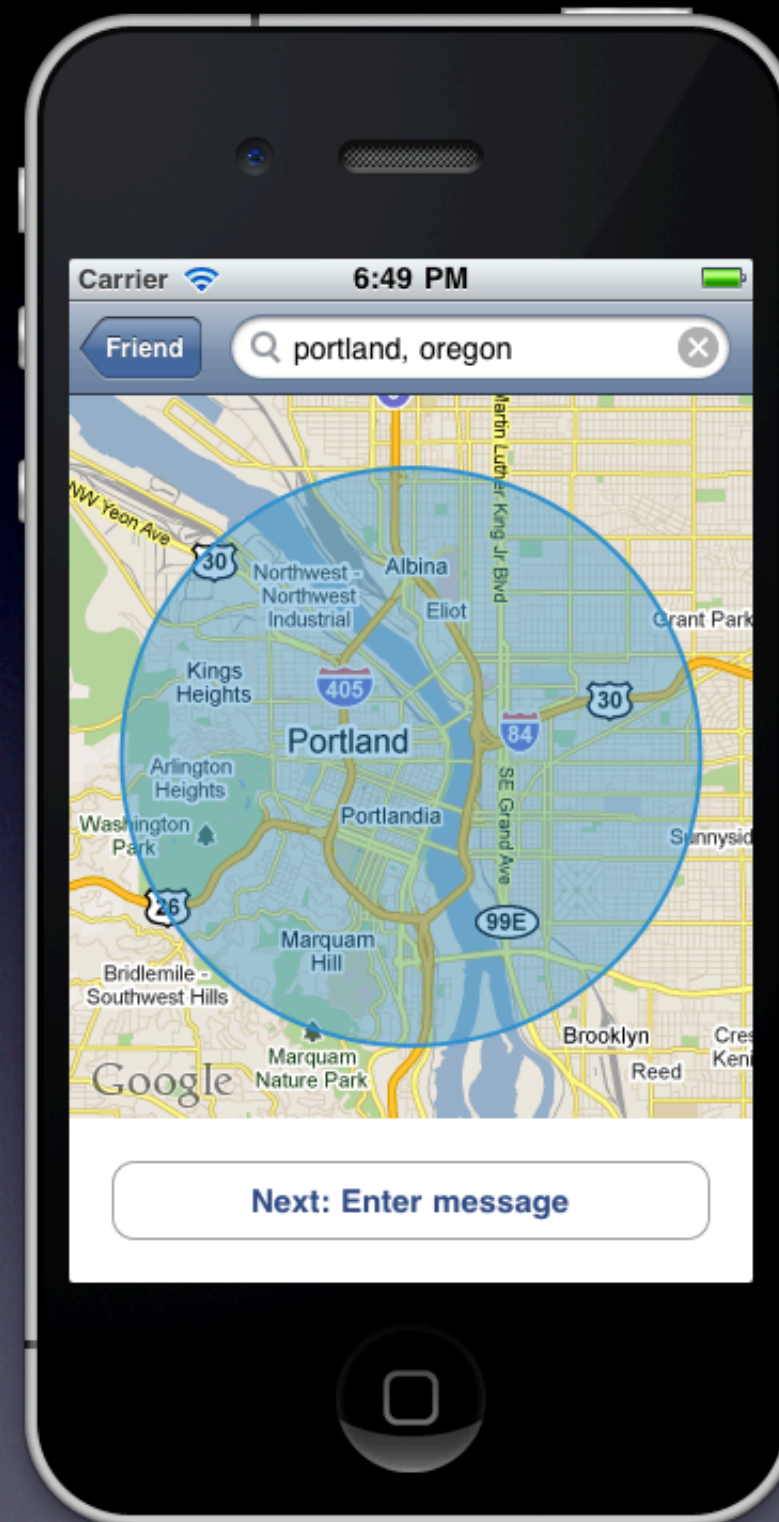
