

# Getting Around with Map Kit

Session 300 and 310

**Brady Law**

Software Engineer - Maps Client Team

These are confidential sessions—please refrain from streaming, blogging, or taking pictures

# Agenda



# Agenda



- The new look of Map Kit

# Agenda



- The new look of Map Kit
- Launching Maps with MKMapItem

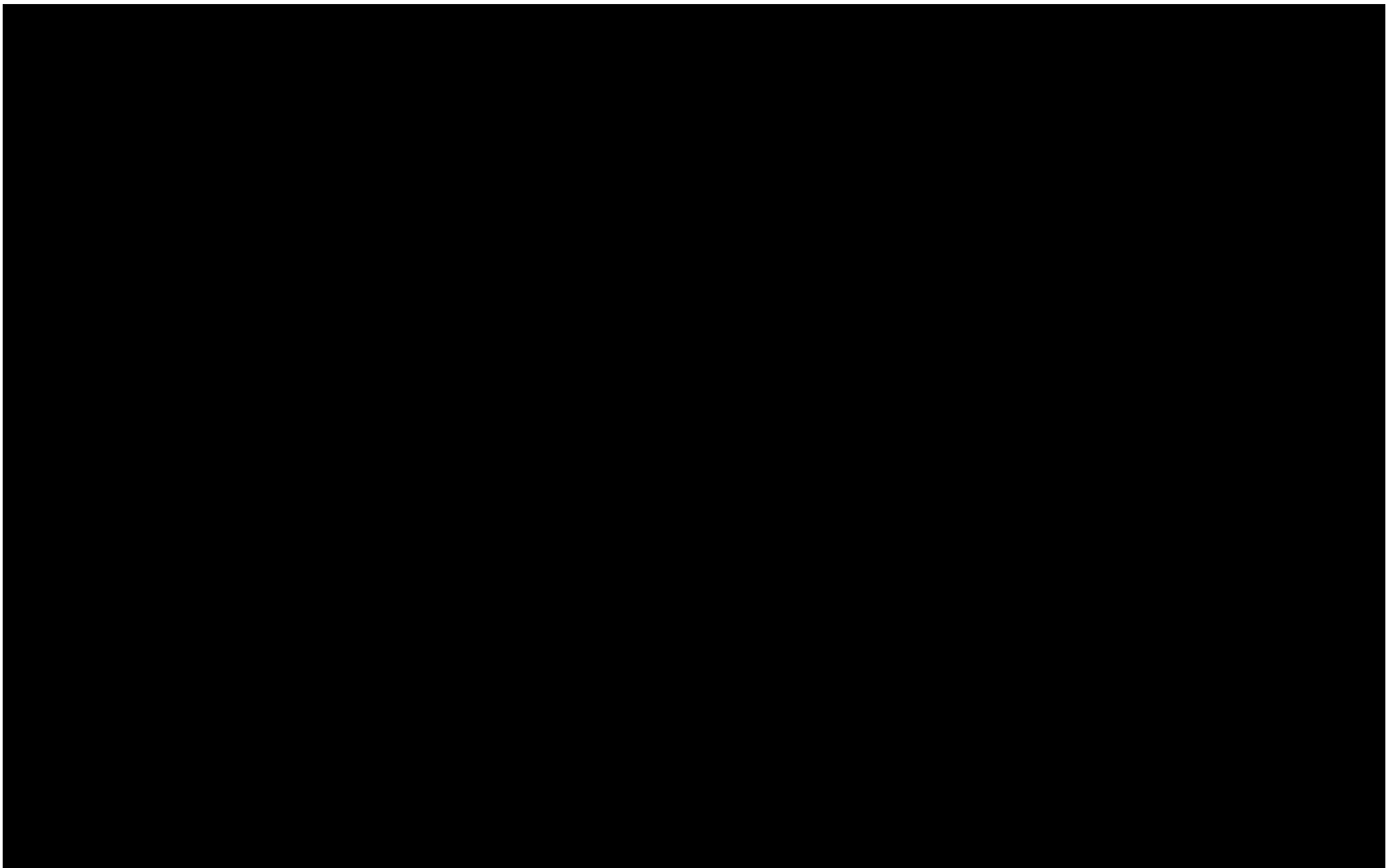
# Agenda

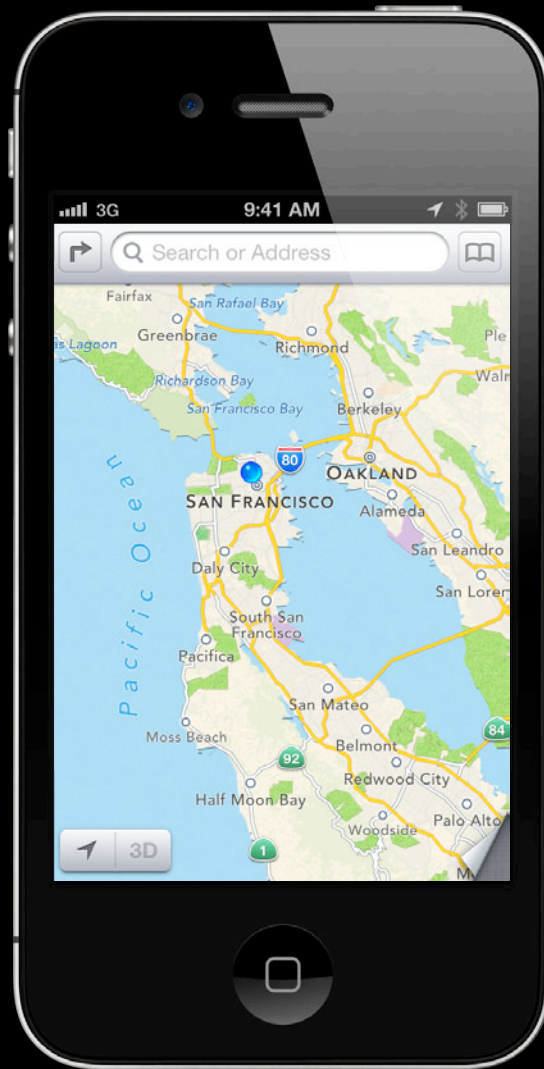


- The new look of Map Kit
- Launching Maps with MKMapItem
- Developing routing apps

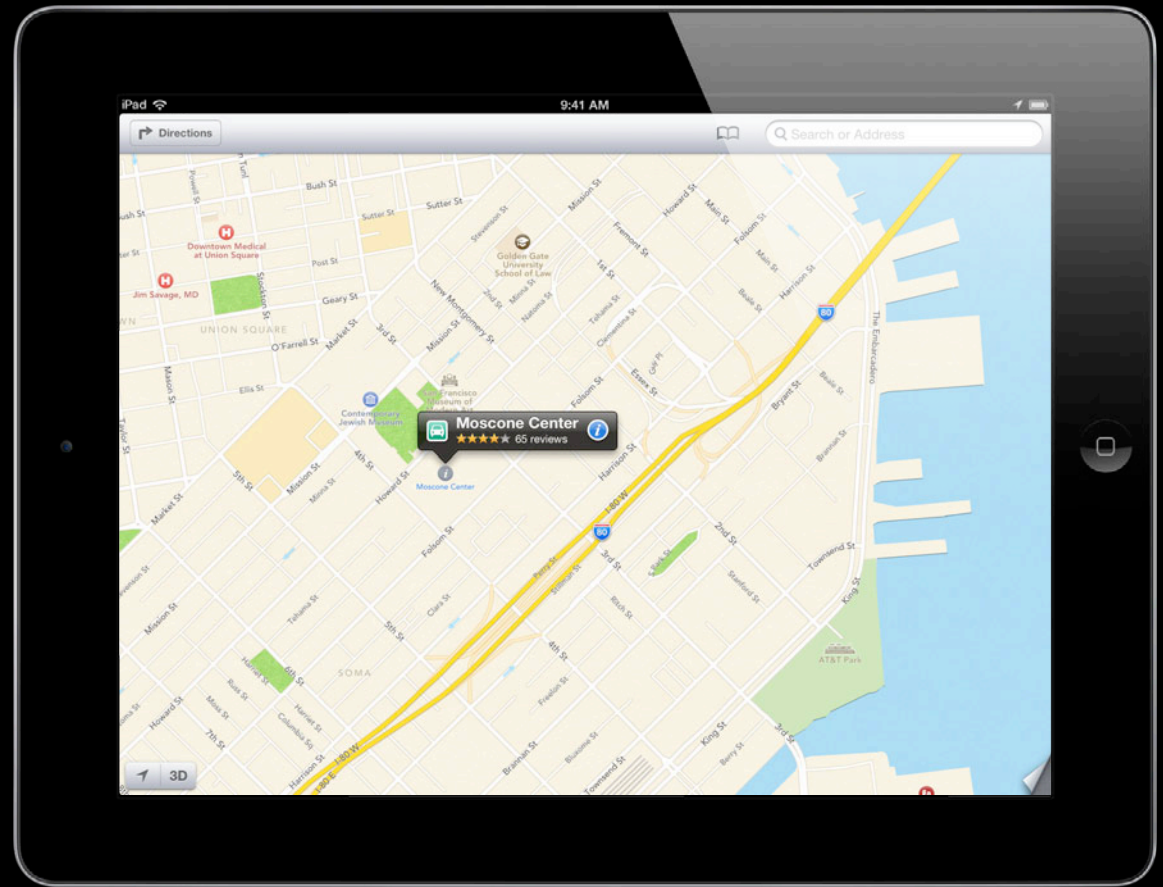
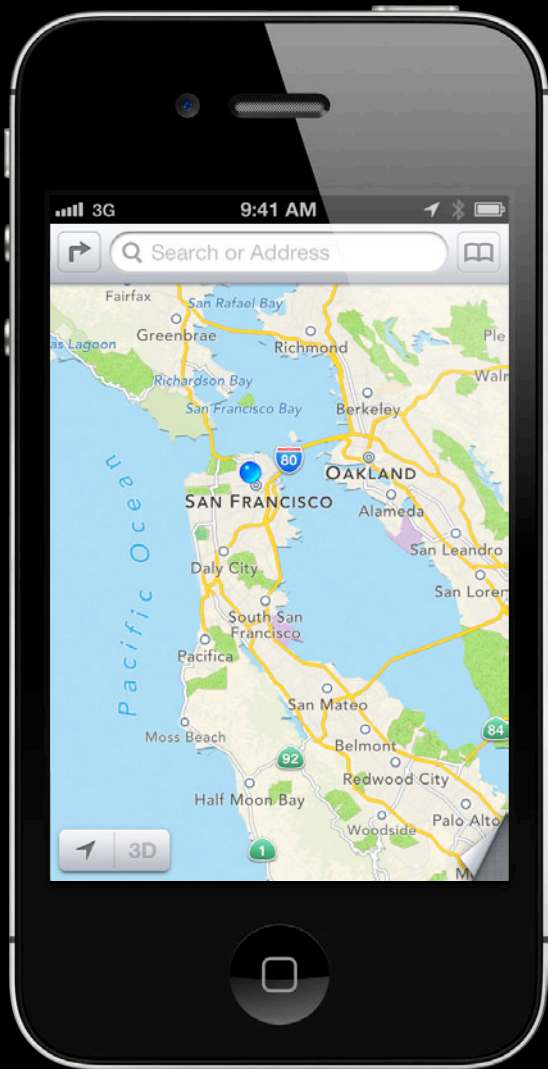
# The New Look of Map Kit

Powered by Apple Maps

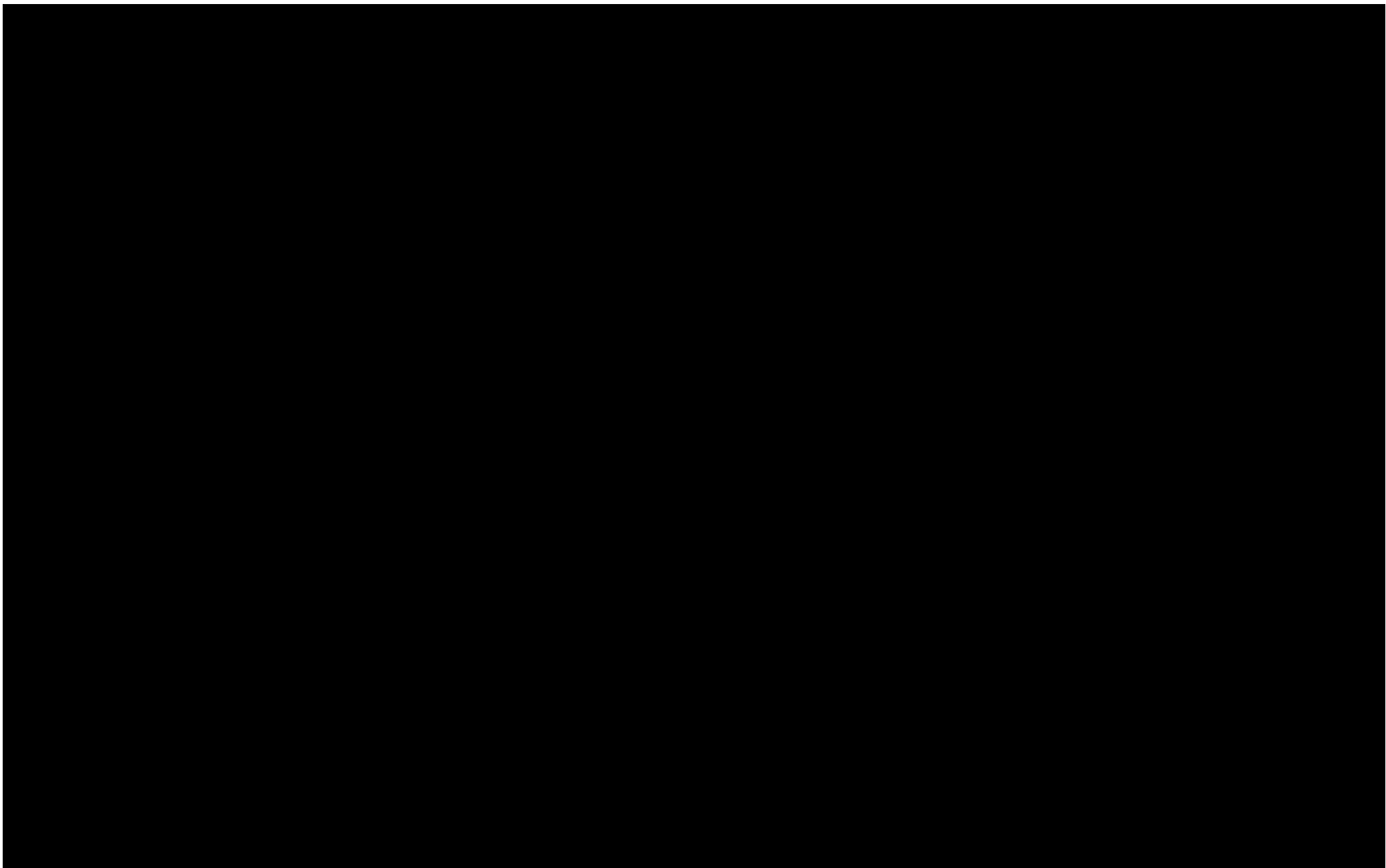








**What does it take to get  
Apple Maps in my app?**

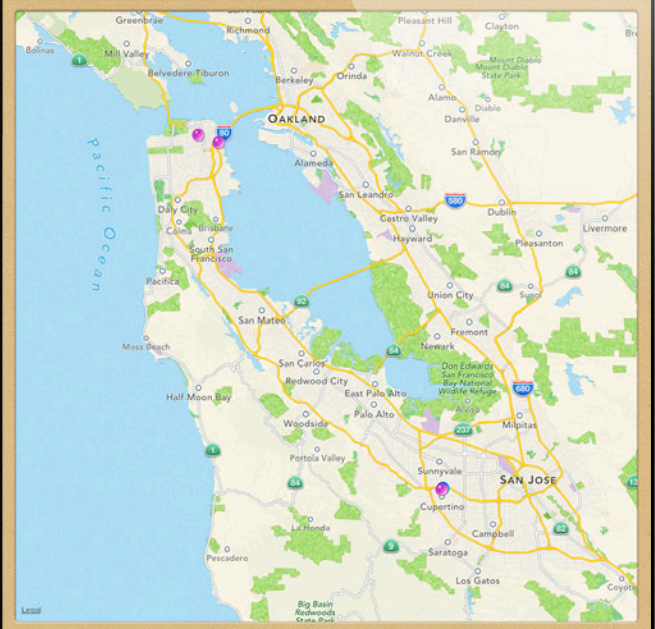


**Absolutely nothing.**

**New Maps. Same API.**



Find My Friends

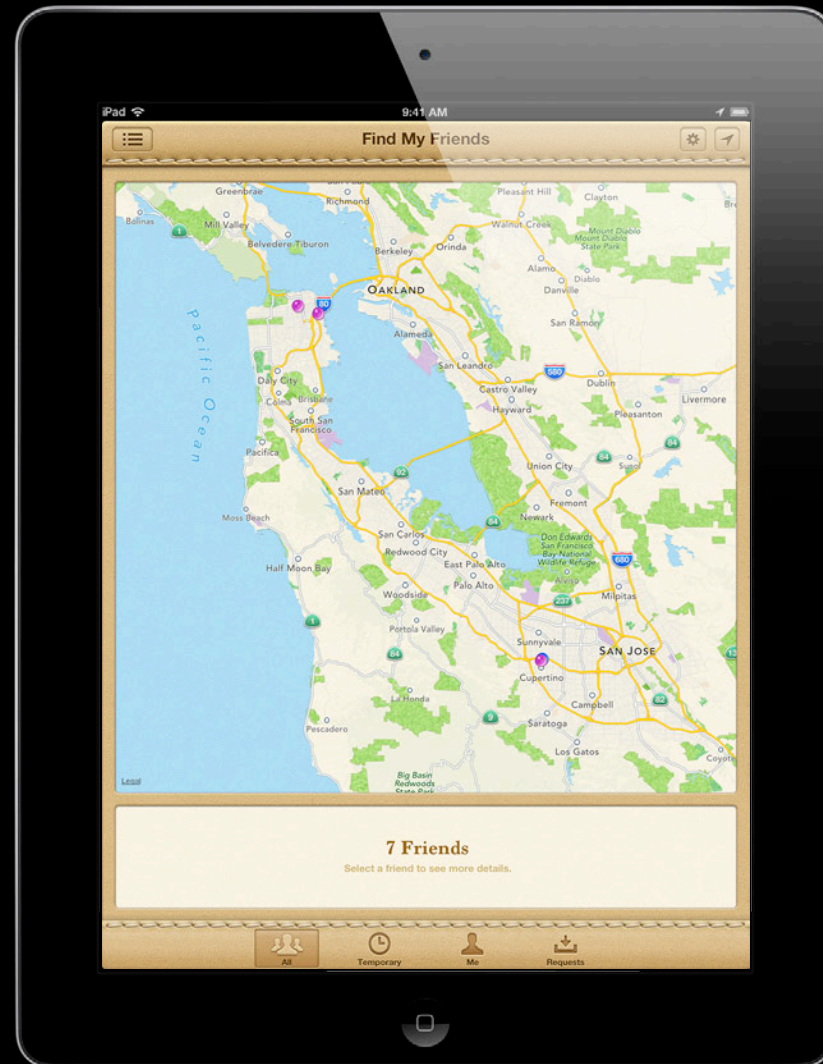


**7 Friends**  
Select a friend to see more details.

- All
- Temporary
- Me
- Requests

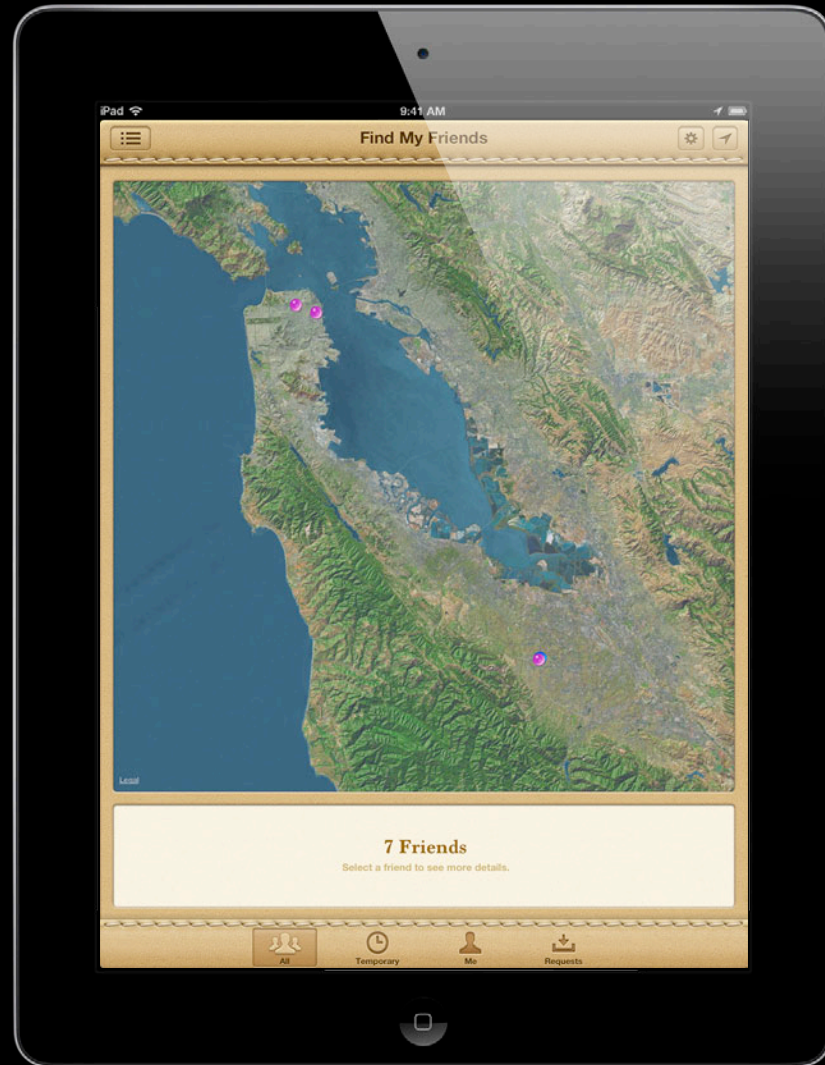
# Map Modes

## Standard



# Map Modes

## Satellite



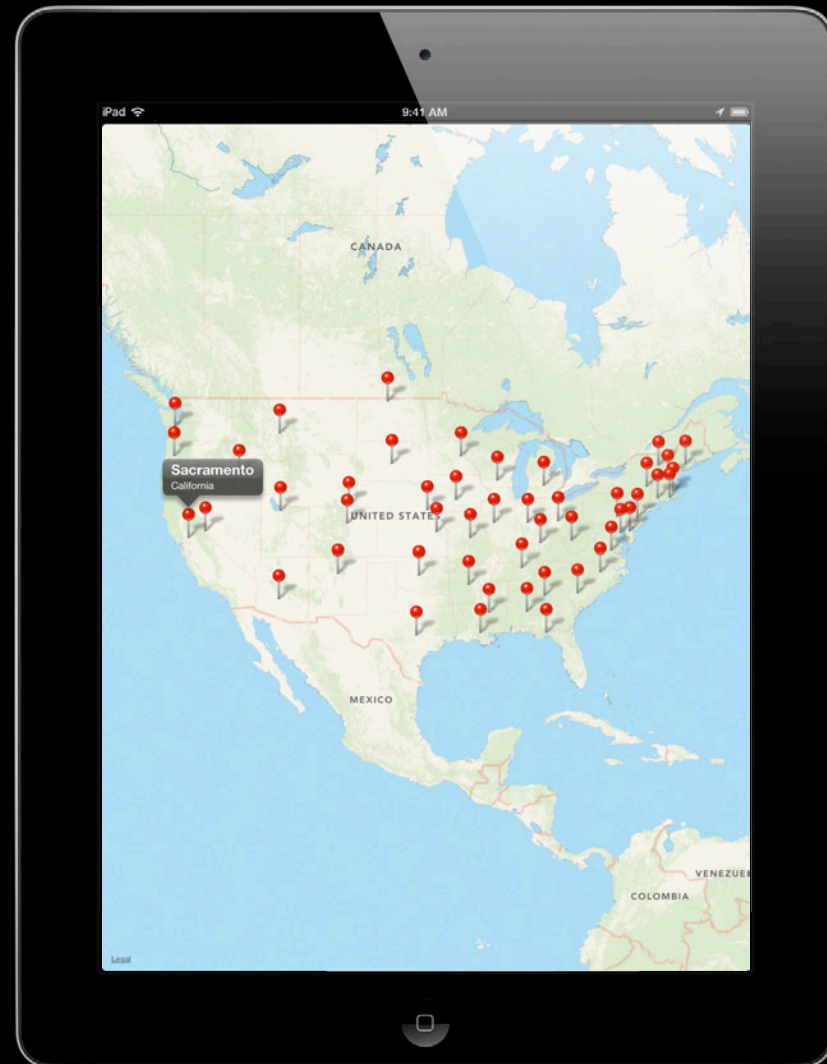
# Map Modes

## Hybrid

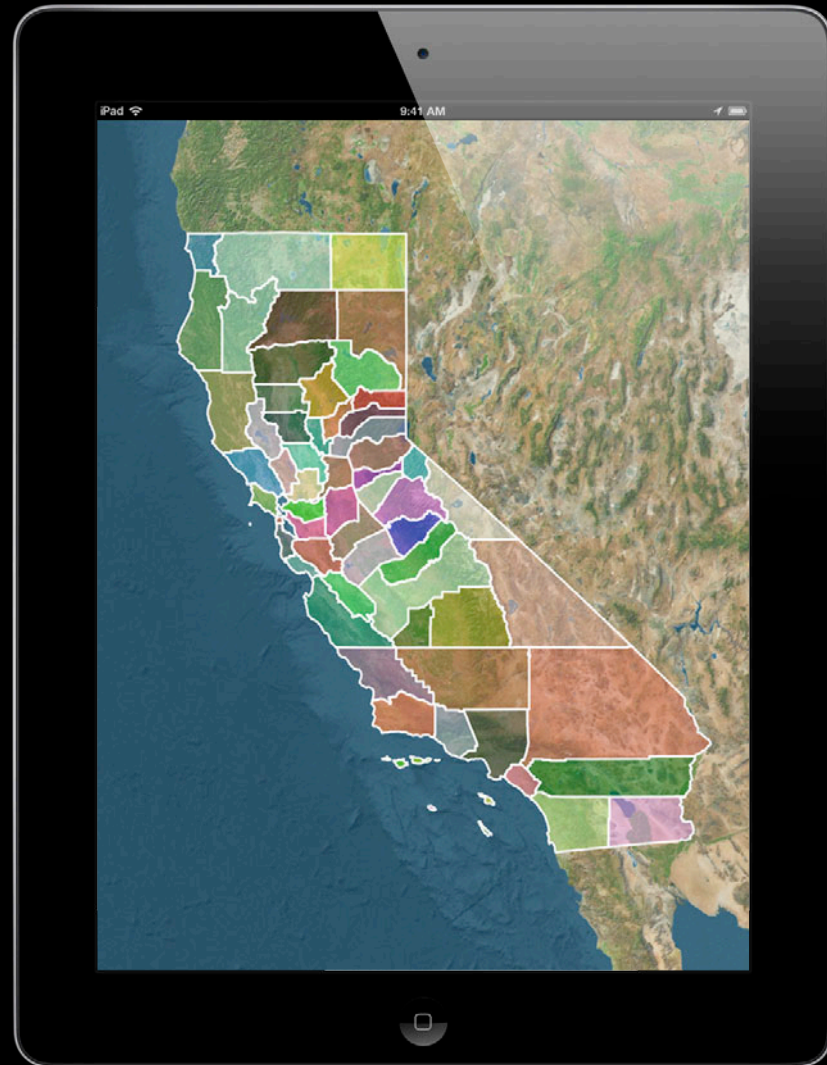




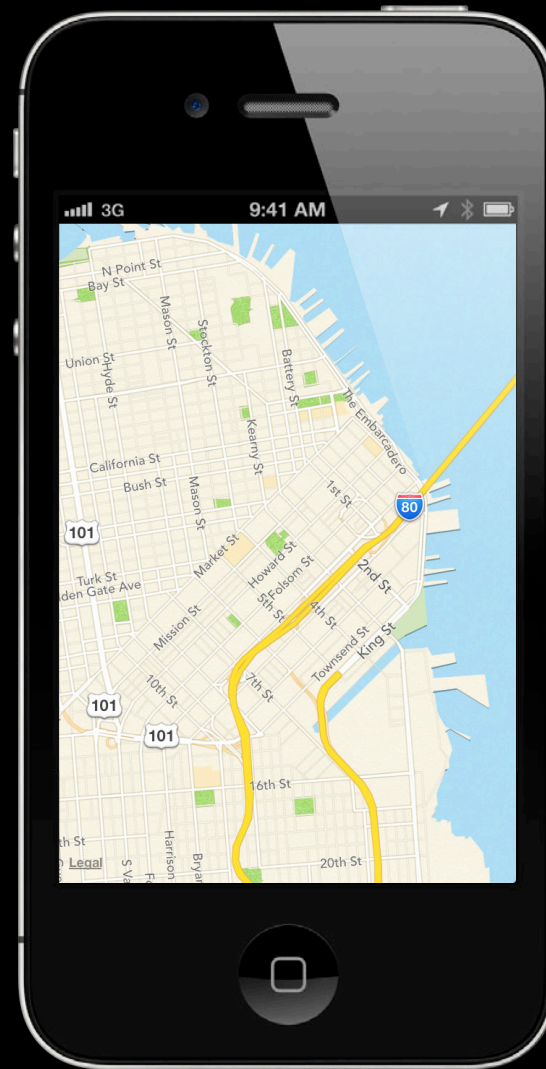
# Annotations



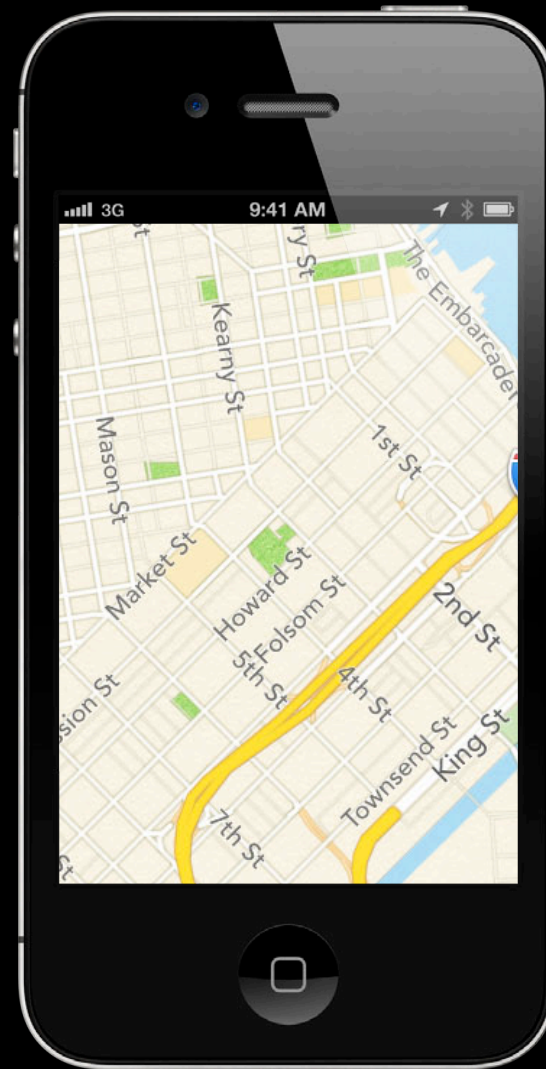
# Overlays



# Pinch to Zoom With a Static Map



# Pinch to Zoom With a Static Map

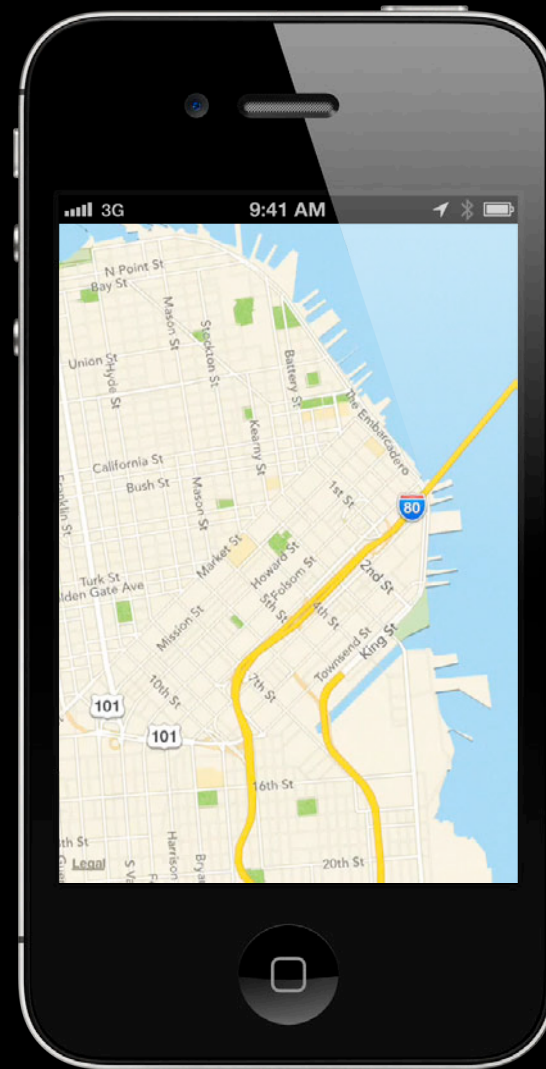


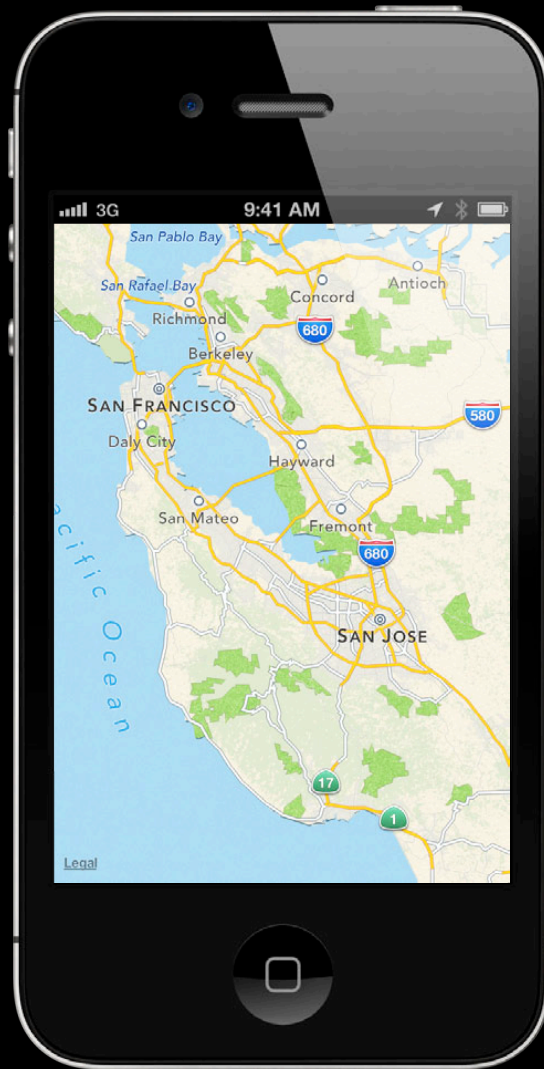
# Pinch to Zoom

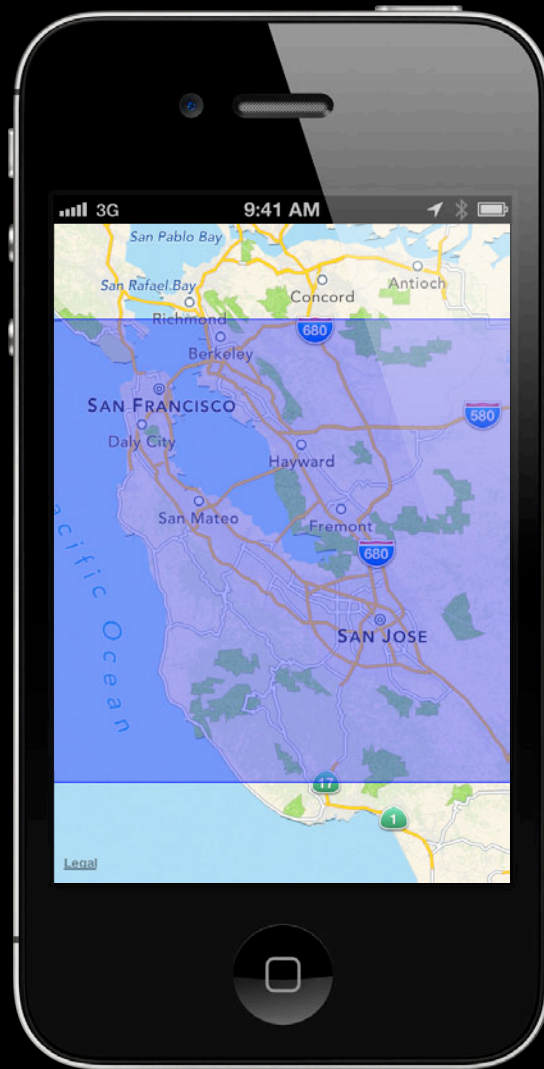
With a Dynamic Map



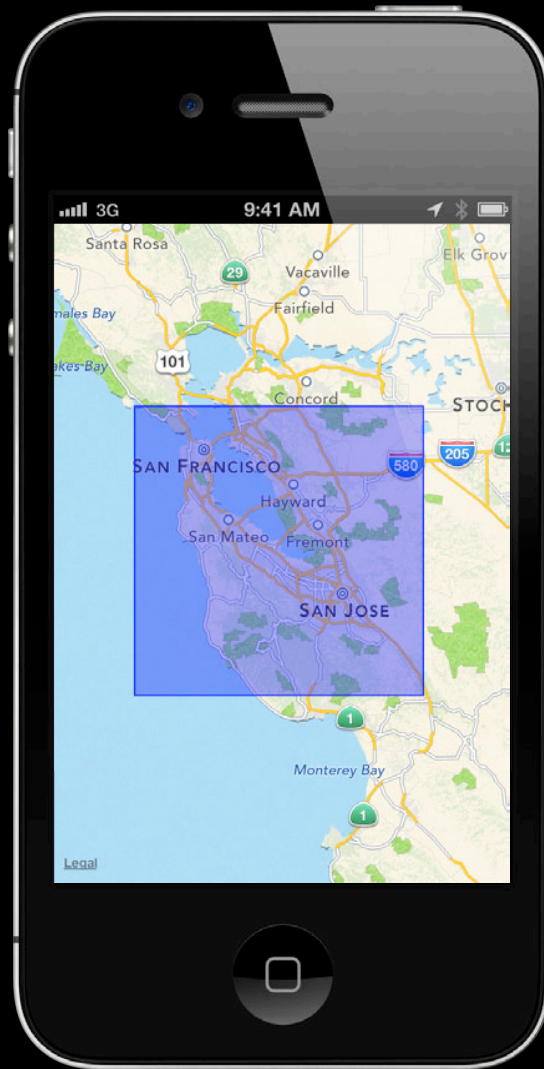
# Pinch to Zoom With a Dynamic Map



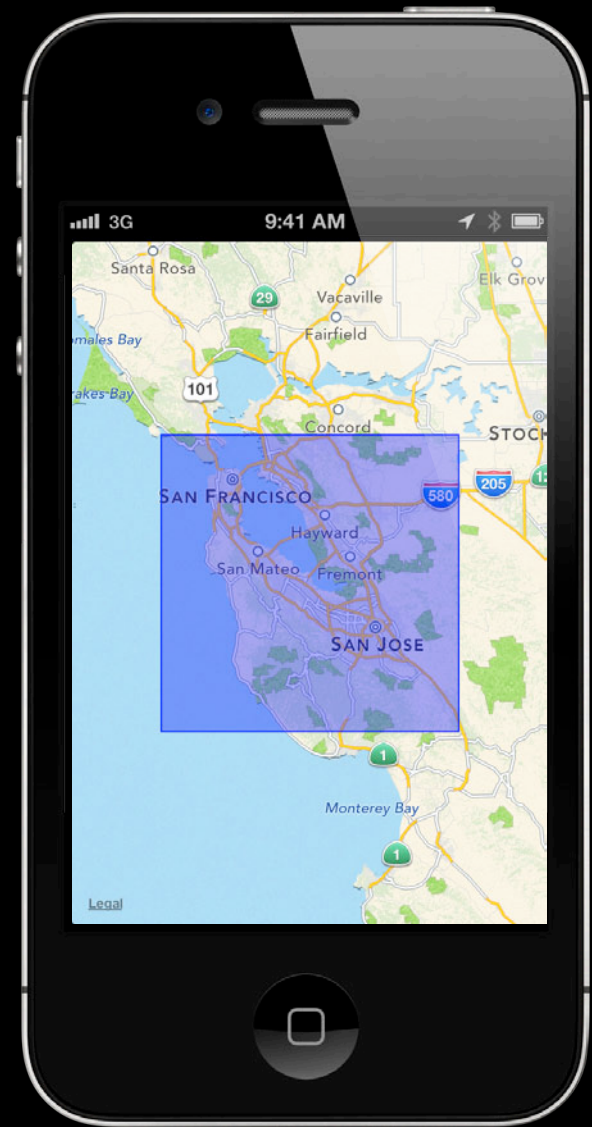






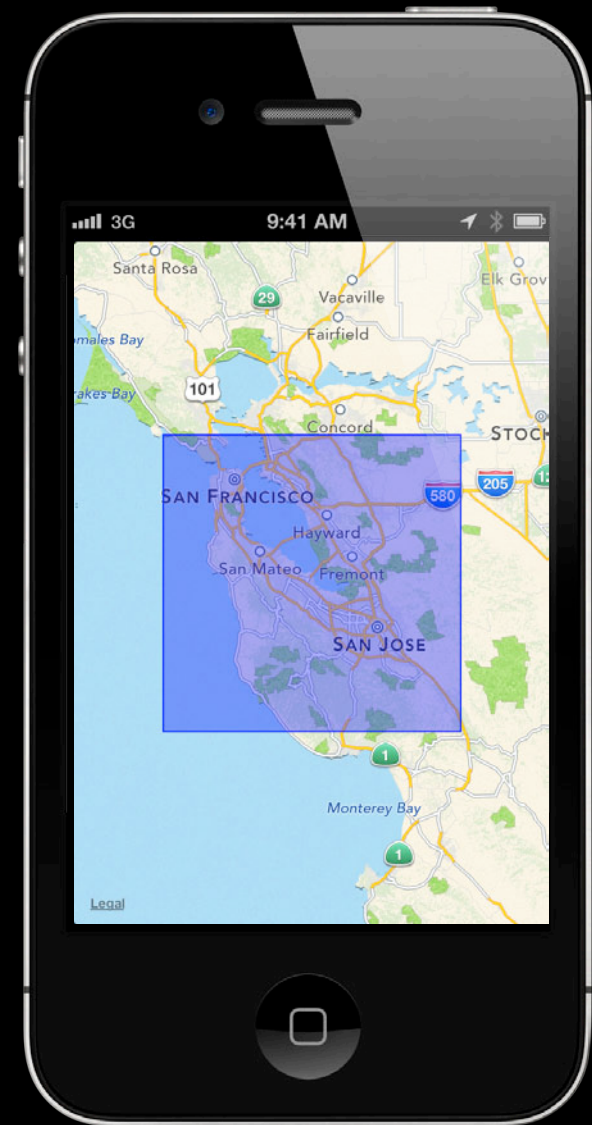


# Setting the Map Region



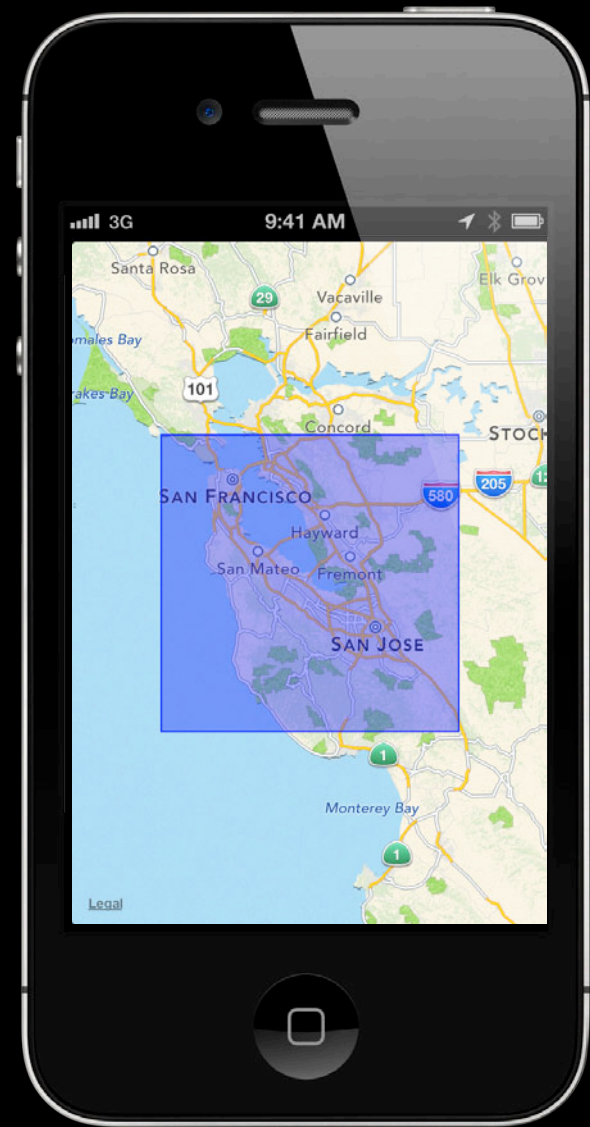
# Setting the Map Region

- In iOS 5, region changes were adjusted to improve map display



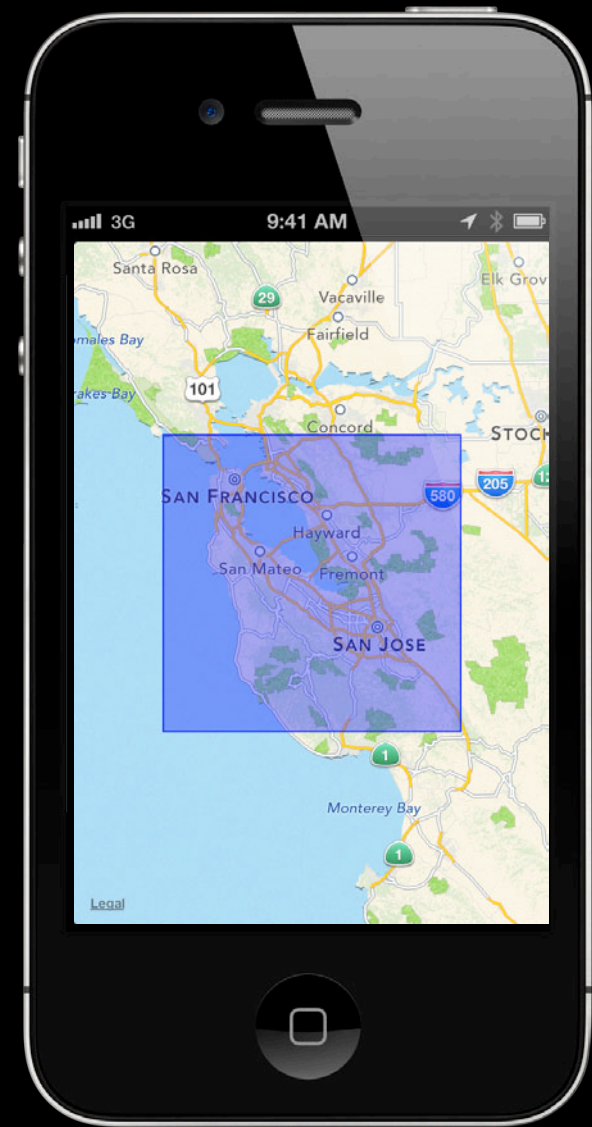
# Setting the Map Region

- In iOS 5, region changes were adjusted to improve map display
  - setRegion:



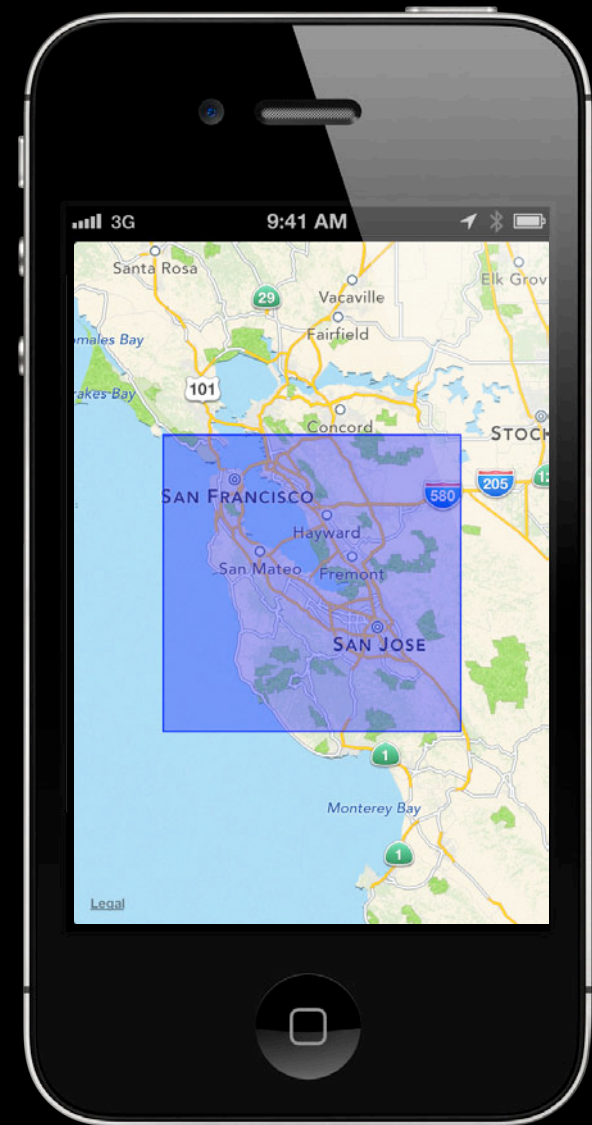
# Setting the Map Region

- In iOS 5, region changes were adjusted to improve map display
  - setRegion:
  - setVisibleMapRect:



# Setting the Map Region

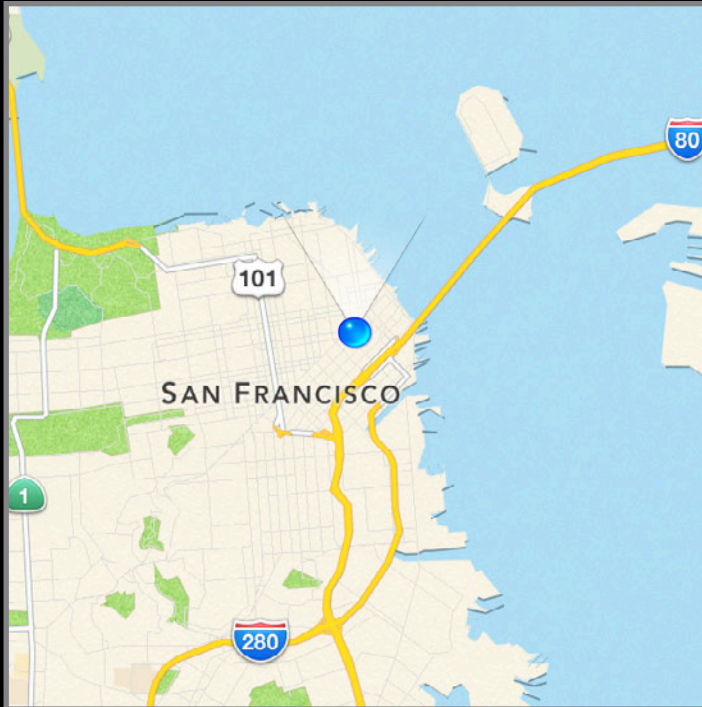
- In iOS 5, region changes were adjusted to improve map display
  - setRegion:
  - setVisibleMapRect:
- No longer necessary in iOS 6



# Heading Mode

# Heading Mode

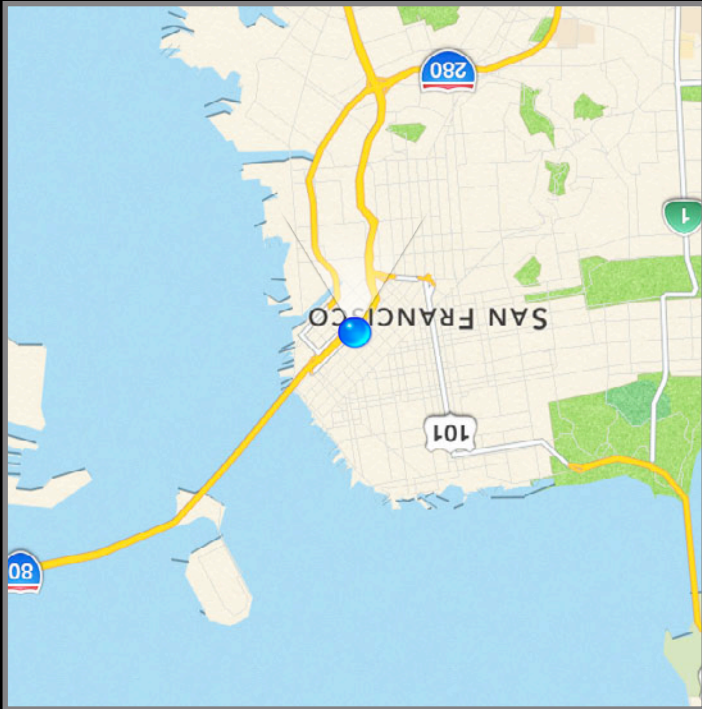
Static Map (iOS 5)





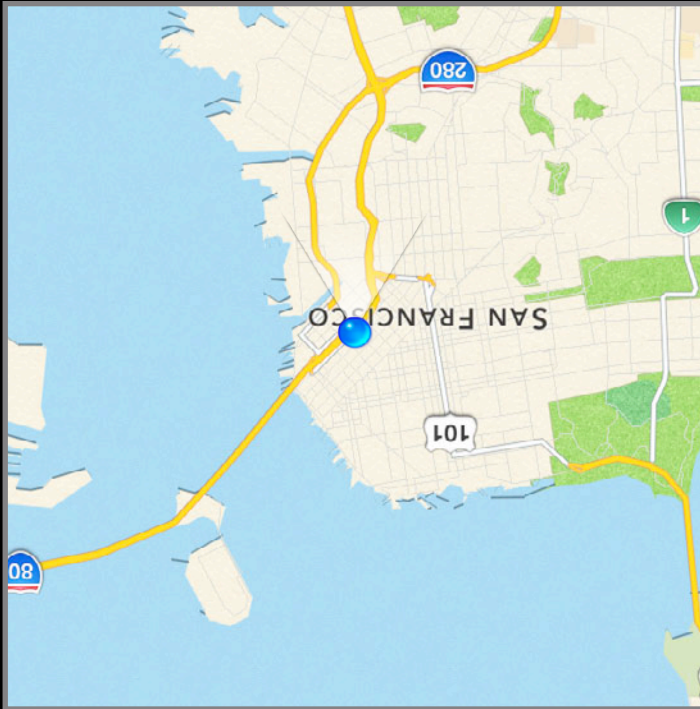
# Heading Mode

Static Map (iOS 5)

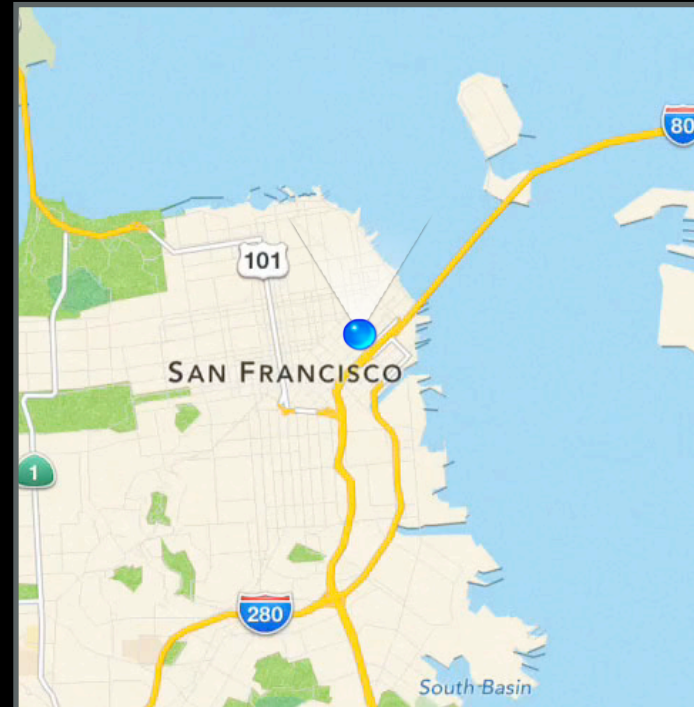


# Heading Mode

Static Map (iOS 5)

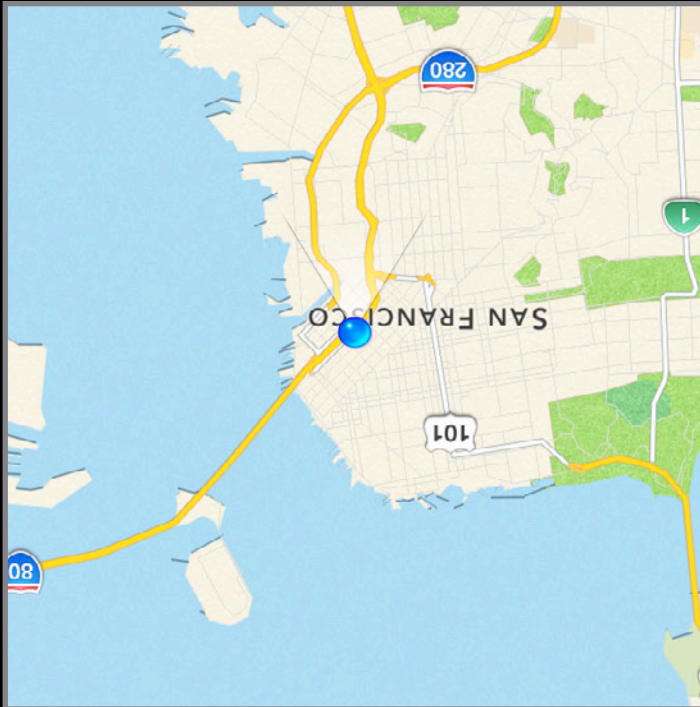


Dynamic Map (iOS 6)

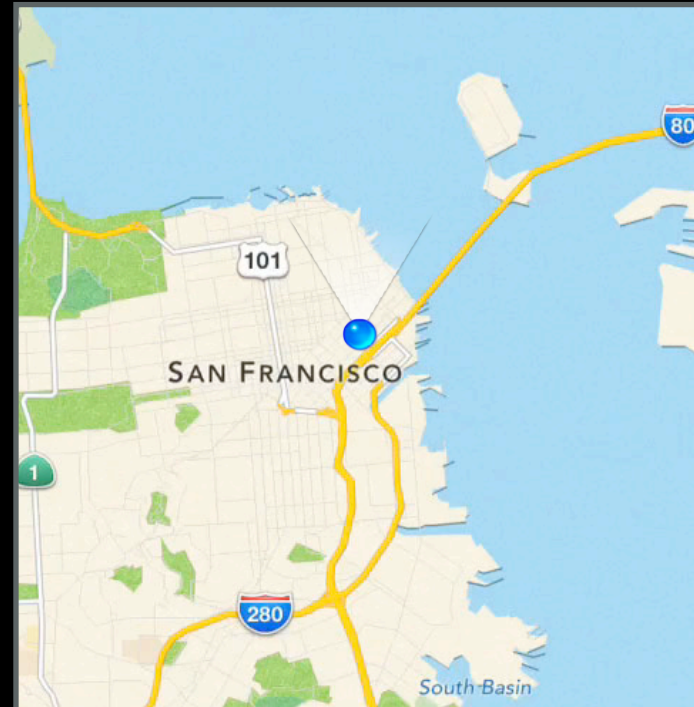


# Heading Mode

Static Map (iOS 5)



Dynamic Map (iOS 6)



# The New Look of Map Kit



# The New Look of Map Kit



- Map display APIs are the same

# The New Look of Map Kit



- Map display APIs are the same
- Improved map rendering

# The New Look of Map Kit



- Map display APIs are the same
- Improved map rendering
- Re-link with iOS 6 to change regions with precision

# The New Look of Map Kit



- Map display APIs are the same
- Improved map rendering
- Re-link with iOS 6 to change regions with precision
- Test your apps!



# Launching Maps with MKMapItem

A new API in iOS 6

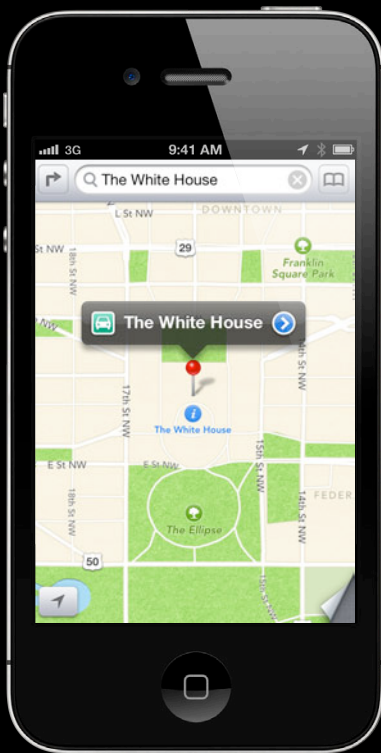
# Why Launch Maps?

Getting directions



# Why Launch Maps?

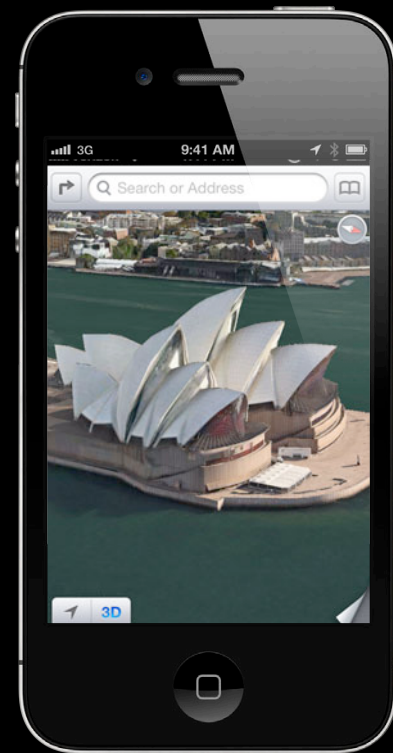
Drop a Pin



Contacts/Bookmarks



Explore



# Introducing MKMapItem



# Introducing MKMapItem



- Objective-C API

# Introducing MKMapItem



- Objective-C API
- Open Maps with one or more pins

# Introducing MKMapItem



- Objective-C API
- Open Maps with one or more pins
- Jump directly into directions

# Introducing MKMapView



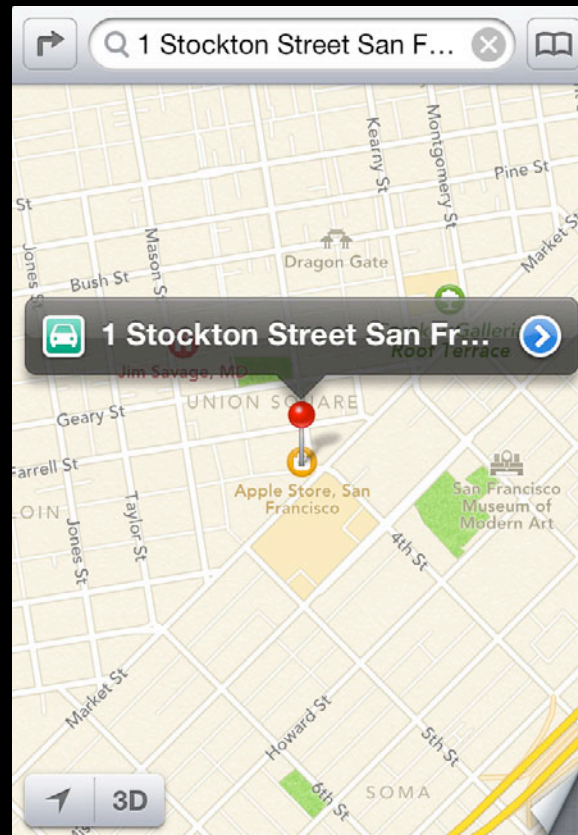
- Objective-C API
- Open Maps with one or more pins
- Jump directly into directions
- Customize the map display



# Opening an Item in Maps



# Opening an Item in Maps



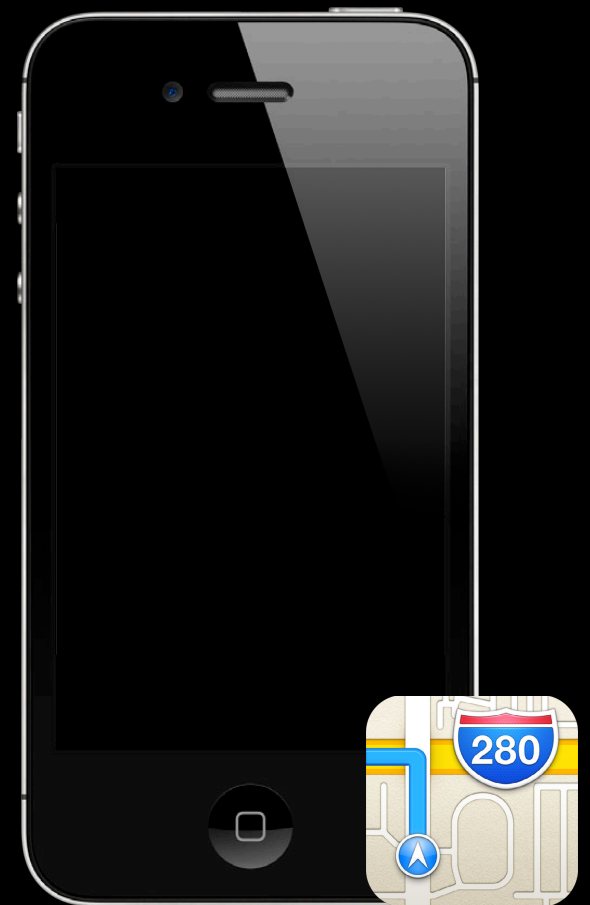
# Opening an Item in Maps



# Opening an Item in Maps



# Opening an Item in Maps



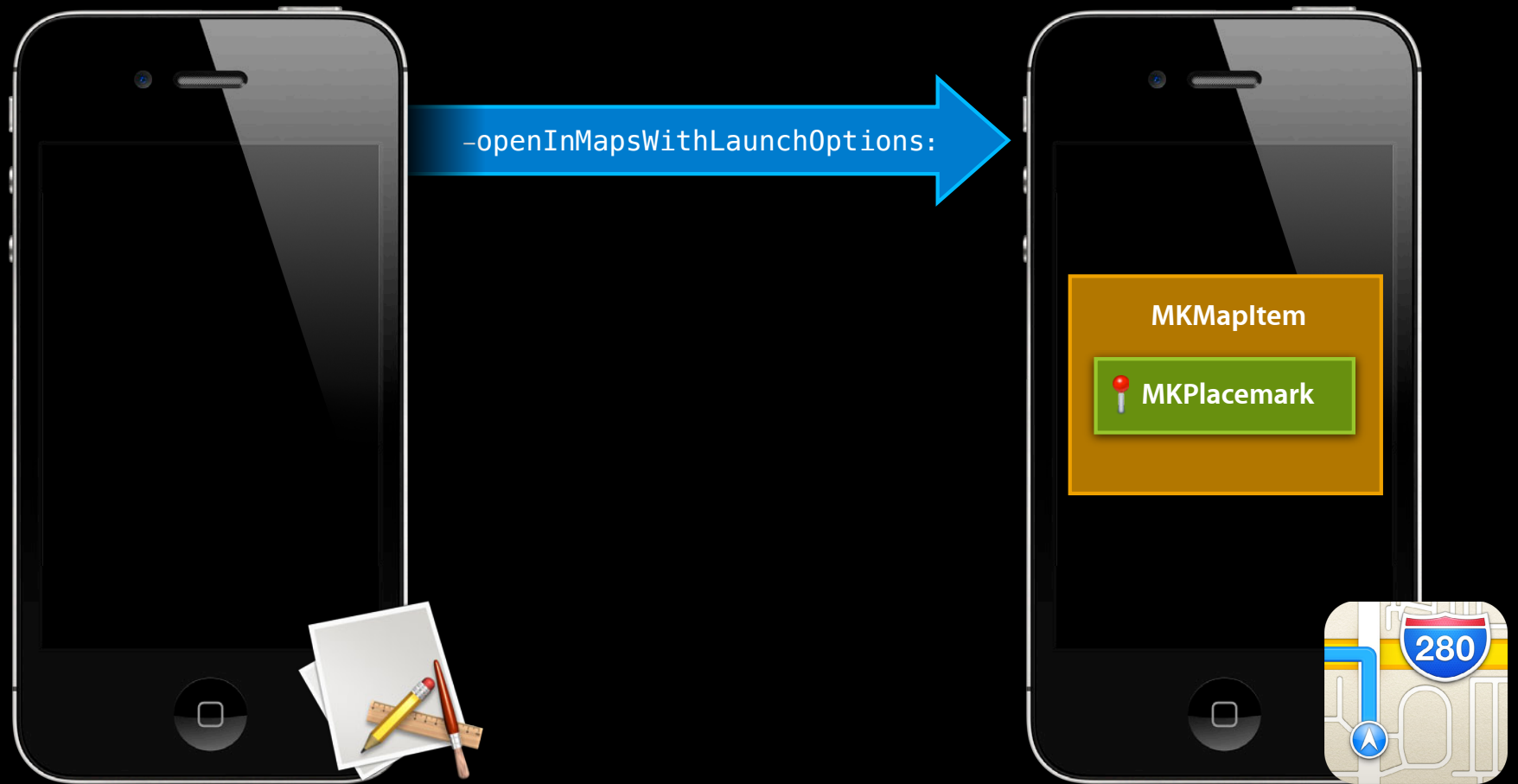
# Opening an Item in Maps



# Opening an Item in Maps



# Opening an Item in Maps





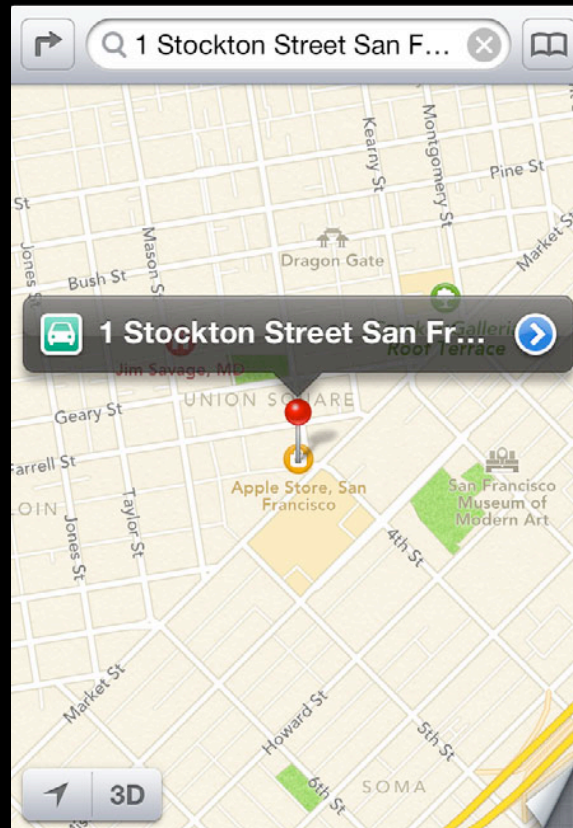
# Opening an Item in Maps

```
MKMapItem *sfStore = [[MKMapItem alloc] initWithPlacemark:placemark];
```

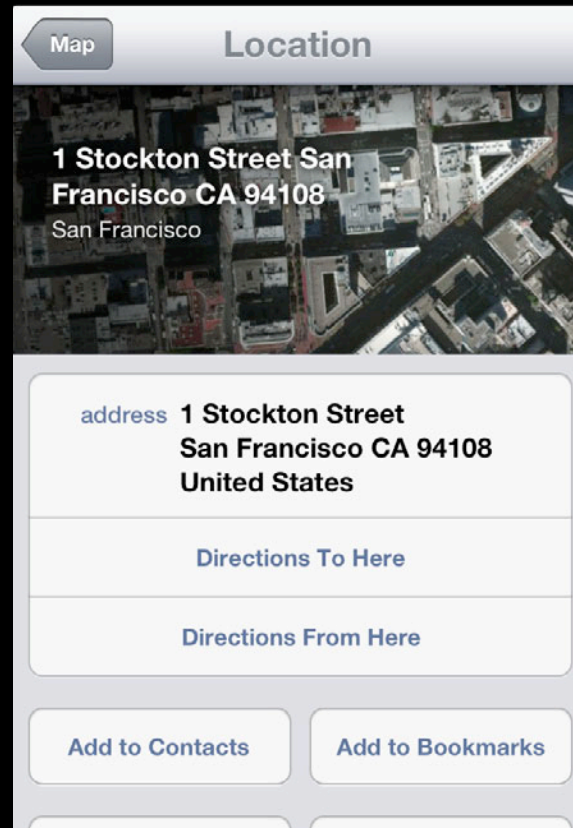
# Opening an Item in Maps

```
MKMapItem *sfStore = [[MKMapItem alloc] initWithPlacemark:placemark];  
[sfStore openInMapsWithOptions:nil];
```