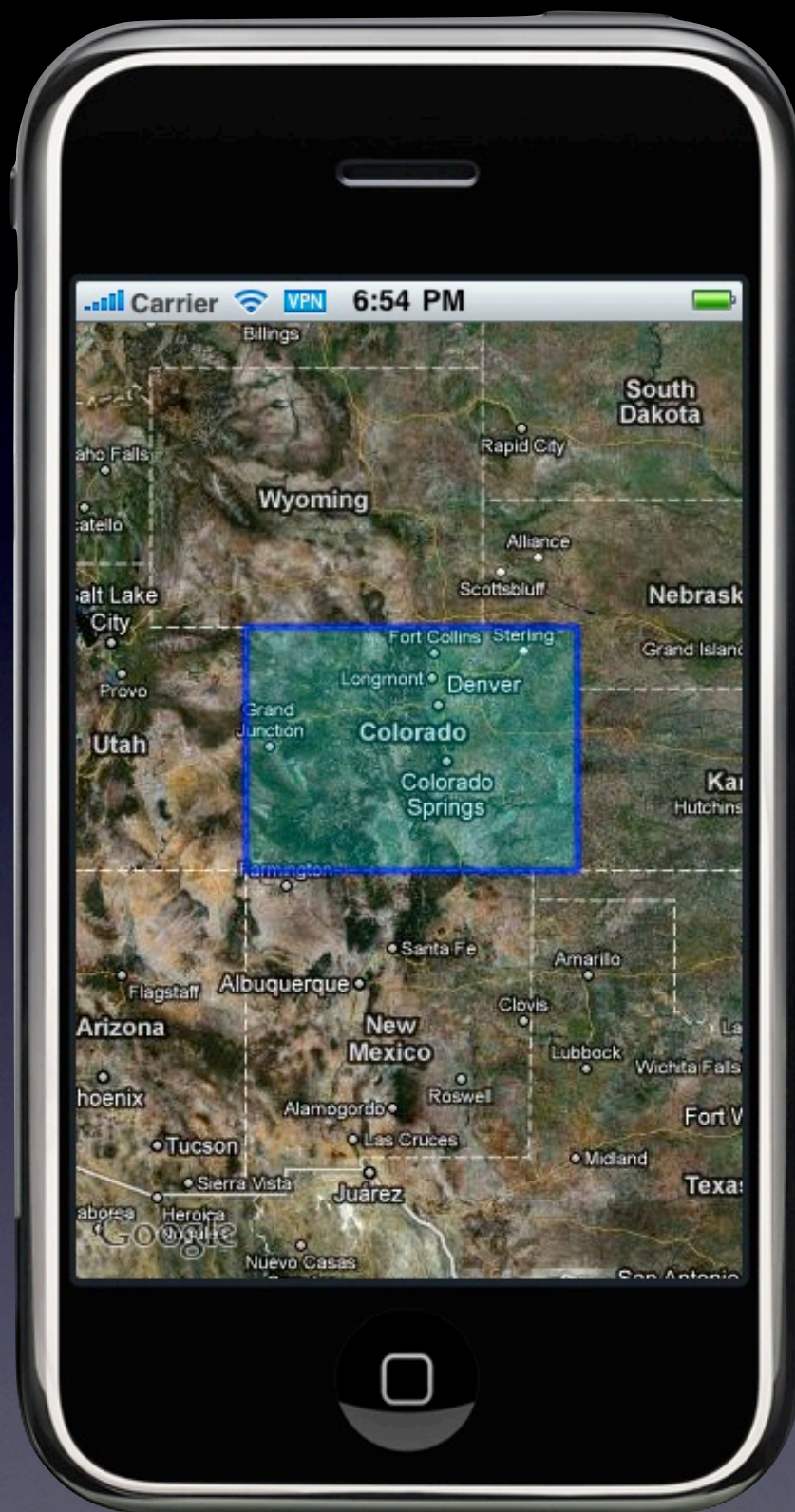
Pin Annotations