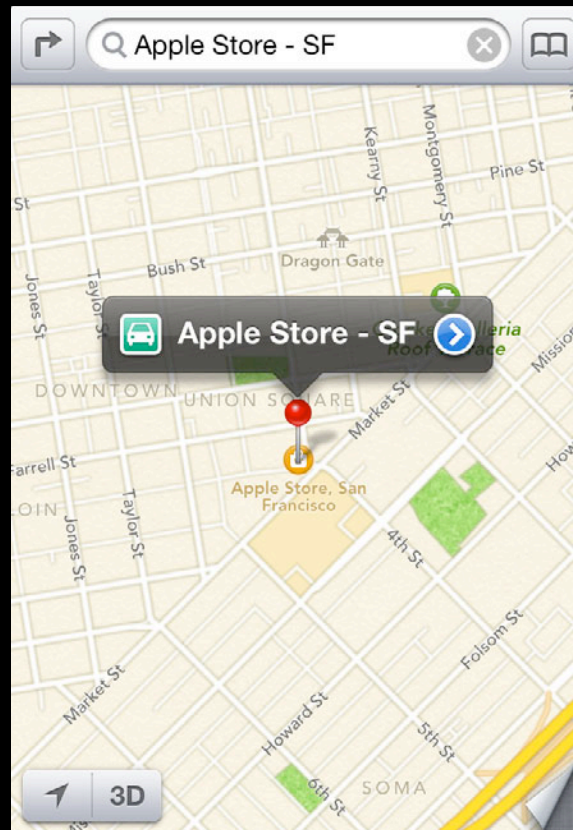
# Opening an Item in Maps



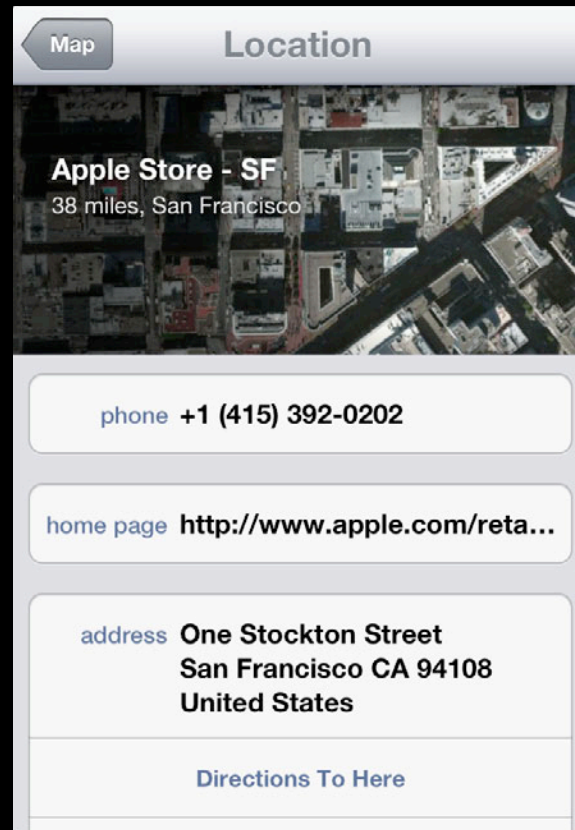
# Opening an Item in Maps



# Adding Item Details



# Adding Item Details



# Adding Item Details

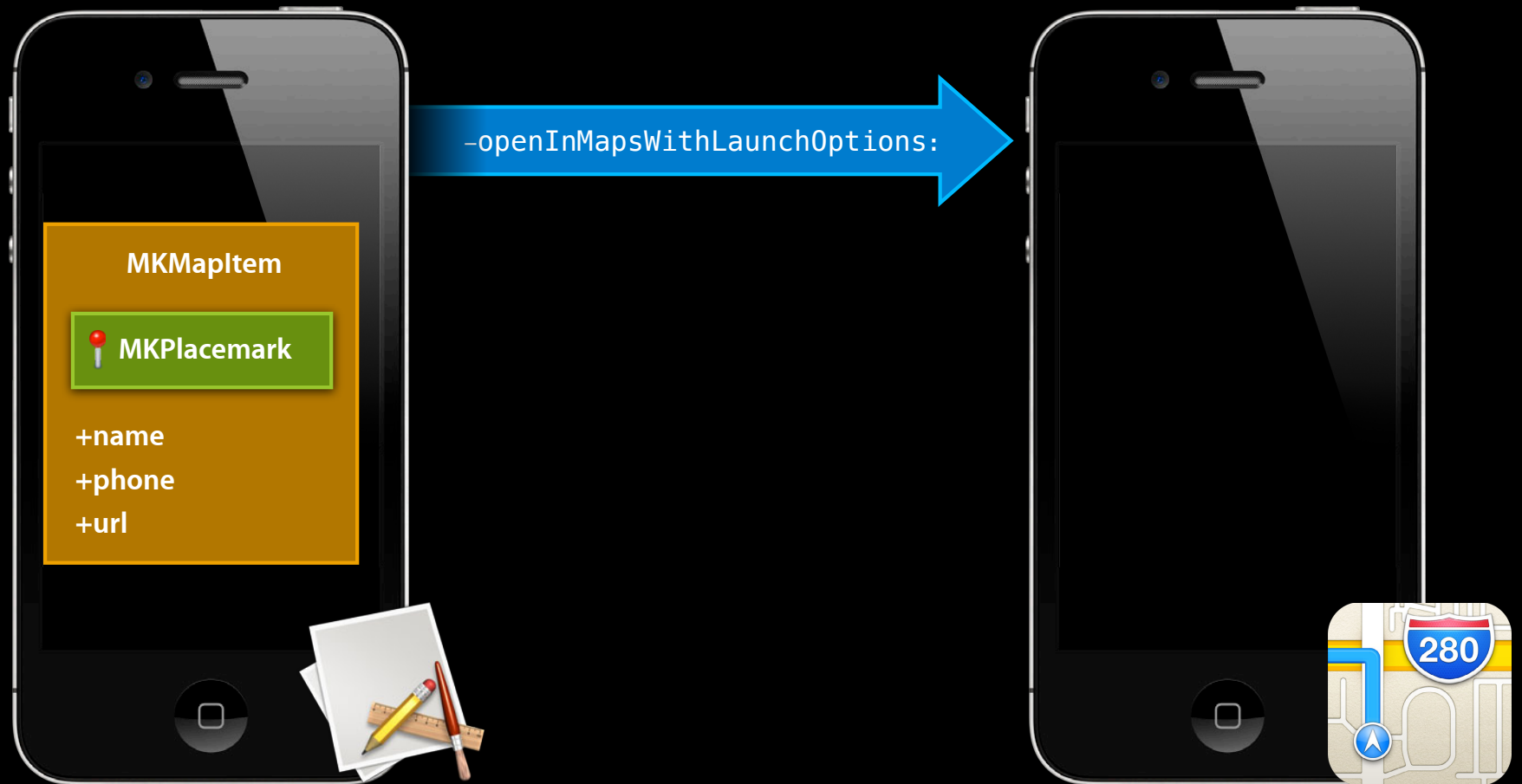


# Adding Item Details

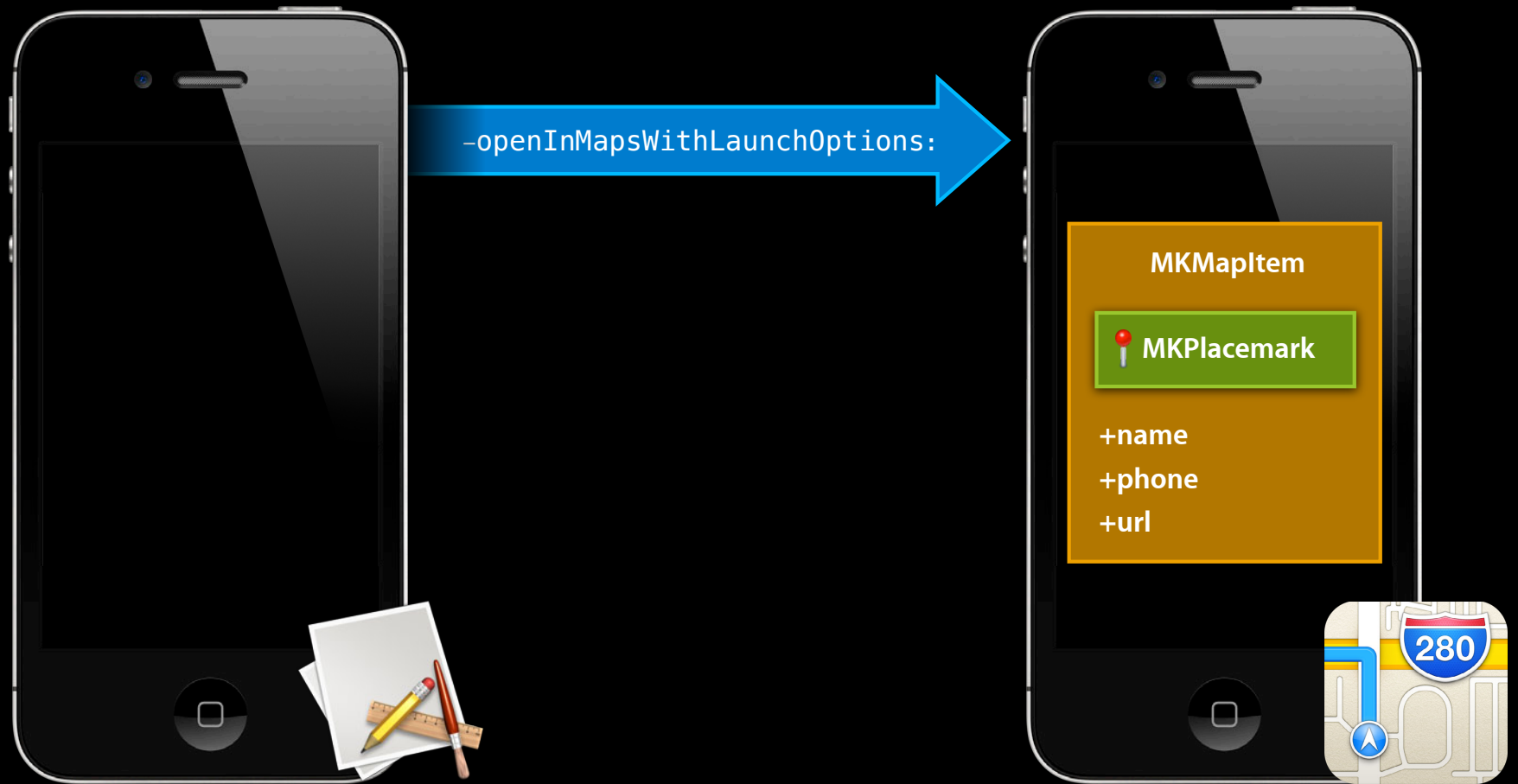




# Adding Item Details



# Adding Item Details



# Adding Item Details

```
MKMapItem *sfStore = [[MKMapItem alloc] initWithPlacemark:placemark];
```

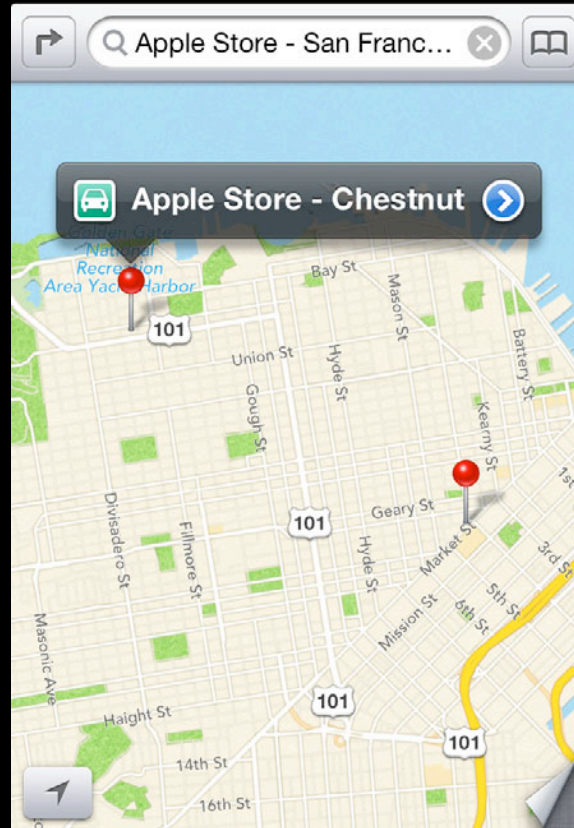
```
sfStore.name = @"Apple Store - San Francisco";  
sfStore.phoneNumber = @"+14153920202";  
sfStore.url = [NSURL URLWithString:@"http://www.apple.com/retail/"];
```

```
[sfStore openInMapsWithOptions:nil];
```

# Opening Multiple Map Items



# Opening Multiple Map Items



# Opening Multiple Items in Maps



# Opening Multiple Items in Maps

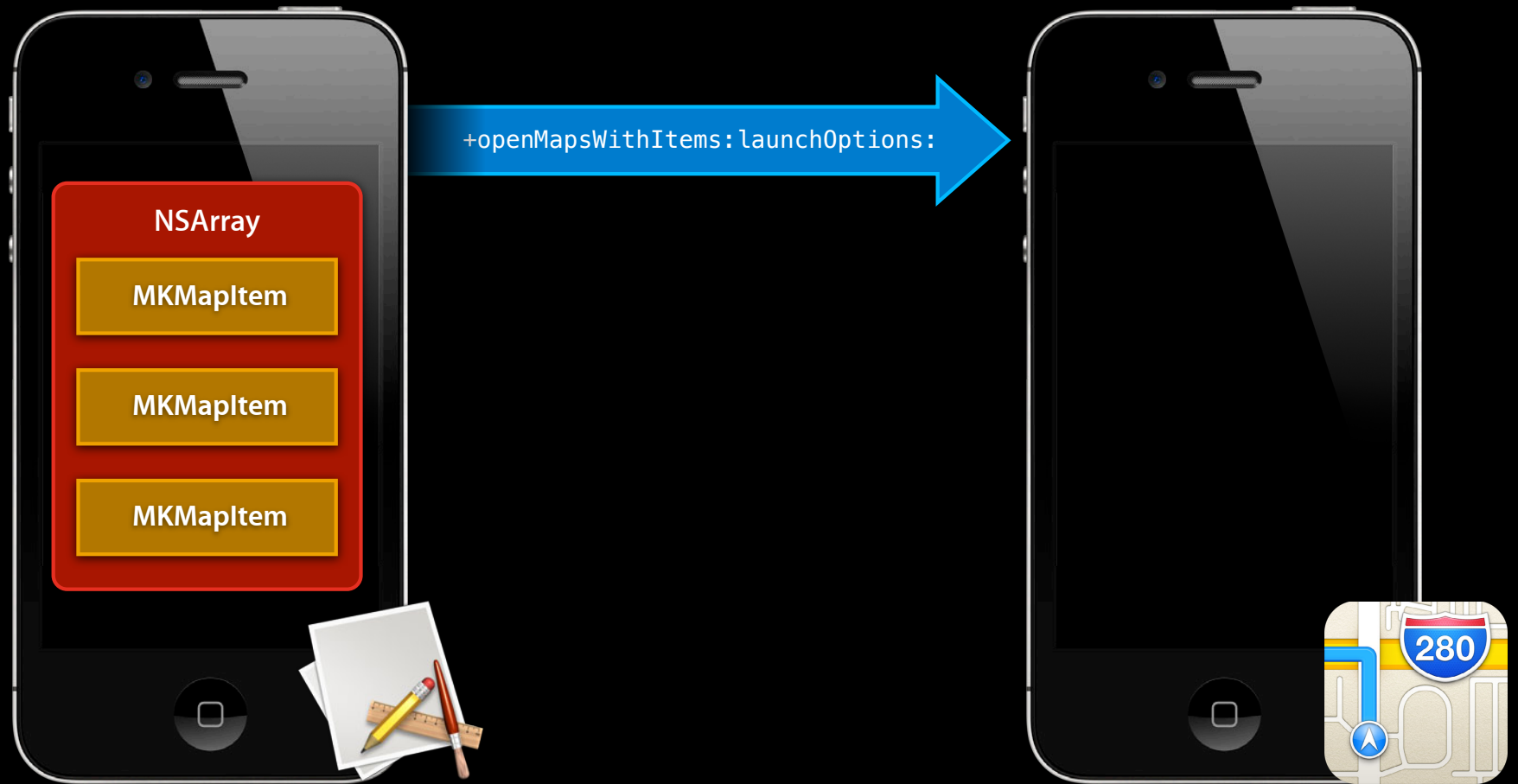


# Opening Multiple Items in Maps

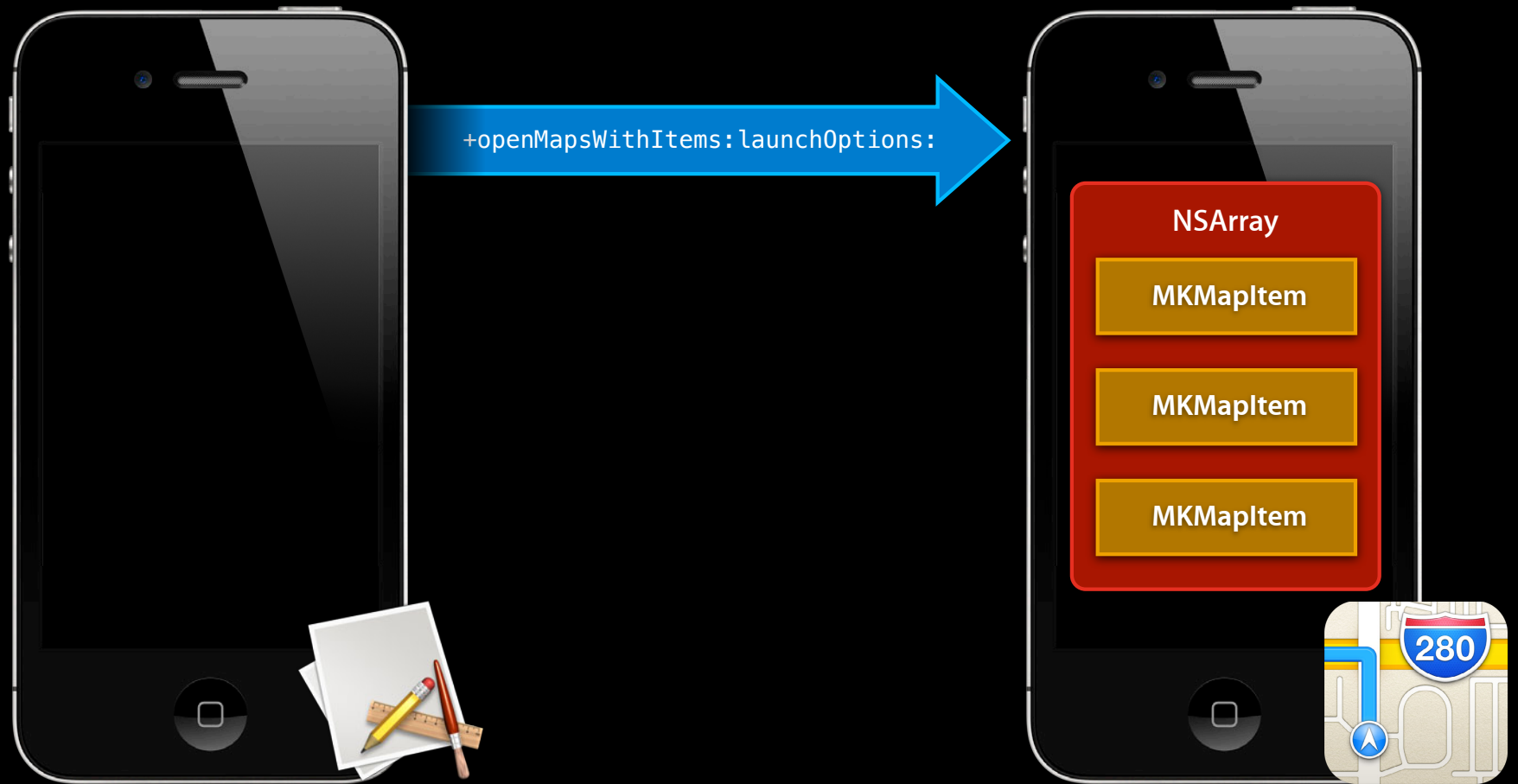




# Opening Multiple Items in Maps



# Opening Multiple Items in Maps



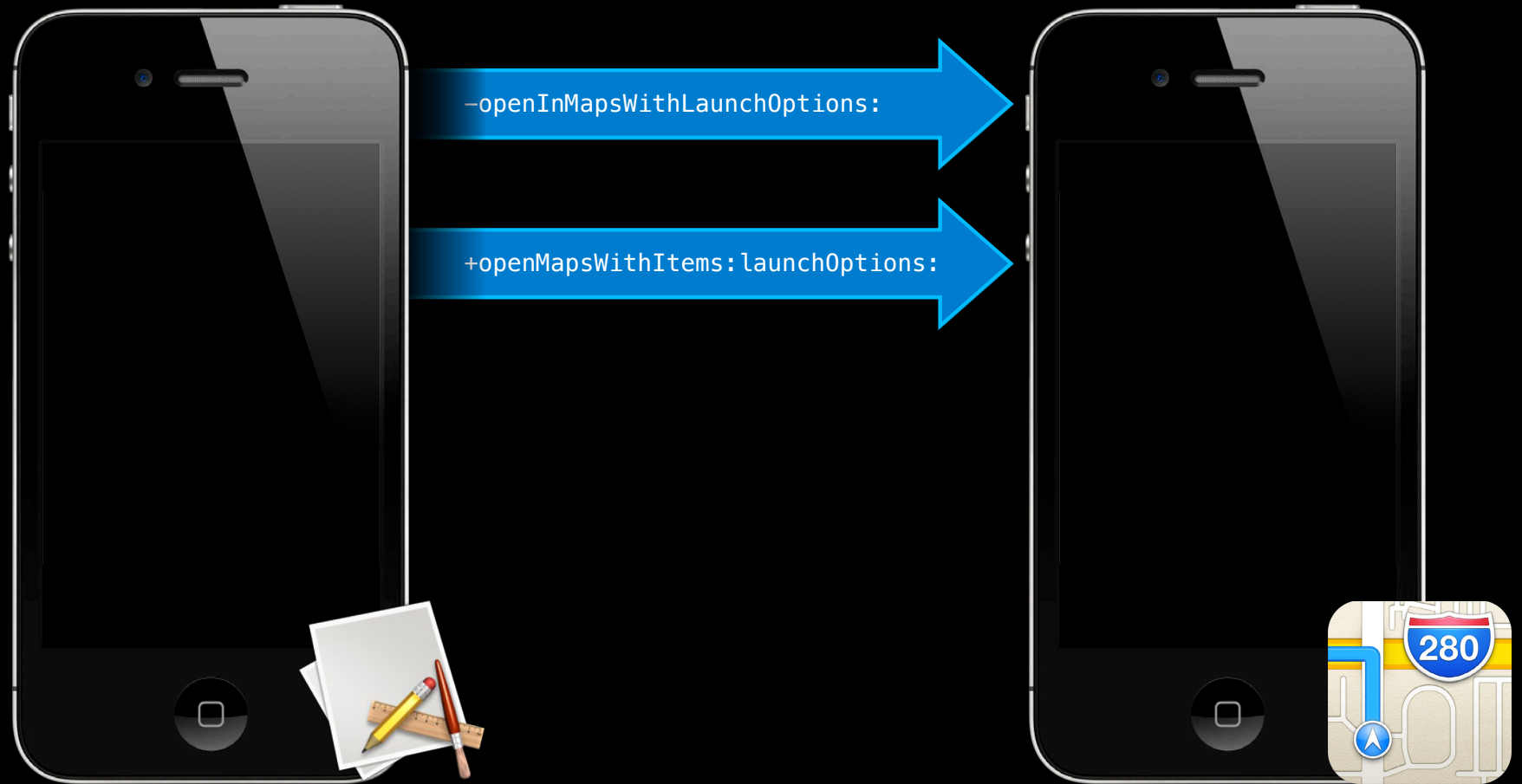
# Opening Multiple Map Items

```
NSArray *storeItems = @[ sfStore, chestnutStore, bayStreetStore ];
```

# Opening Multiple Map Items

```
NSArray *storeItems = @[ sfStore, chestnutStore, bayStreetStore ];  
[MKMapItem openMapsWithItems:storeItems launchOptions:nil];
```

# Launch Options



# Launch Options



# Launch Options



# Launch Options





# Launch Options



`-openInMapsWithLaunchOptions:`

`+openMapsWithItems:launchOptions:`

Map type

Coordinate region

Traffic

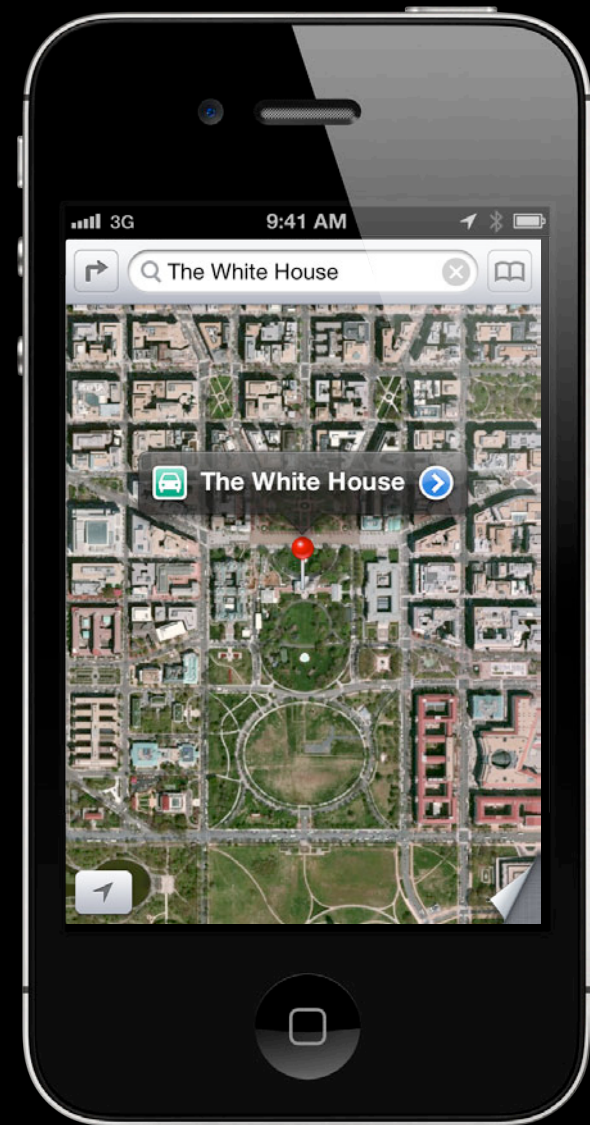


# Launch Options

## Map type

```
NSDictionary *options = @{
```

```
};
```



# Launch Options

## Map type

```
NSDictionary *options = @{  
    MKLaunchOptionsMapTypeKey :  
    [NSNumber  
    numberWithInteger:MKMapTypeSatellite],
```

```
};
```



# Launch Options

## Coordinate region

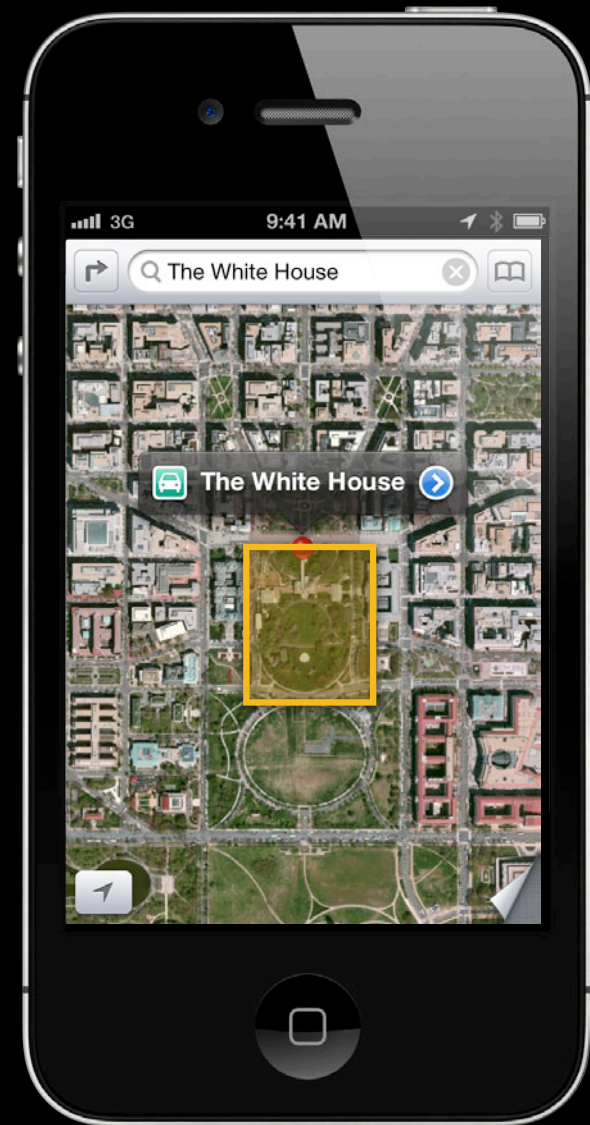
```
NSDictionary *options = @{  
    MKLaunchOptionsMapTypeKey :  
        [NSNumber  
        numberWithInt:MKMapTypeSatellite],  
  
};
```



# Launch Options

## Coordinate region

```
NSDictionary *options = @{  
    MKLaunchOptionsMapTypeKey :  
        [NSNumber  
        numberWithInt:MKMapTypeSatellite],  
  
};
```



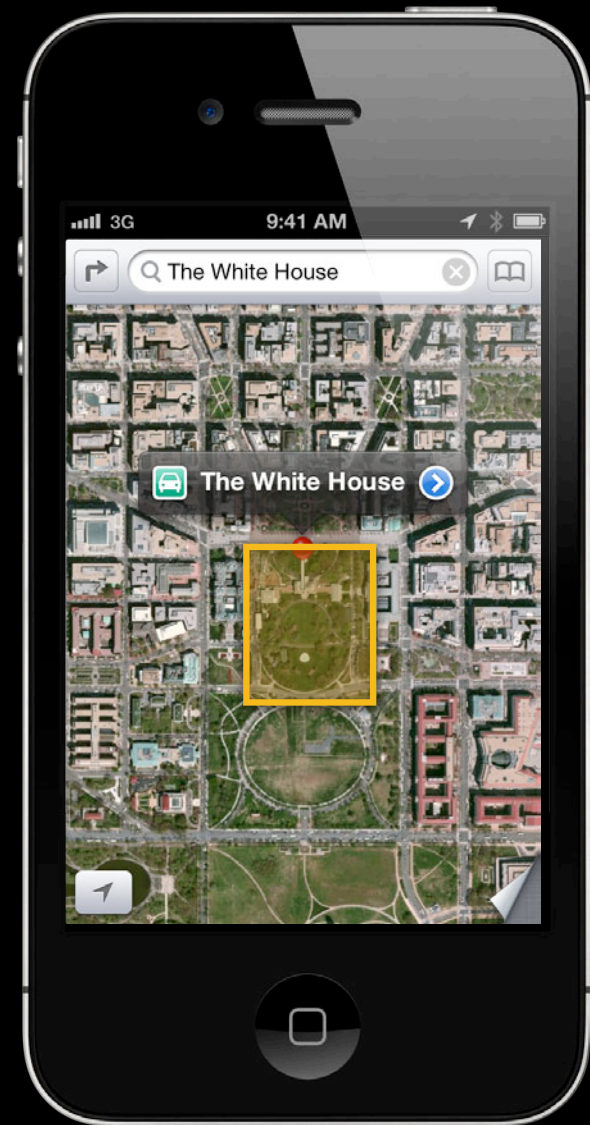
# Launch Options

## Coordinate region

```
NSDictionary *options = @{
    MKLaunchOptionsMapTypeKey :
        [NSNumber
         numberWithInteger:MKMapTypeSatellite],

    MKLaunchOptionsMapCenterKey :
        [NSValue
         valueWithMKCoordinate:regionCenter],

    MKLaunchOptionsMapSpanKey :
        [NSValue
         valueWithMKCoordinateSpan:regionSpan]
};
```



# Launch Options

## Coordinate region

```
NSDictionary *options = @{
    MKLaunchOptionsMapTypeKey :
        [NSNumber
         numberWithInteger:MKMapTypeSatellite],

    MKLaunchOptionsMapCenterKey :
        [NSValue
         valueWithMKCoordinate:regionCenter],

    MKLaunchOptionsMapSpanKey :
        [NSValue
         valueWithMKCoordinateSpan:regionSpan]
};
```



# Launch Options

## Traffic

```
NSDictionary *options = @{
```

```
};
```





# Launch Options

## Traffic

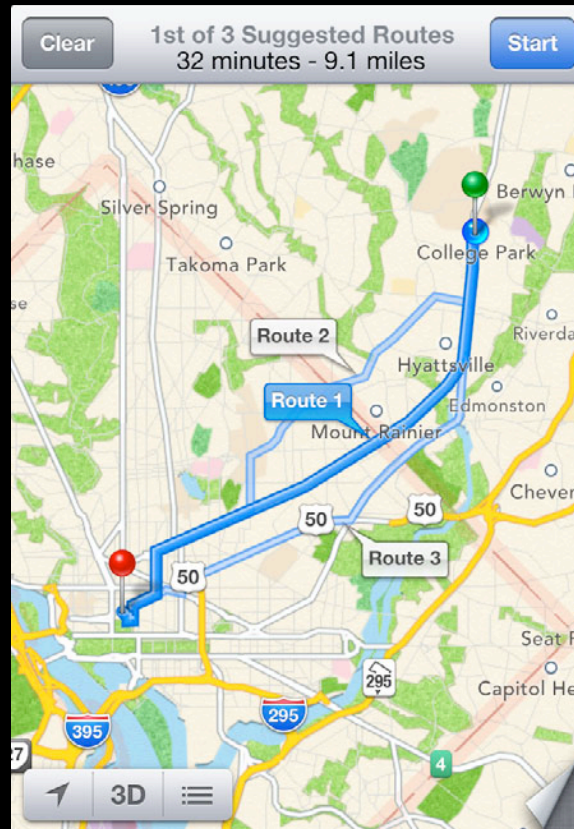
```
NSDictionary *options = @{
```

```
    MKLaunchOptionsShowsTrafficKey :  
    @YES,
```

```
};
```



# Getting Directions



# Getting Directions



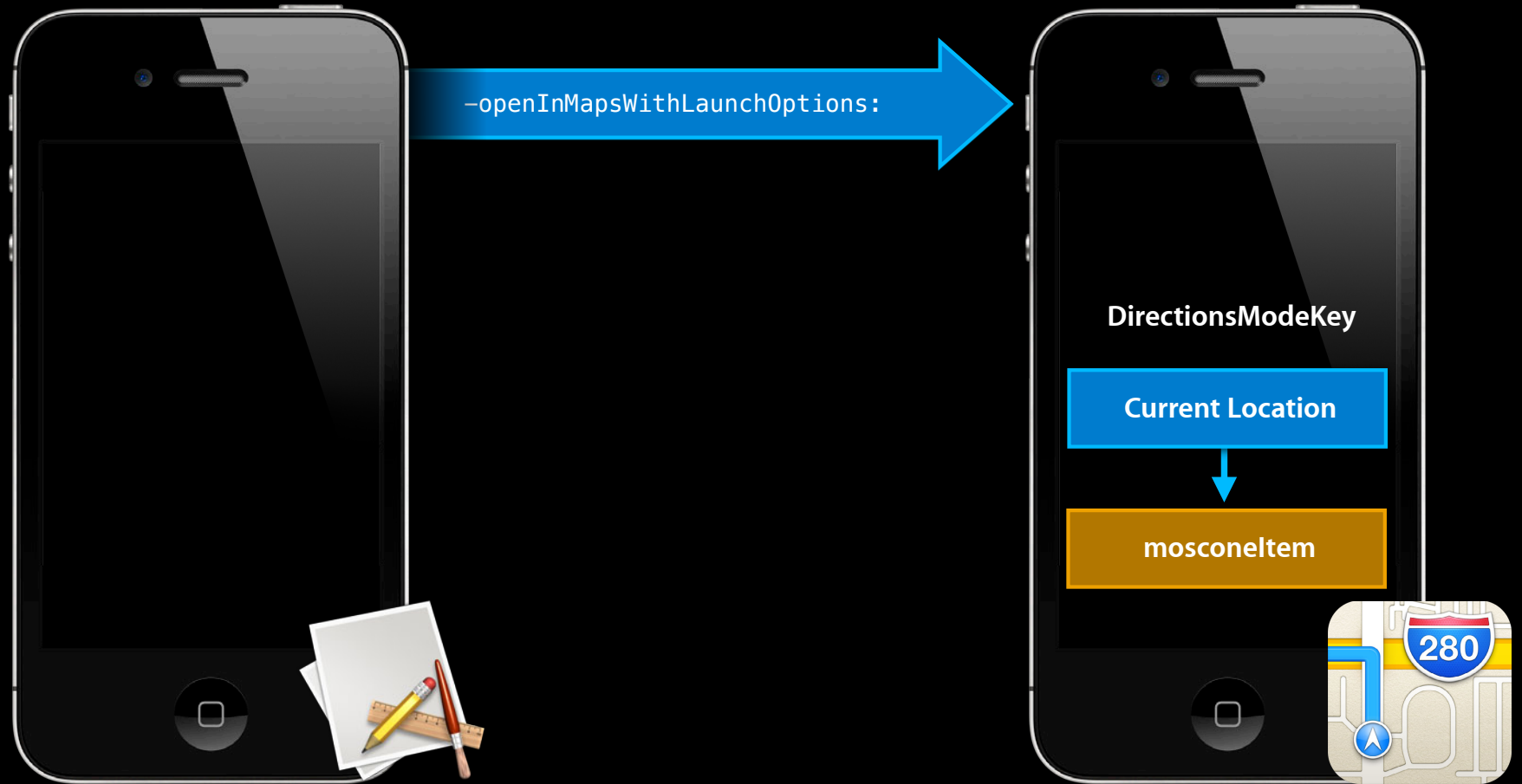
# Getting Directions



# Getting Directions



# Getting Directions



# Getting Directions

## From your current location

```
MKMapItem *mosconeItem = ...
```

```
NSDictionary *options = @{  
    MKLaunchOptionsDirectionsModeKey : MKLaunchOptionsDirectionsModeDriving,  
};
```

```
[mosconeItem openInMapsWithOptions:options];
```

# Directions from a Custom Origin

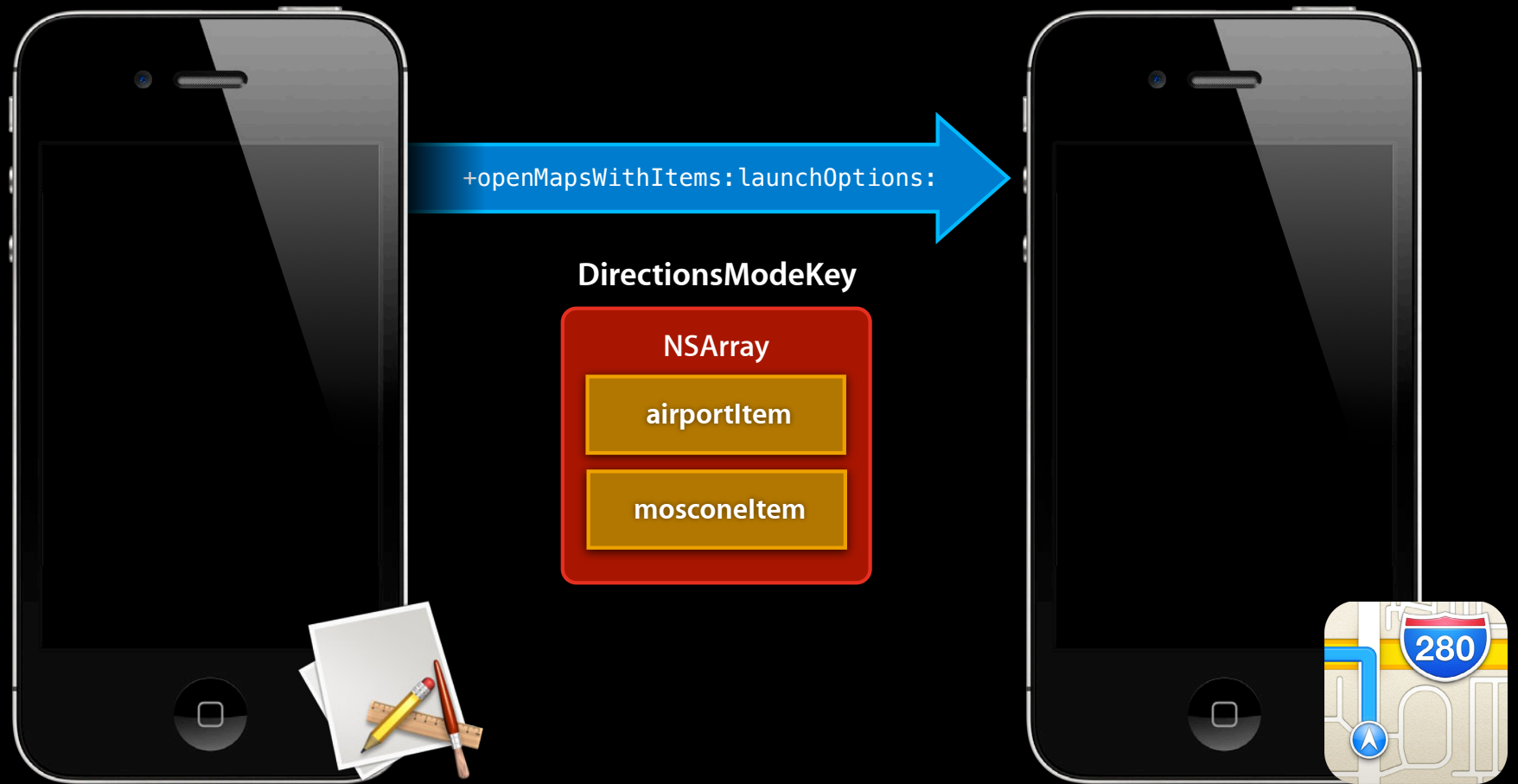




# Directions from a Custom Origin



# Directions from a Custom Origin



# Directions from a Custom Origin



# Directions from a Custom Origin



# Directions from a Custom Origin

```
NSArray *directionsItems = @[  
    airportItem,  
    mosconeWestItem  
];
```

# Directions from a Custom Origin

```
NSArray *directionsItems = @[  
    airportItem,  
    mosconeWestItem  
];
```

# Directions from a Custom Origin

```
NSArray *directionsItems = @[
    airportItem,
    mosconeWestItem
];
```

```
NSDictionary *options = @{
    MKLaunchOptionsDirectionsModeKey :
        MKLaunchOptionsDirectionsModeDriving,
};
```

# Directions from a Custom Origin

```
NSArray *directionsItems = @[
    airportItem,
    mosconeWestItem
];
```

```
NSDictionary *options = @{
    MKLaunchOptionsDirectionsModeKey :
        MKLaunchOptionsDirectionsModeDriving,
};
```

```
[MKMapItem openMapsWithItems:directionsItems launchOptions:options];
```



# Representing Current Location

# Representing Current Location

```
MKMapItem *item = [MKMapItem mapItemForCurrentLocation];
```

# Representing Current Location

```
MKMapItem *item = [MKMapItem mapItemForCurrentLocation];
```

- Current location item will NOT have a placemark

# Representing Current Location

```
MKMapItem *item = [MKMapItem mapItemForCurrentLocation];
```

- Current location item will NOT have a placemark

```
mapItem.isCurrentLocation == YES
```

# Directions from a Custom Origin

```
NSArray *directionsItems = @[
    mosconeWestItem,
    [MKMapItem mapItemForCurrentLocation]
];

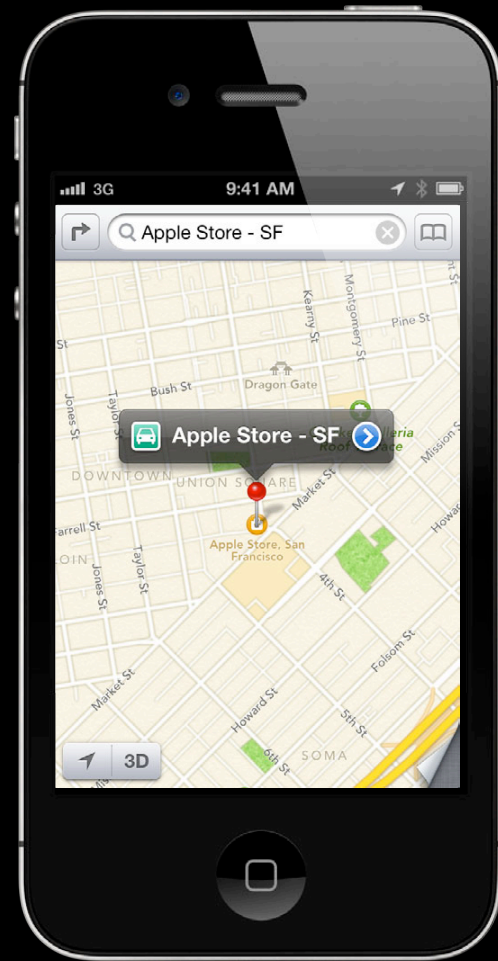
NSDictionary *options = @{
    MKLaunchOptionsDirectionsModeKey :
        MKLaunchOptionsDirectionsModeDriving,
};

[MKMapItem openMapsWithItems:directionsItems launchOptions:options];
```

# Launching Maps with MKMapView

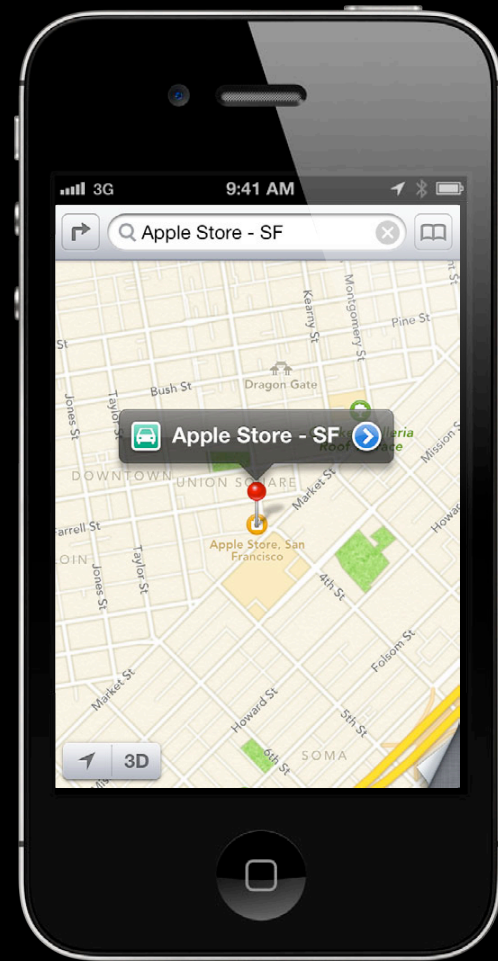
# Launching Maps with MKMapItem

- Open Maps with minimal code



# Launching Maps with MKMapItem

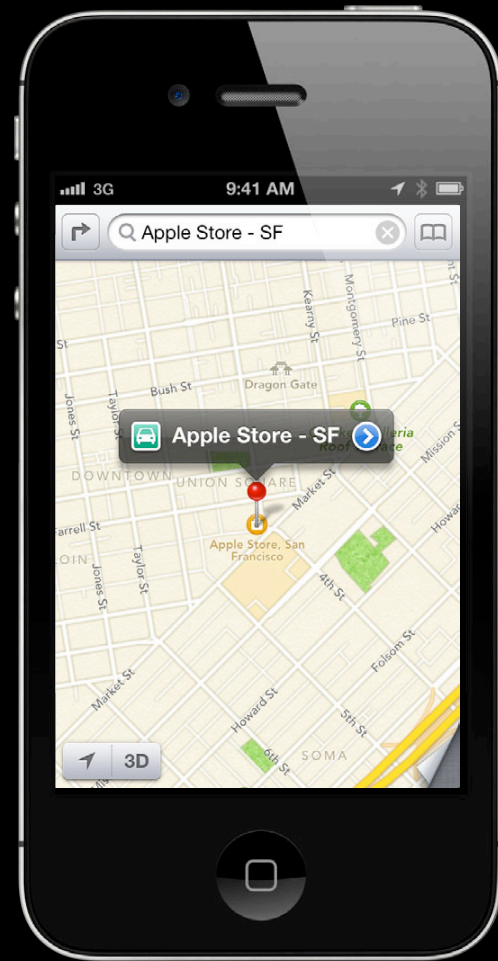
- Open Maps with minimal code
- Offer quick access to navigation, bookmarks, and more





# Launching Maps with MKMapItem

- Open Maps with minimal code
- Offer quick access to navigation, bookmarks, and more
- Keep your app focused