- **MKPinAnnotationView**
- You get some stuff for free
 - All the colors of the rainbow
 - As long as they're green, red, or purple
 - Used for starting, ending, and user-specified points
- Drop animations



Shape Annotations

- Available in iOS 4.0+
- **MKShape** abstract class
- **MKCircle**, **MKPolygon**, **MKPolyline**
- Associated views as well
 - Or subclass **MKOverlayPathView**
 - Use **CGPathRef** & friends



User Location

- Simple option: showing only
 - `myMapView.showsUserLocation`
 - `myMapView.userLocationVisible`
- More complicated option: Core Location
 - `<CoreLocation.framework>`
 - Pass responses to map view owner

MapKit demos

Matt Blair

route-me & MapBox

- route-me: BSD-licensed MapKit alternative
 - came from a city transit project
- MapBox: custom map tiles & tools
- I put these together in an iPad app

App Requirements

- Complete offline use
- Custom tile images
- Data visualization overlays

MapBox

“Create beautiful custom maps using open source tools in the cloud.”



Featured Maps

Afghanistan Summer

Oct 29, 2009

Z5-Z11

Shuttle Radar hillshades with borders & Open Street Map roads





DC Nightvision

Oct 8, 2009

Z0-Z17

Elevations, building footprints, and roads seen through nightvision





World Glass

Aug 18, 2010

Z0-9

A transparent world tileset for fast & simple color customization





Pakistan Grey

Sep 27, 2010

Z0-9

Light grey hillshades & borders for Pakistan



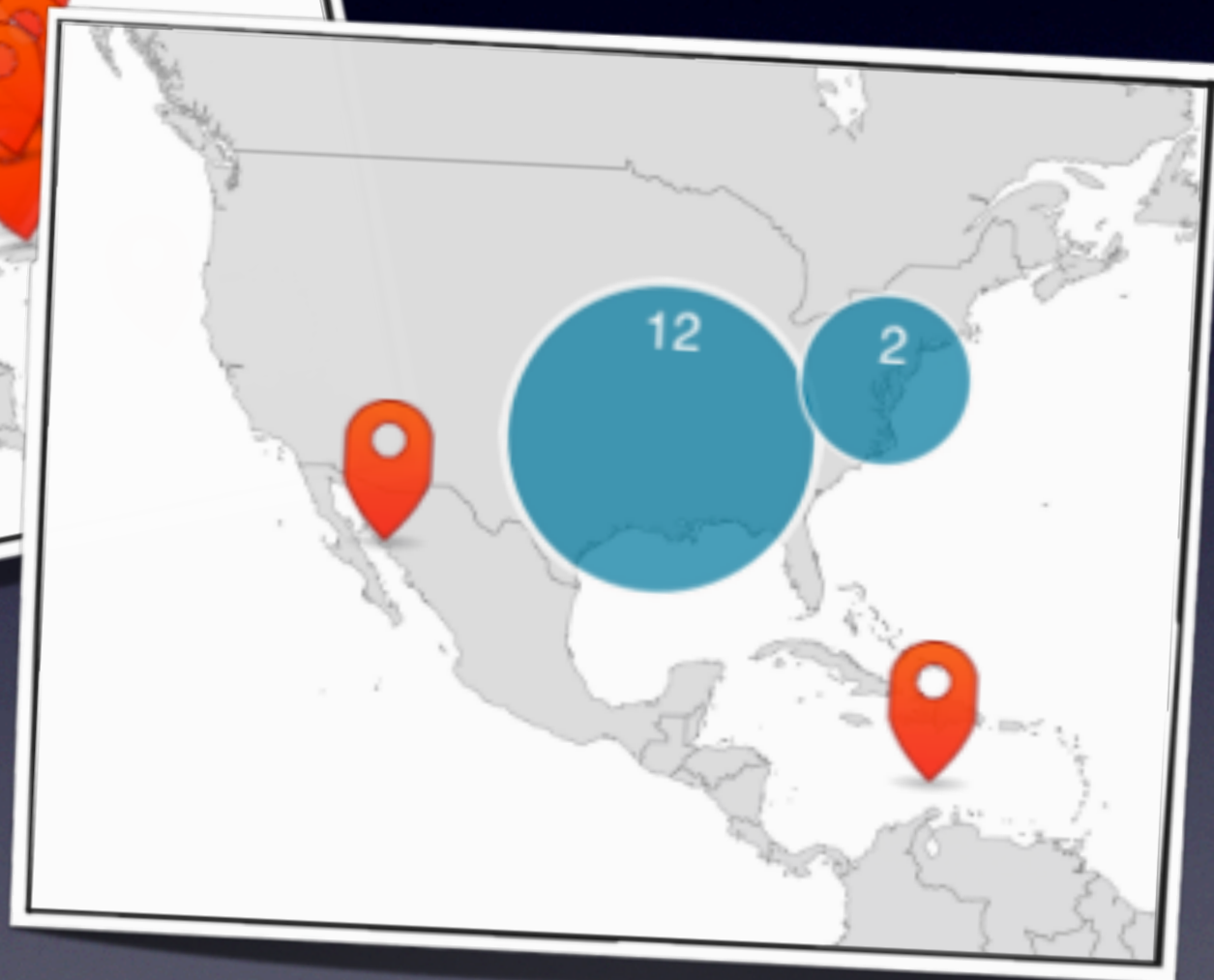


route-me

- RMMMapView
- RMFoundation
- RMMarker & RMMarkerManager
- RMPATH & friends
- Support for OpenStreetMap, Microsoft VirtualEarth, CloudMade, OpenCycleMap, OpenAerialMap
- Also: Yahoo!*

Customizations

- MBTiles backend
 - offline tile file format
 - SQLite-based
- fading tile loading
- master/slave layers
- clustered markers



Clustering Algorithm

- For each point:
 - Iterate all cluster arrays
 - If one exists with close center, add to it
 - If not, create a new cluster & add to it
 - Update cluster center
 - Update text label count
- Draw clusters & lone points

MapBox Demo

Resources

- Slides: <http://tinyurl.com/pdxmapping>
- MapKit: <http://developer.apple.com>
- route-me: <https://github.com/route-me>
- MapBox: <http://mapbox.com/ipad>
- Justin: <http://codesorcery.net>
- Matt: <http://elsewisestrategic.com>