# Developing Routing Apps

Integrated routing powered by the app store

# The Many Faces of Routing

Transportation modes

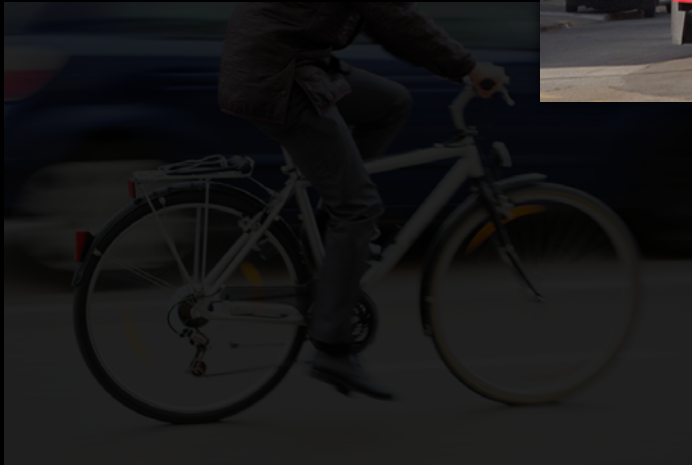
# The Many Faces of Routing

Transportation modes



# The Many Faces of Routing

Transportation modes



# The Many Faces of Routing

Transportation modes







+

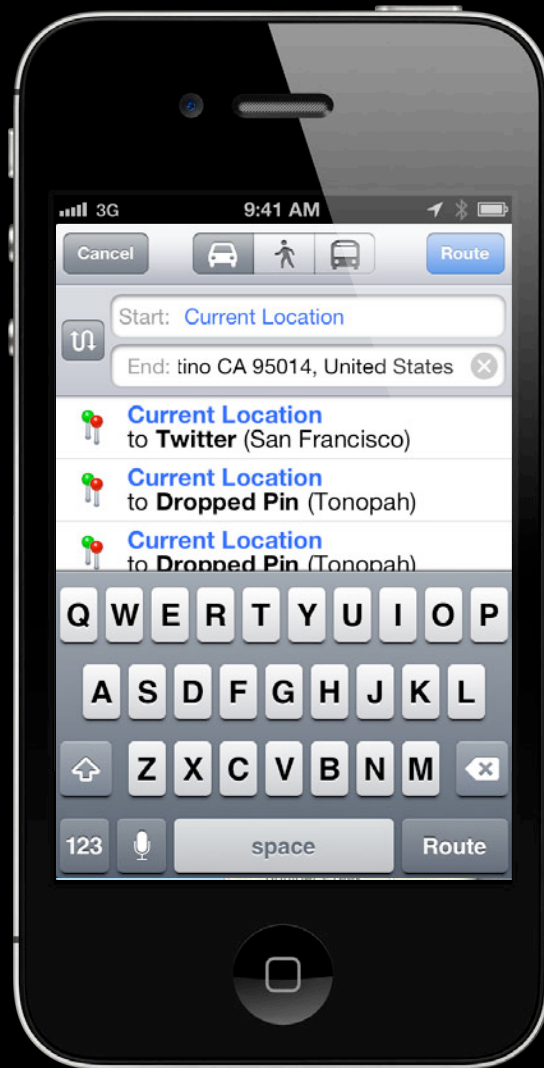


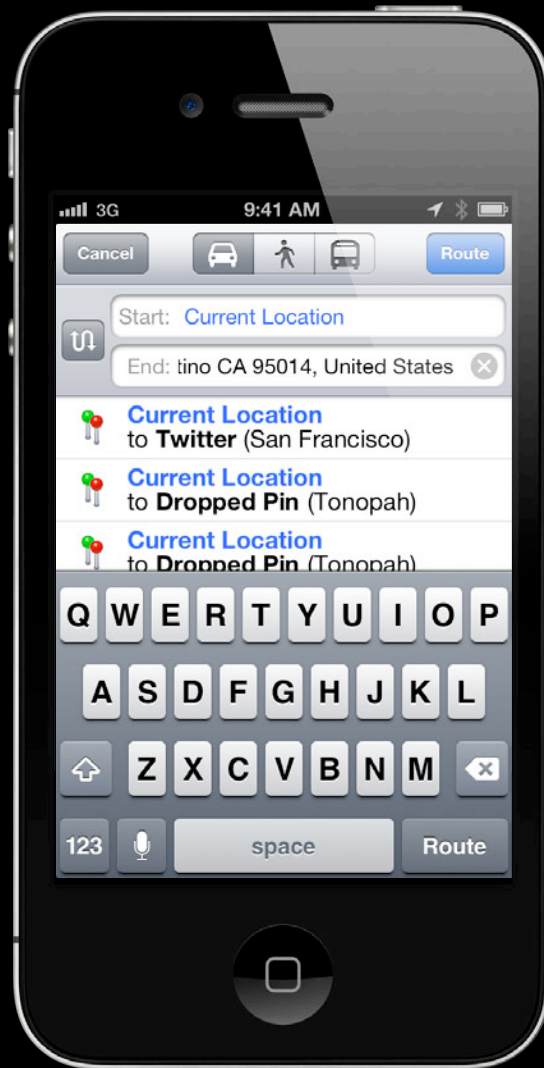


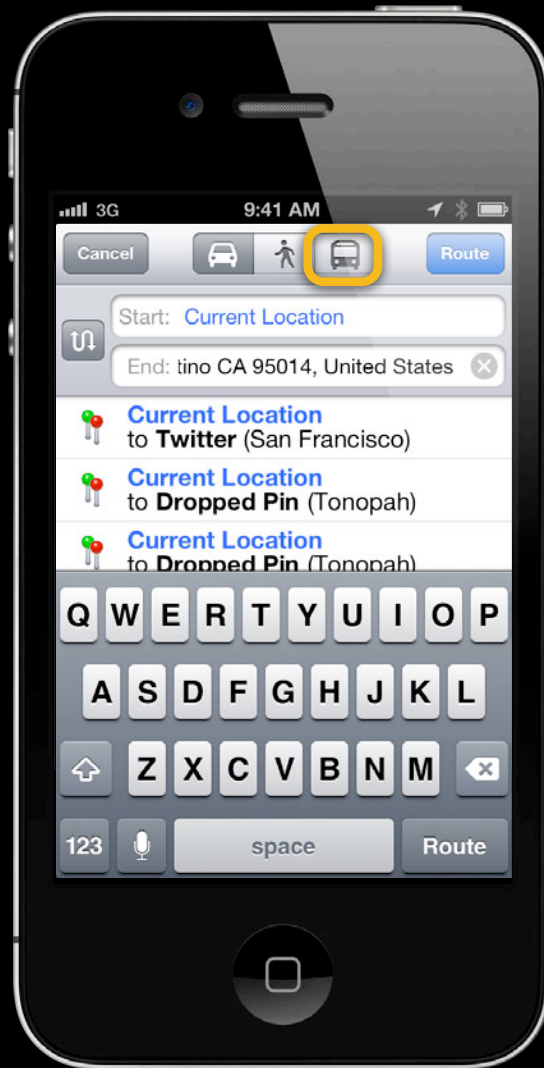


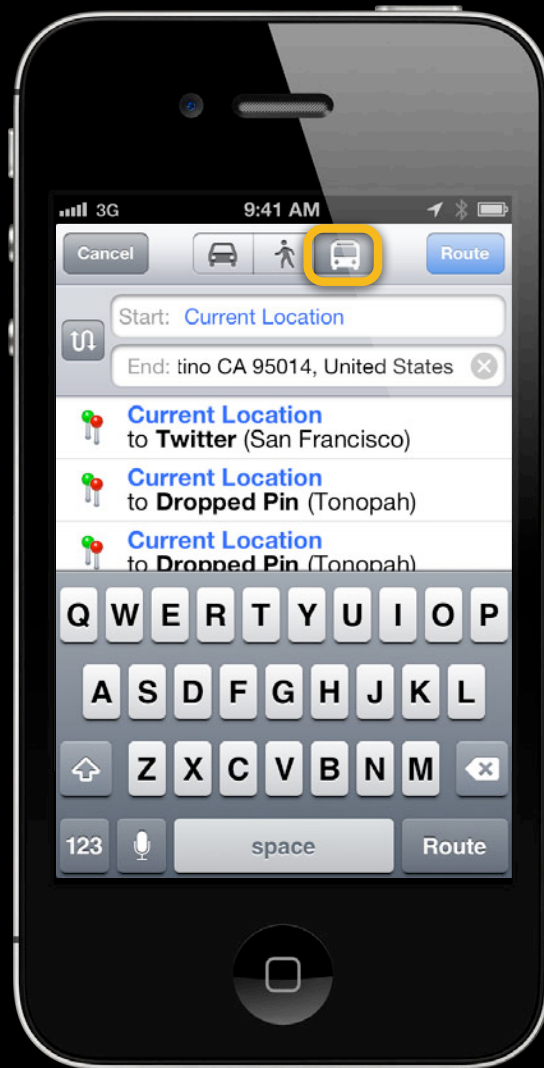


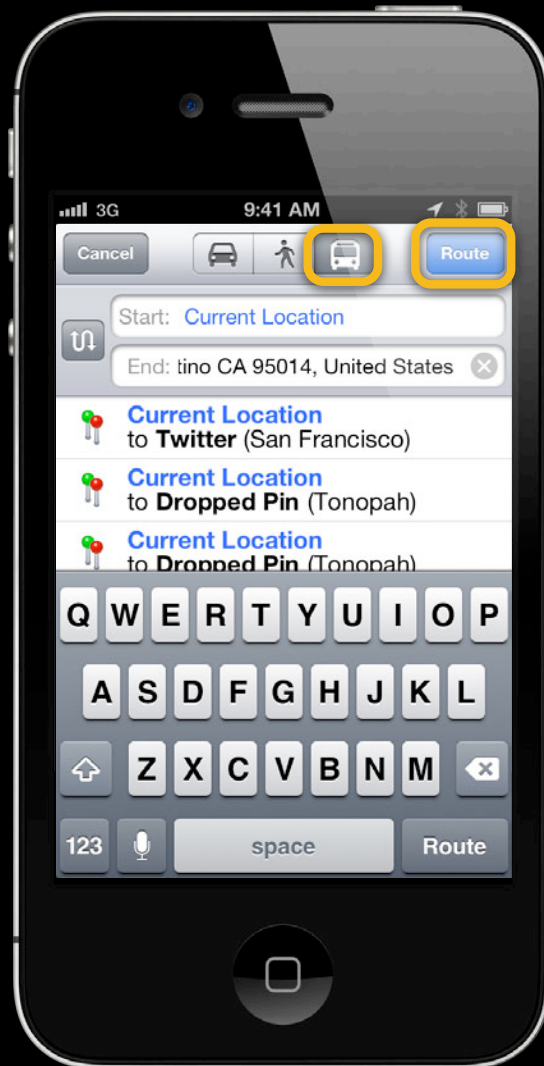
















3G 9:41 AM

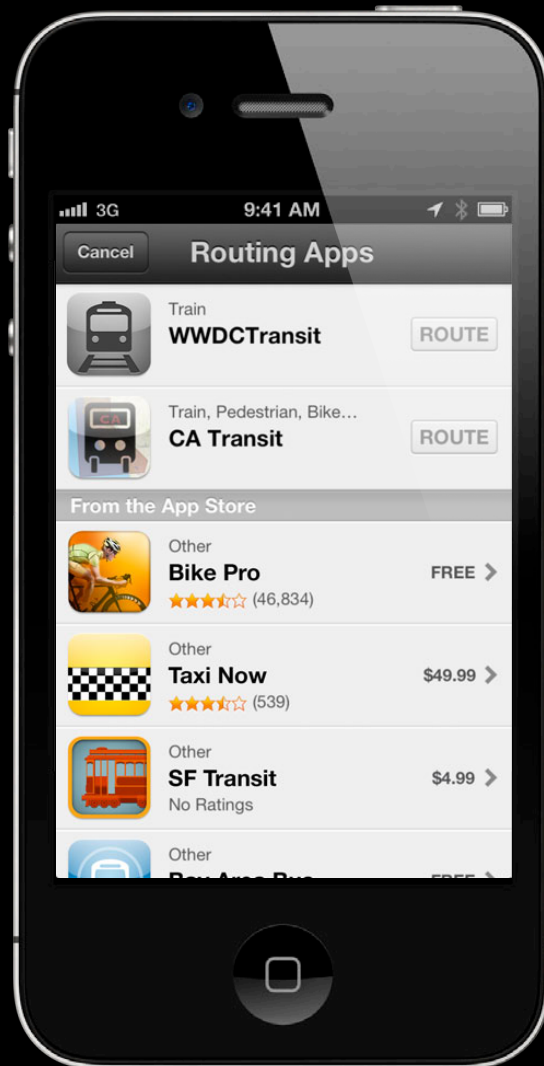
Cancel [Car] [Walking] [Bus] Route

Start: Current Location

End: tino CA 95014, United States

- Current Location to Twitter (San Francisco)
- Current Location to Dropped Pin (Tonopah)
- Current Location to Dropped Pin (Tonopah)

Q W E R T Y U I O P  
A S D F G H J K L  
Z X C V B N M  
123 space Route



3G 9:41 AM

Cancel Routing Apps

Train  
**WWDCTransit** ROUTE

Train, Pedestrian, Bike...  
**CA Transit** ROUTE

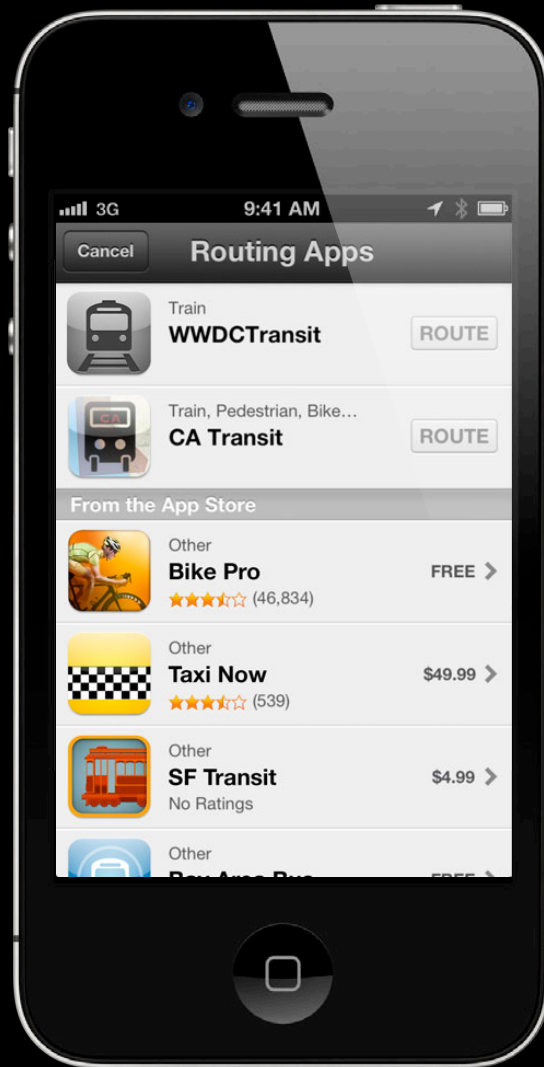
From the App Store

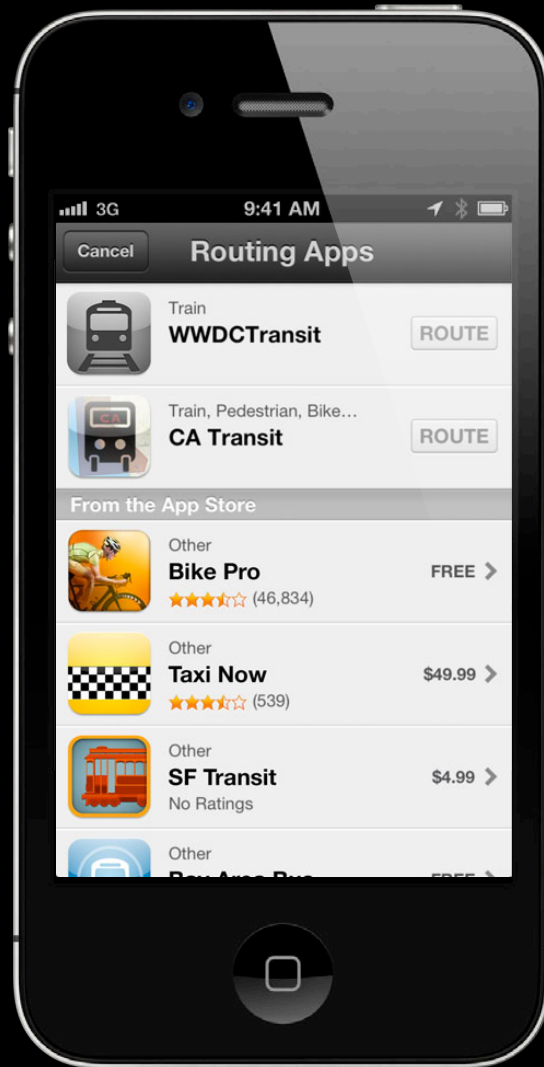
Other  
**Bike Pro** FREE >  
★★★★☆ (46,834)

Other  
**Taxi Now** \$49.99 >  
★★★★☆ (539)

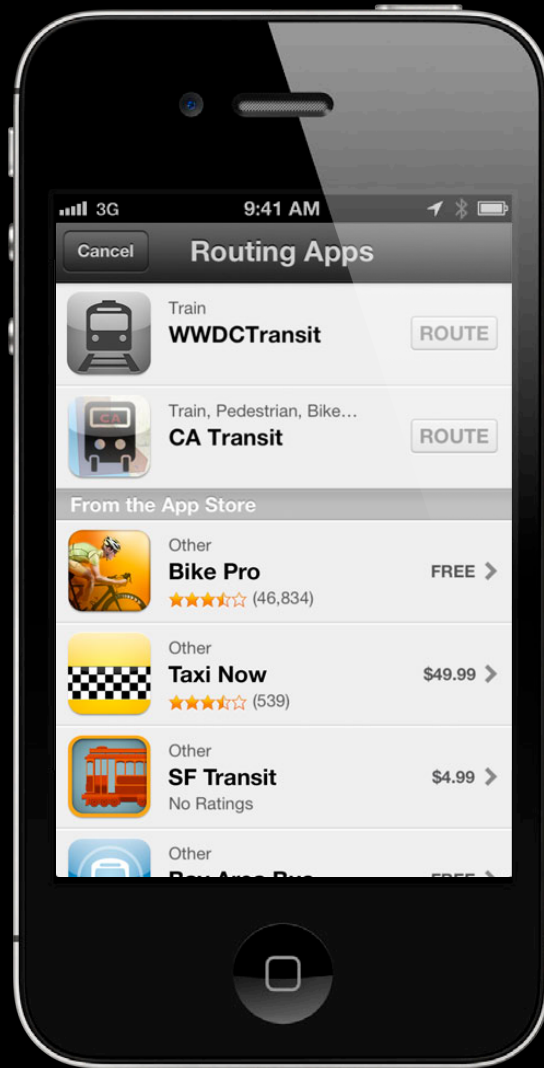
Other  
**SF Transit** \$4.99 >  
No Ratings

Other  
Bay Area Bus FREE >

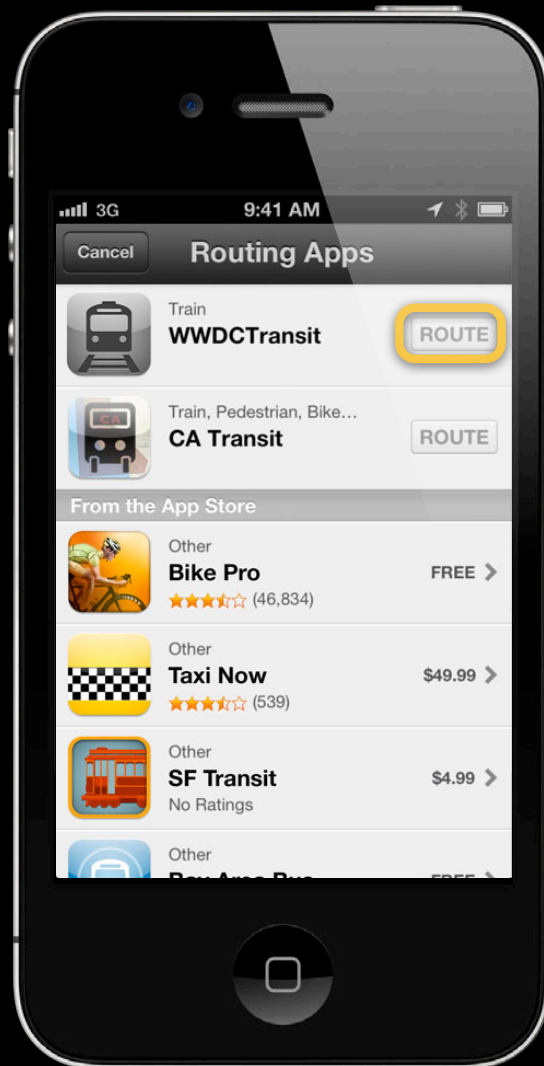


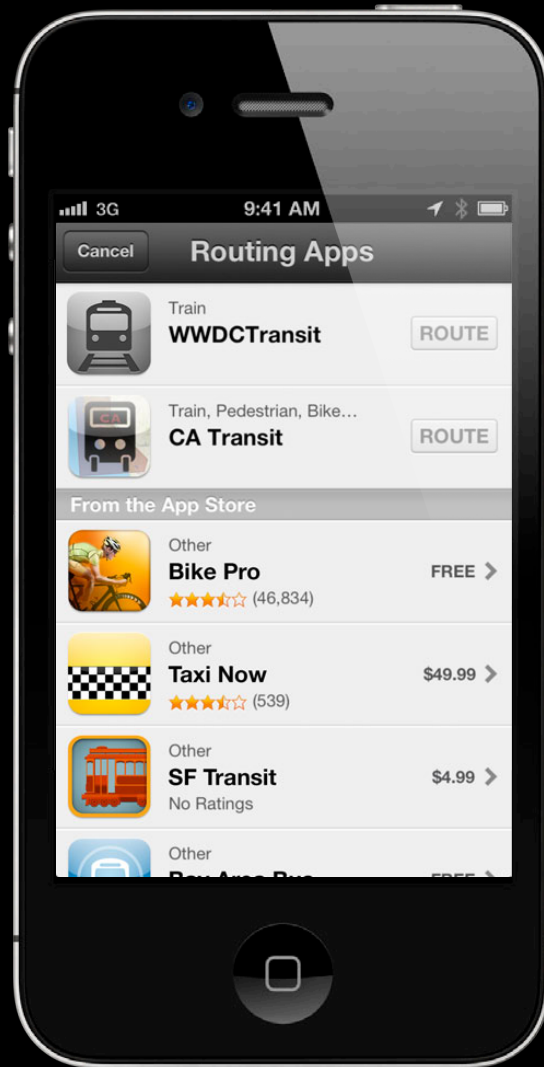


← Installed Routing Apps  
Recommended apps for  
your start and endpoint.



← App Store Suggestions  
Purchase from inside of  
Maps.





3G 9:41 AM

Cancel Routing Apps

Train  
**WWDCTransit** ROUTE

Train, Pedestrian, Bike...  
**CA Transit** ROUTE

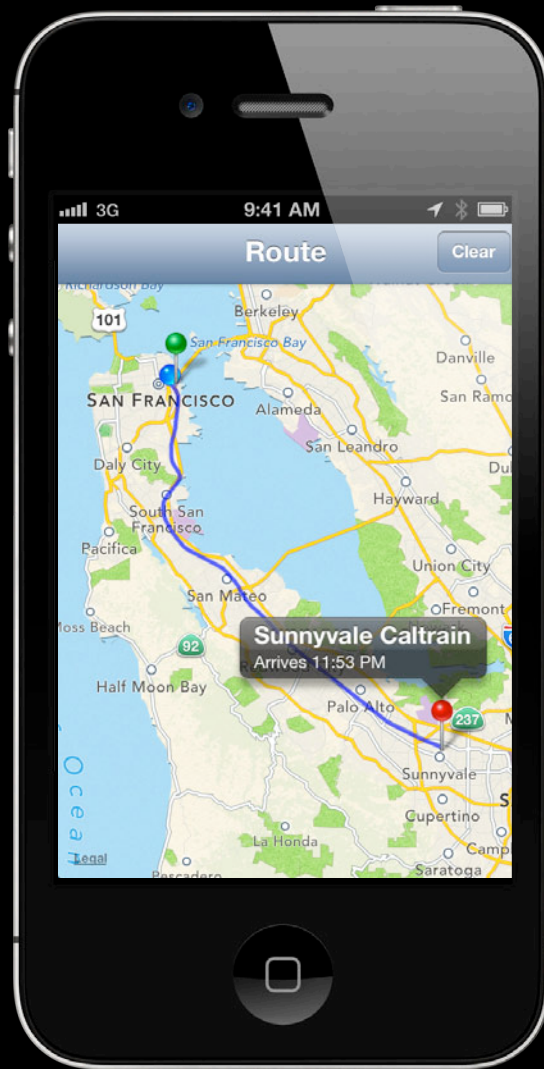
From the App Store

Other  
**Bike Pro** FREE >  
★★★★☆ (46,834)

Other  
**Taxi Now** \$49.99 >  
★★★★☆ (539)

Other  
**SF Transit** \$4.99 >  
No Ratings

Other  
**Bay Area Bus** FREE >

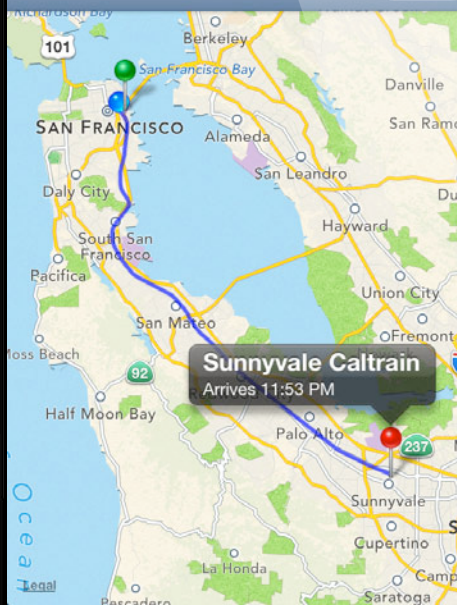


3G 9:41 AM

Route

Clear

Sunnyvale Caltrain  
Arrives 11:53 PM





# Routing App Requirements

# Routing App Requirements

1. Declare your app as a routing app

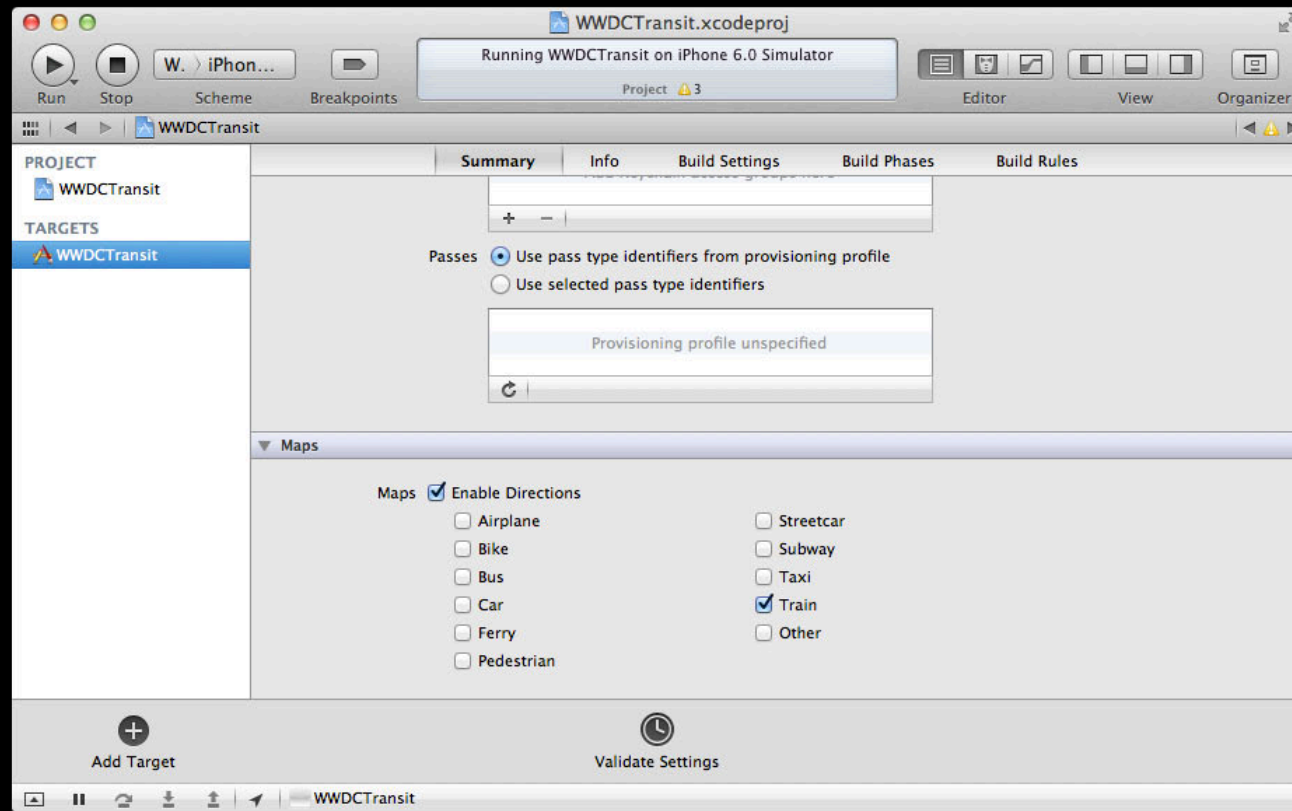
# Routing App Requirements

1. Declare your app as a routing app
2. Specify where your app is relevant geographically

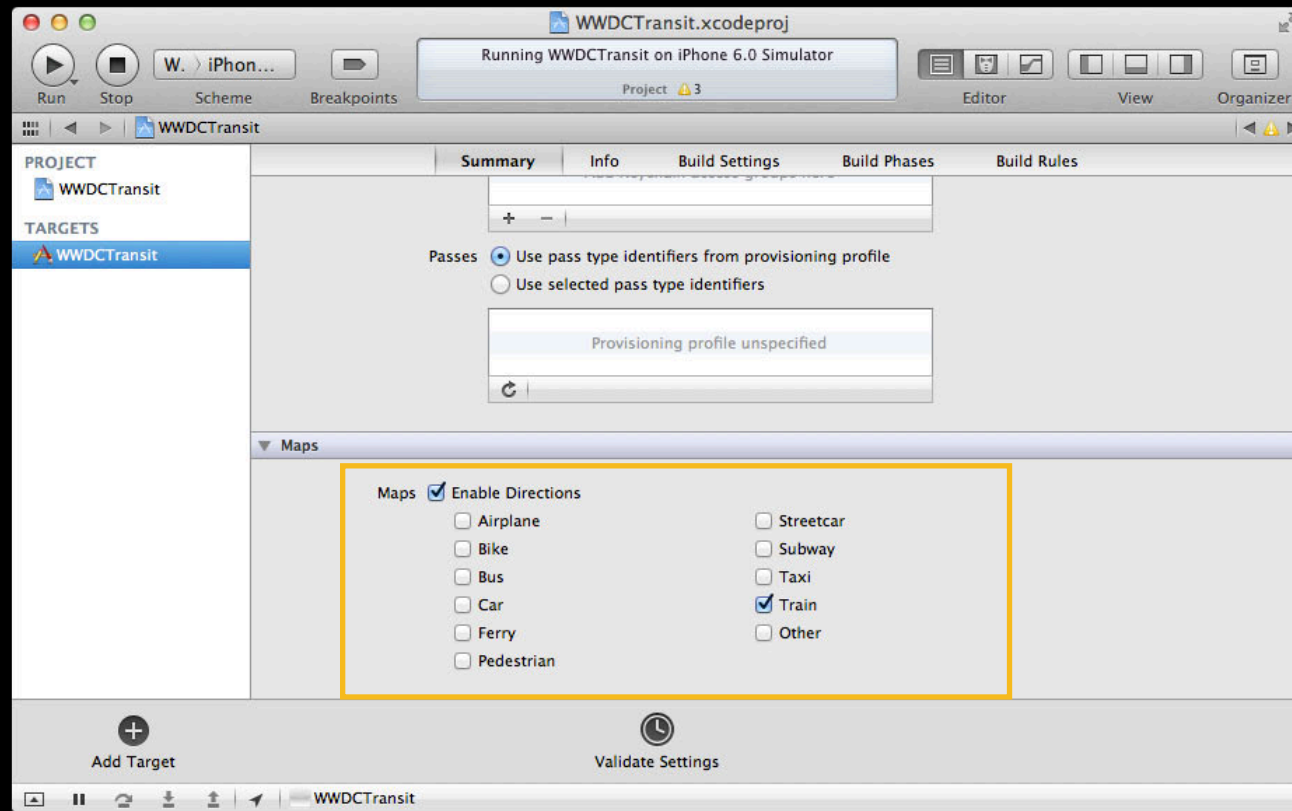
# Routing App Requirements

1. Declare your app as a routing app
2. Specify where your app is relevant geographically
3. Handle launches from Maps

# Declare Your App as a Routing App



# Declare Your App as a Routing App

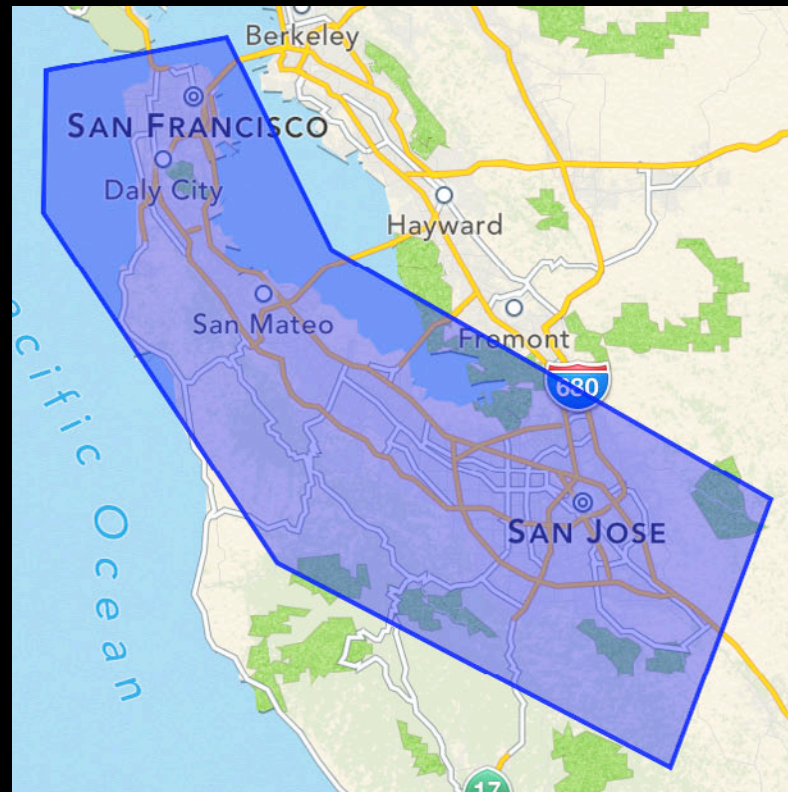


# Specifying Geographic Coverage

Where can your app provide routes?

# Specifying Geographic Coverage

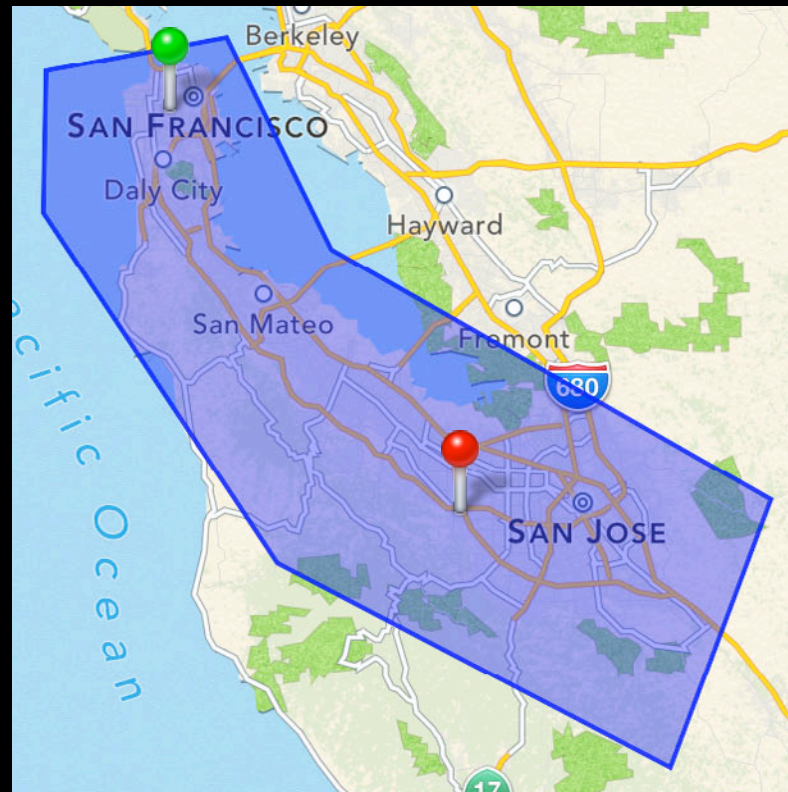
Where can your app provide routes?





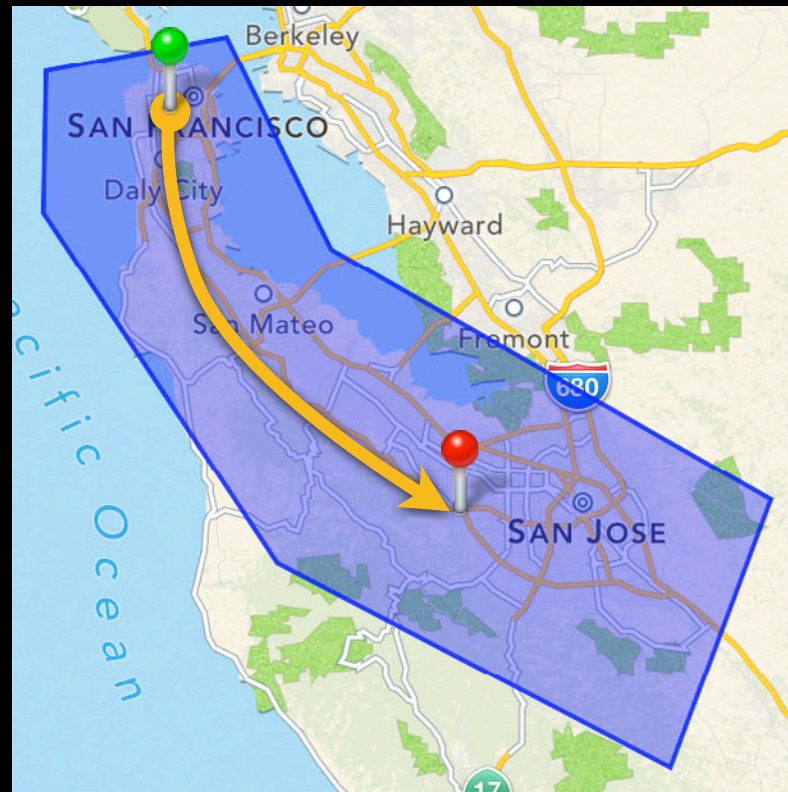
# Specifying Geographic Coverage

Where can your app provide routes?



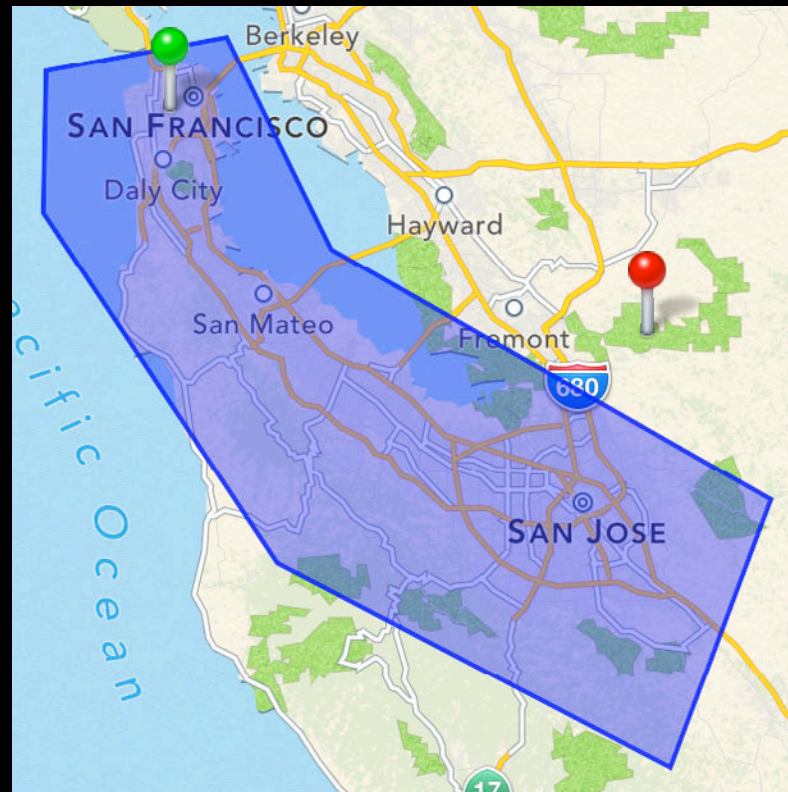
# Specifying Geographic Coverage

Where can your app provide routes?



# Specifying Geographic Coverage

Where can your app provide routes?



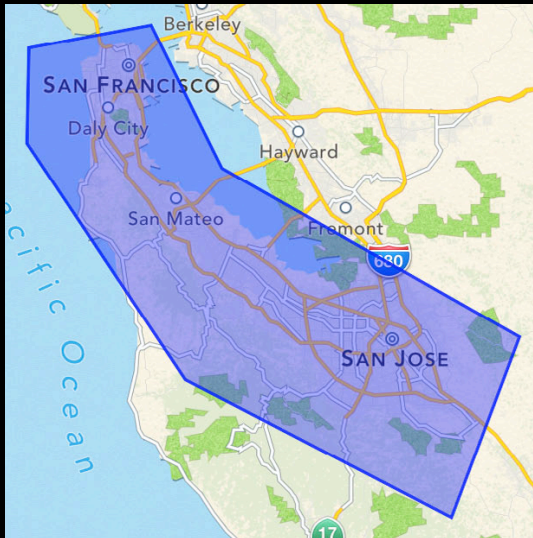
# Specifying Geographic Coverage

Where can your app provide routes?



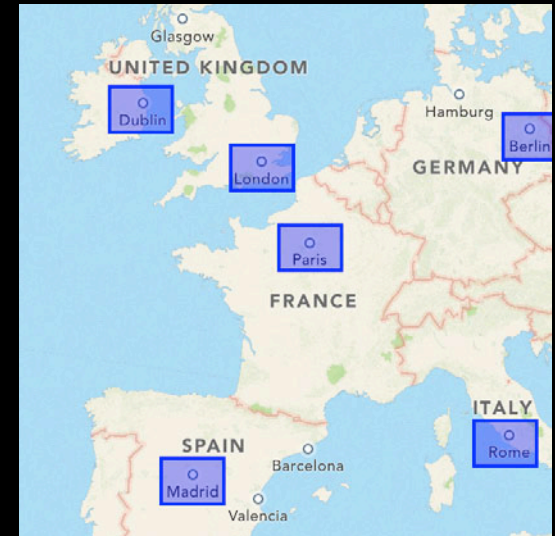
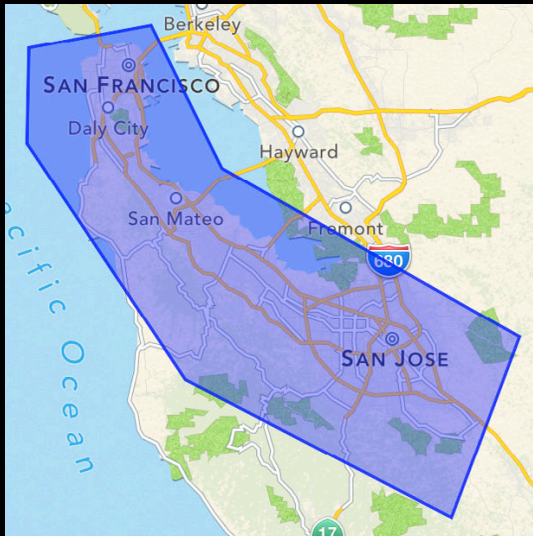
# Specifying Geographic Coverage

Where can your app provide routes?



# Specifying Geographic Coverage

Where can your app provide routes?



# Specifying Geographic Coverage

## Requirements

# Specifying Geographic Coverage

## Requirements

- GeoJSON file format (.geojson)



# Specifying Geographic Coverage

## Requirements

- GeoJSON file format (.geojson)
- Provide **one** MultiPolygon

# Specifying Geographic Coverage Requirements

- GeoJSON file format (.geojson)
- Provide **one** MultiPolygon
- Keep it simple

# Specifying Geographic Coverage Requirements

- GeoJSON file format (.geojson)
- Provide **one** MultiPolygon
- Keep it simple
  - Up to **20** polygons, **20** points per polygon

# Specifying Geographic Coverage Requirements

- GeoJSON file format (.geojson)
- Provide **one** MultiPolygon
- Keep it simple
  - Up to **20** polygons, **20** points per polygon
- **Coverage file is NOT part of the app bundle**

# Specifying Geographic Coverage Requirements

- GeoJSON file format (.geojson)
- Provide **one** MultiPolygon
- Keep it simple
  - Up to **20** polygons, **20** points per polygon
- **Coverage file is NOT part of the app bundle**
  - Uploaded using iTunes Connect

# Specifying Geographic Coverage Requirements

- GeoJSON file format (.geojson)
- Provide **one** MultiPolygon
- Keep it simple
  - Up to **20** polygons, **20** points per polygon
- **Coverage file is NOT part of the app bundle**
  - Uploaded using iTunes Connect
  - Automatically updated

# Testing Your Routing App



# Testing Your Routing App

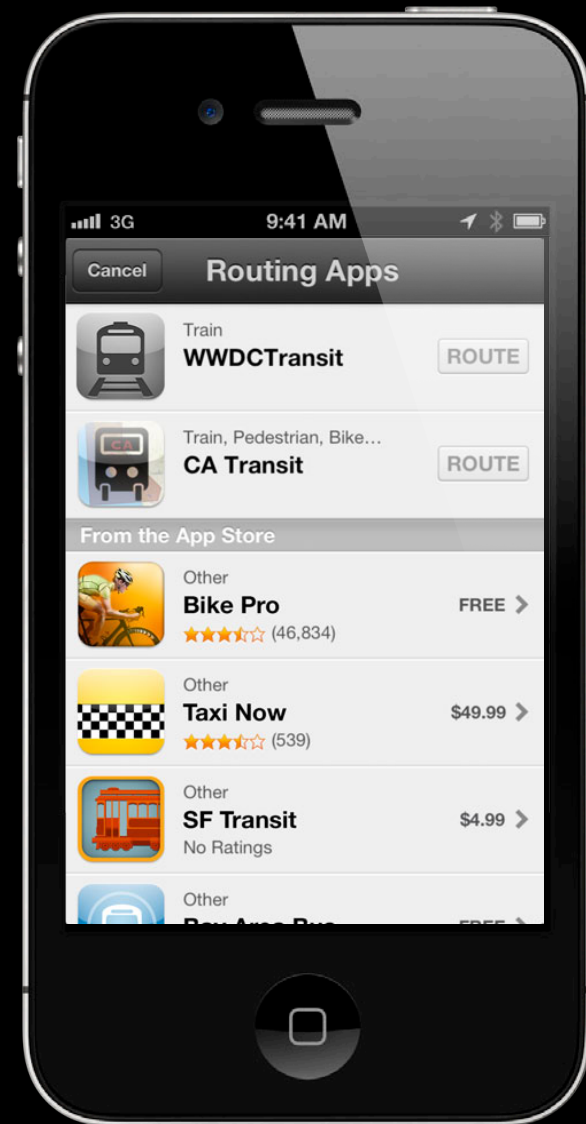
- Maps is now in the simulator





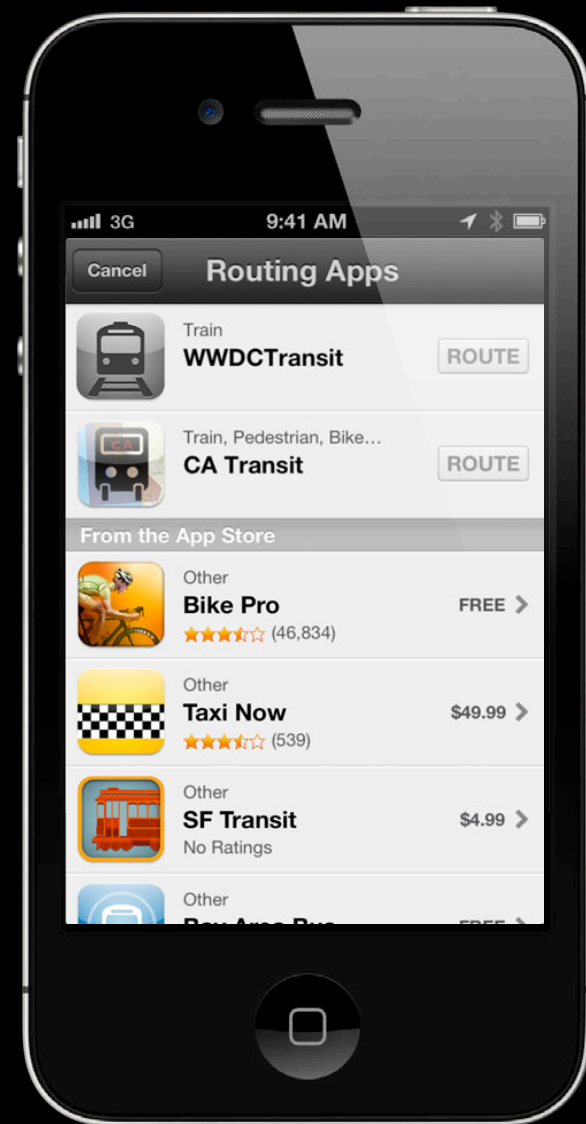
# Testing Your Routing App

- Maps is now in the simulator
- Verify your app appears when relevant



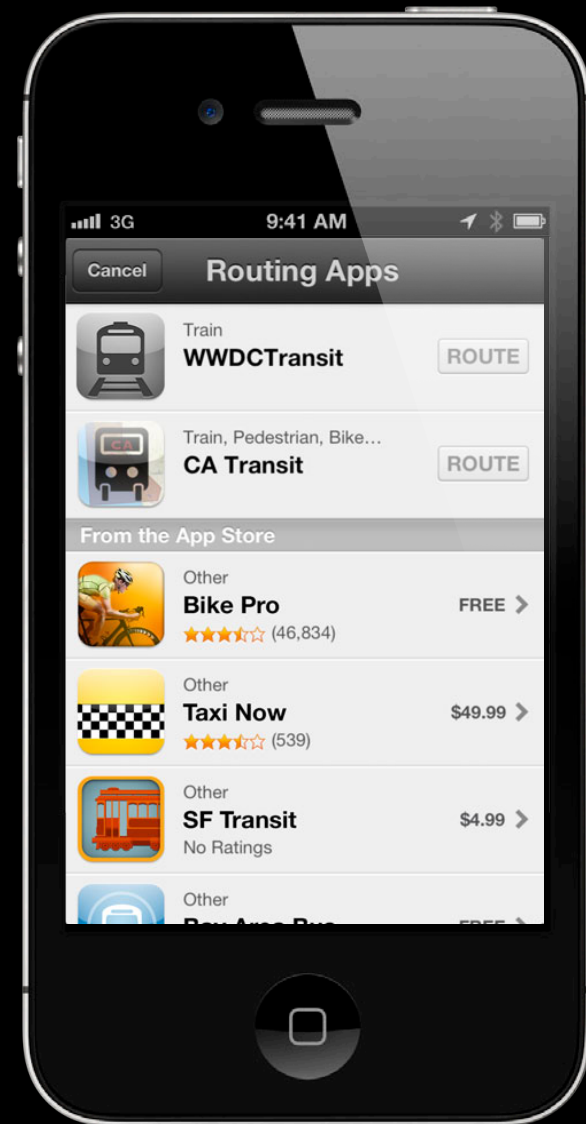
# Testing Your Routing App

- Maps is now in the simulator
- Verify your app appears when relevant
- Check the logs



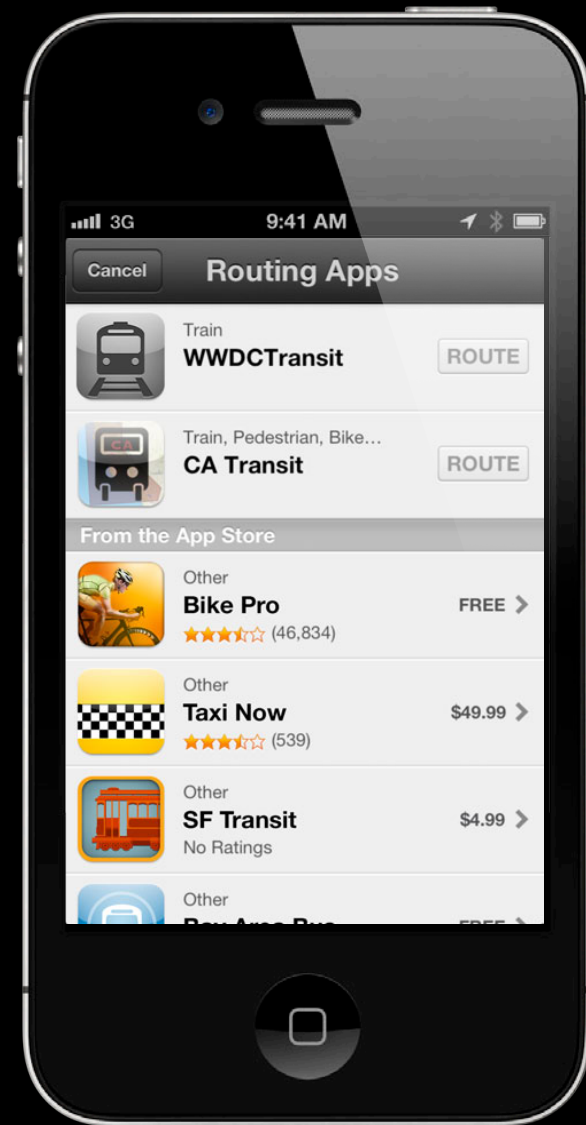
# Testing Your Routing App

- Maps is now in the simulator
- Verify your app appears when relevant
- Check the logs
  - Simulator—use Console



# Testing Your Routing App

- Maps is now in the simulator
- Verify your app appears when relevant
- Check the logs
  - Simulator—use Console
  - Device—use Xcode Organizer



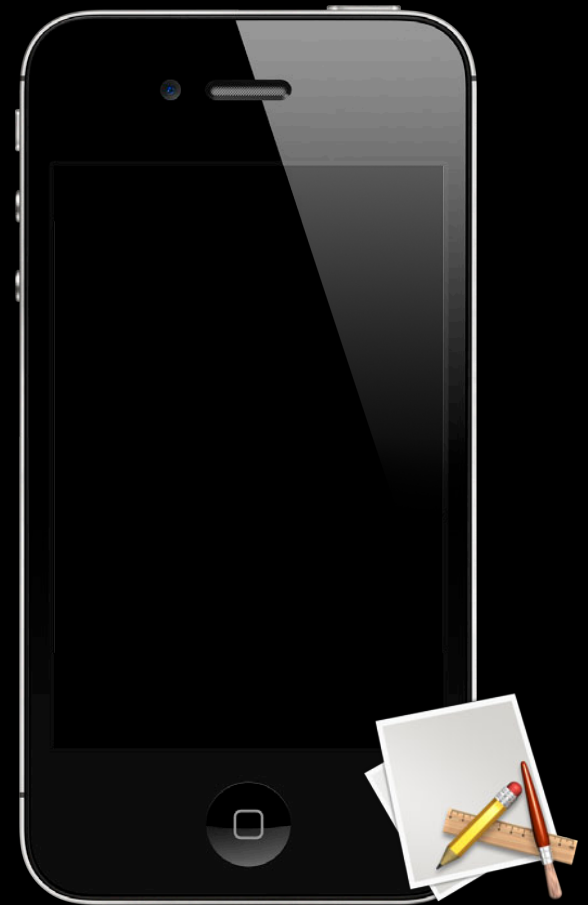
*Demo*

Declaring your app as a routing app

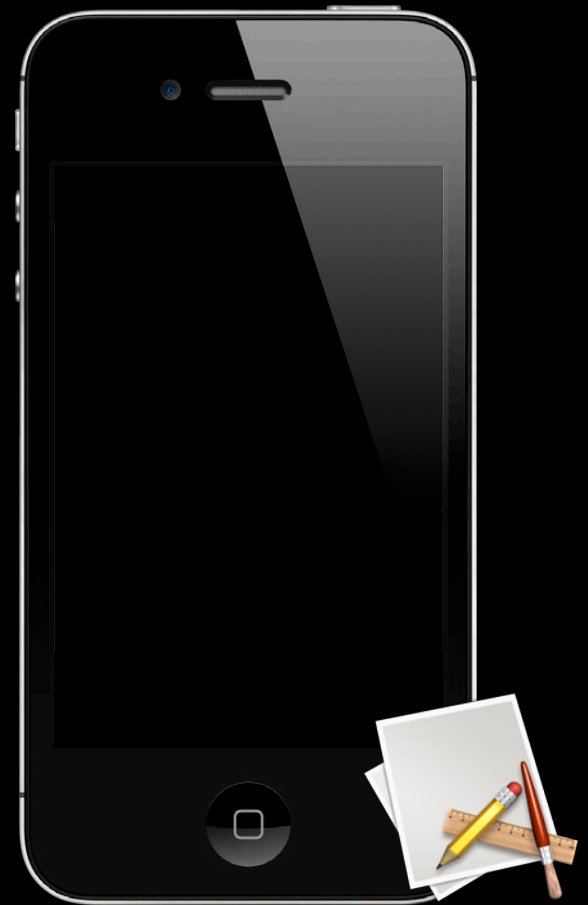
# Routing App Requirements

1. Declare your app as a routing app
2. Specify where your app is relevant geographically
3. Handle launches from Maps

# Handling Launches from Maps

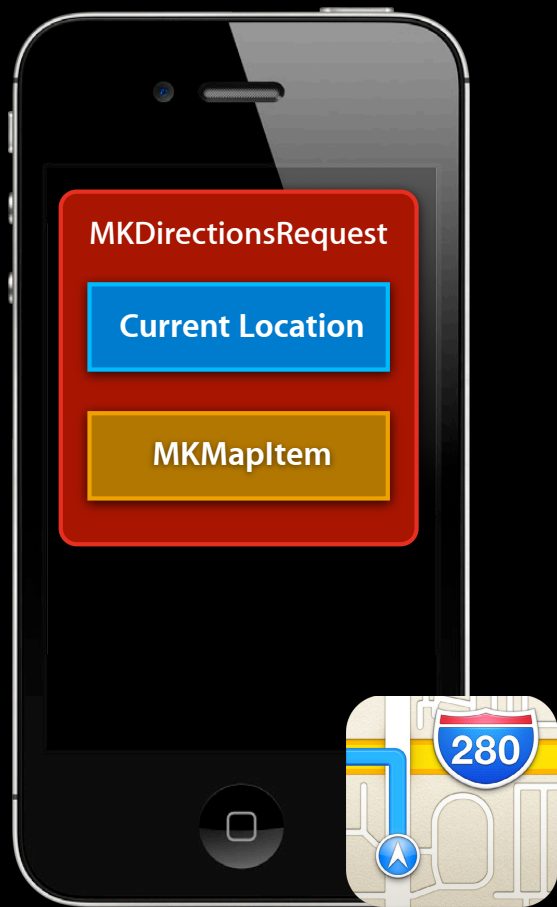


# Handling Launches from Maps

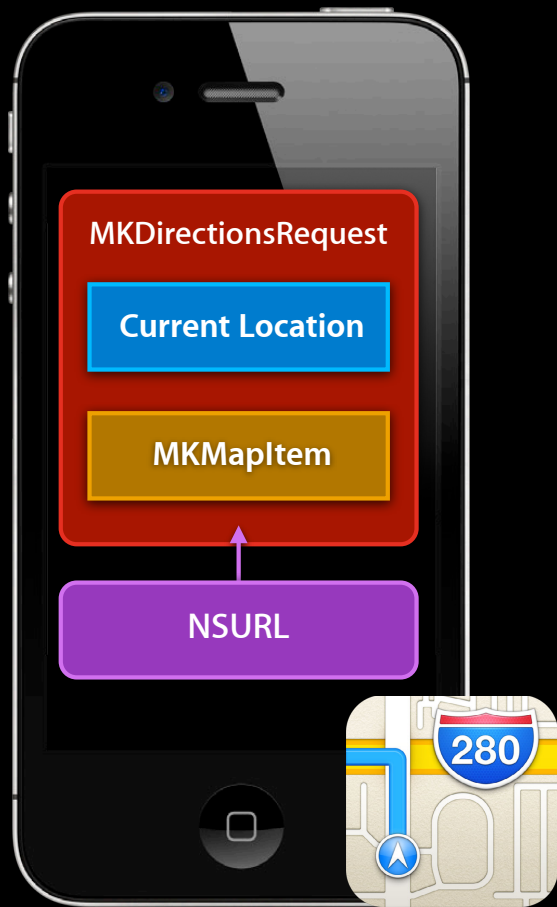




# Handling Launches from Maps



# Handling Launches from Maps



# Handling Launches from Maps



# Handling Launches from Maps



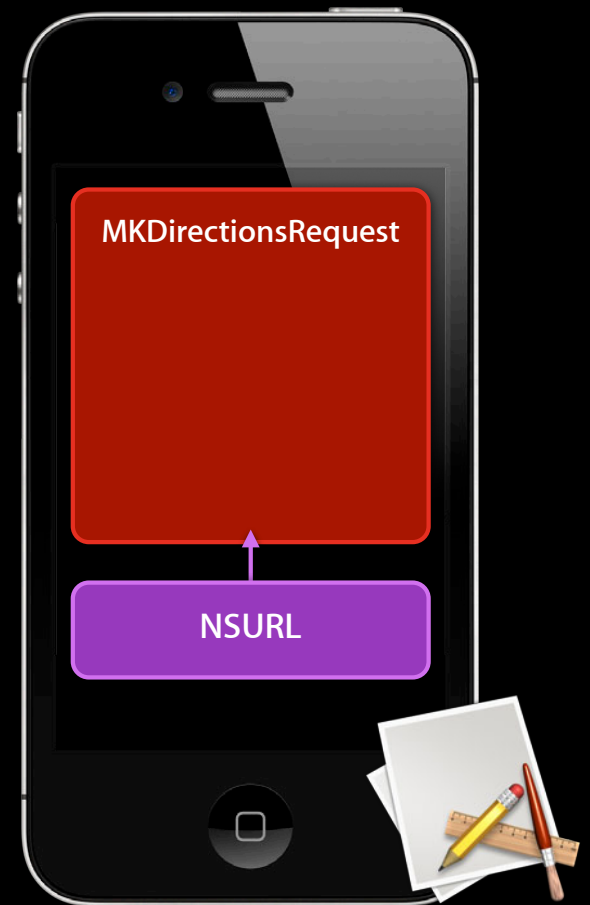
# Handling Launches from Maps

- Is it a MKDirectionsRequest URL?



# Handling Launches from Maps

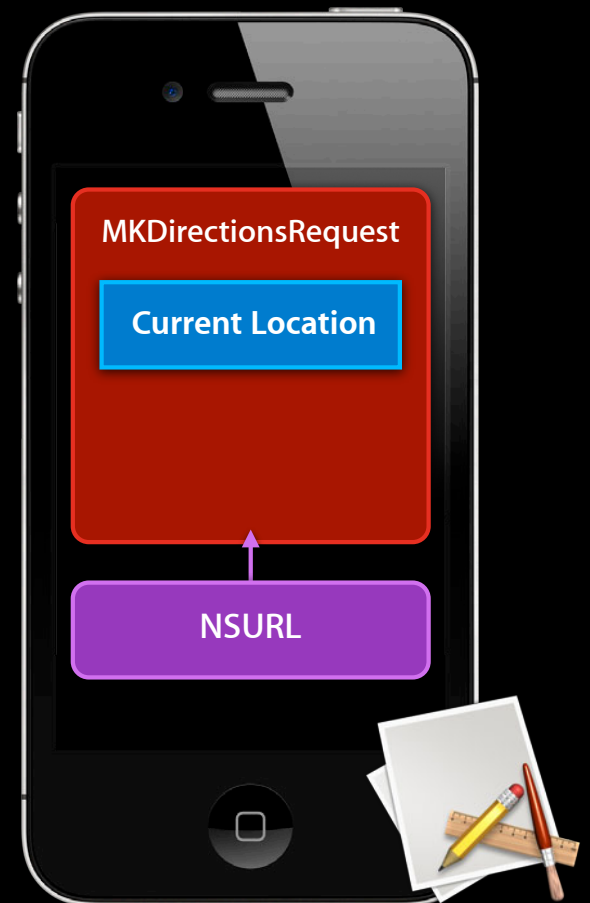
- Is it a MKDirectionsRequest URL?
- If yes, instantiate the request using the URL



# Handling Launches from Maps

- Is it a MKDirectionsRequest URL?
- If yes, instantiate the request using the URL

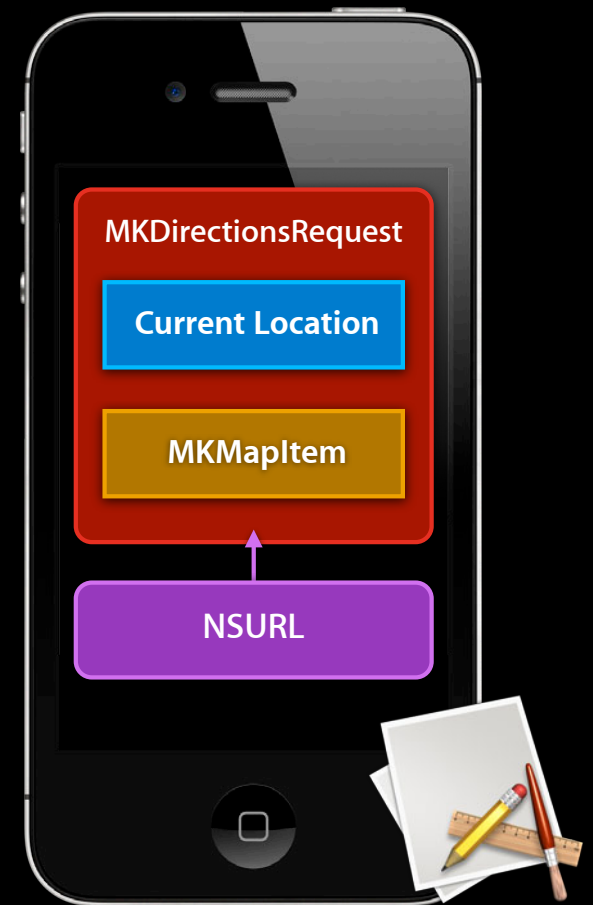
```
@property MKMapItem *source;
```



# Handling Launches from Maps

- Is it a MKDirectionsRequest URL?
- If yes, instantiate the request using the URL

```
@property MKMapItem *source;  
@property MKMapItem *destination;
```



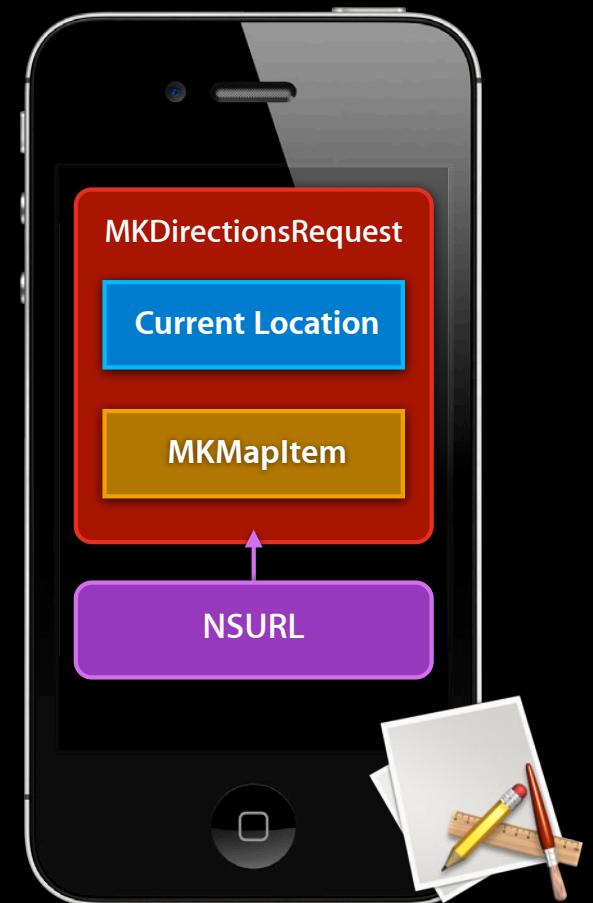


# Handling Launches from Maps

- Is it a MKDirectionsRequest URL?
- If yes, instantiate the request using the URL

```
@property MKMapItem *source;  
@property MKMapItem *destination;
```

- **Resolve the current location map item**

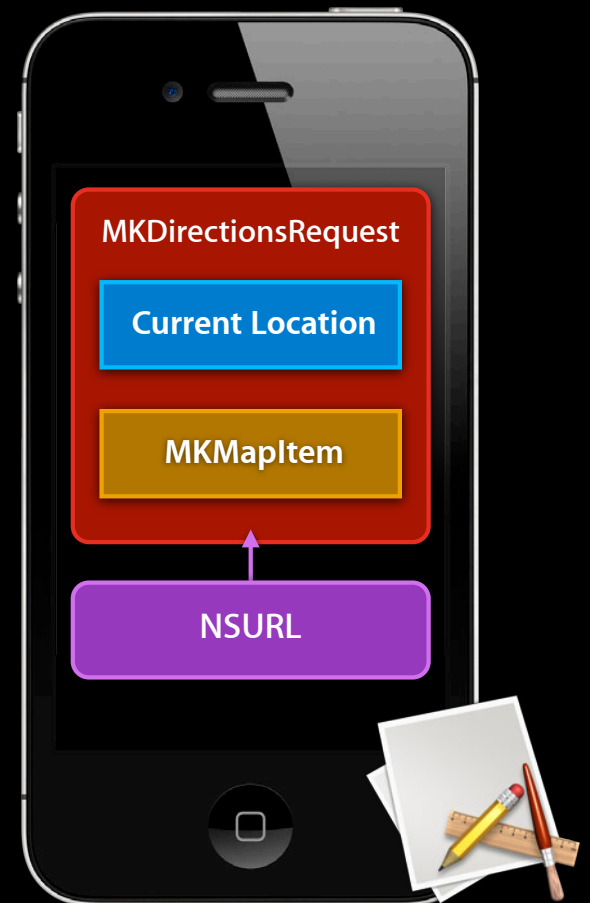


# Handling Launches from Maps

- Is it a MKDirectionsRequest URL?
- If yes, instantiate the request using the URL

```
@property MKMapItem *source;  
@property MKMapItem *destination;
```

- **Resolve the current location map item**
- Provide your route!



# Handling Launches from Maps

```
- (BOOL)application:(UIApplication *)application
    openURL:(NSURL *)url
    sourceApplication:(NSString *)sourceApplication
    annotation:(id)annotation
{
}
}
```

# Handling Launches from Maps

```
- (BOOL)application:(UIApplication *)application
    openURL:(NSURL *)url
    sourceApplication:(NSString *)sourceApplication
    annotation:(id)annotation
{
    if ([MKDirectionsRequest isDirectionsRequestURL:url]) {

    }
}
```

# Handling Launches from Maps

```
- (BOOL)application:(UIApplication *)application
    openURL:(NSURL *)url
    sourceApplication:(NSString *)sourceApplication
    annotation:(id)annotation
{
    if ([MKDirectionsRequest isDirectionsRequestURL:url]) {
        MKDirectionsRequest *request = [[MKDirectionsRequest alloc]
            initWithContentsOfURL:url];

        MKMapItem *startItem = [request source];
        MKMapItem *endItem = [request destination];

        // YOUR CODE HERE
    }
}
```

# *Demo*

Using the MKDirectionsRequest to provide a route

# Making Great Routing Apps

Best practices

# Making Great Routing Apps

## Best practices

- Minimize user input after launch



# Making Great Routing Apps

## Best practices

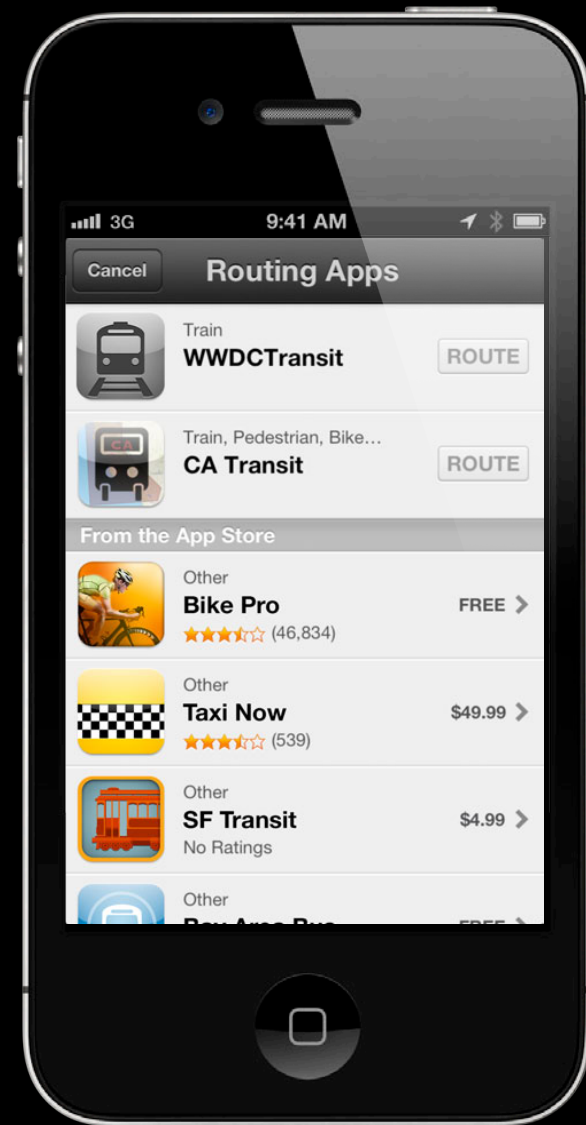
- Minimize user input after launch
- Personalize display using MKMapItem data

# Making Great Routing Apps

## Best practices

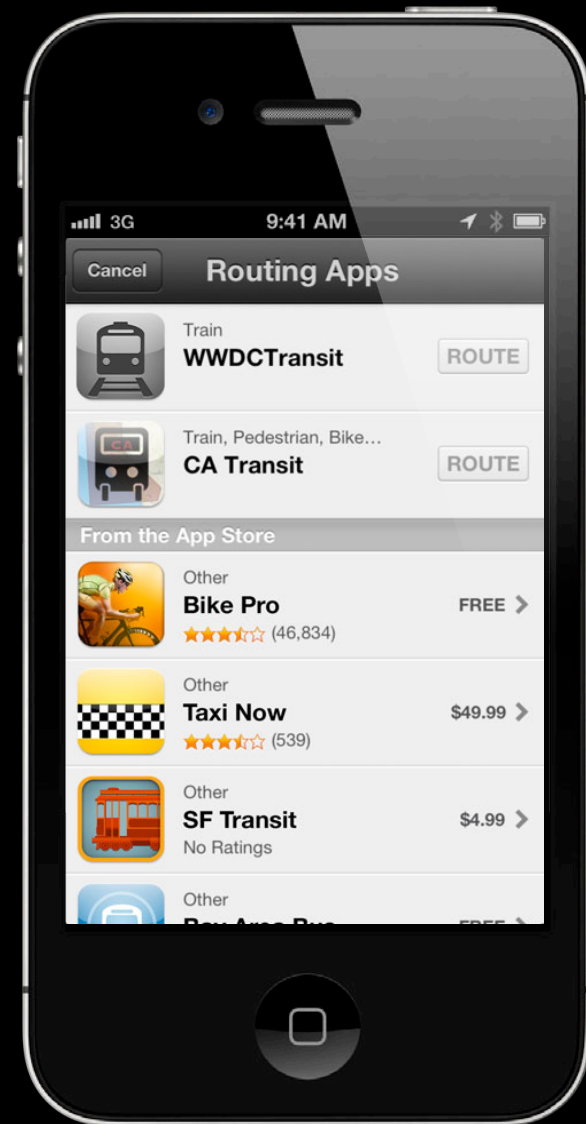
- Minimize user input after launch
- Personalize display using MKMapItem data
- Be reasonable with geographic coverage

# Routing Apps



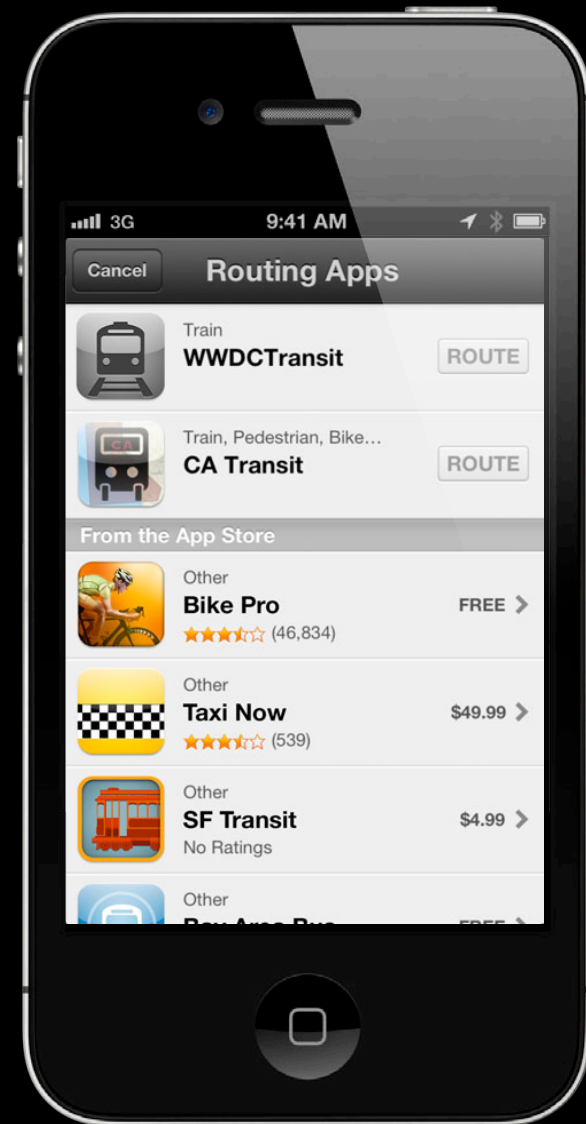
# Routing Apps

- Integrate with Maps



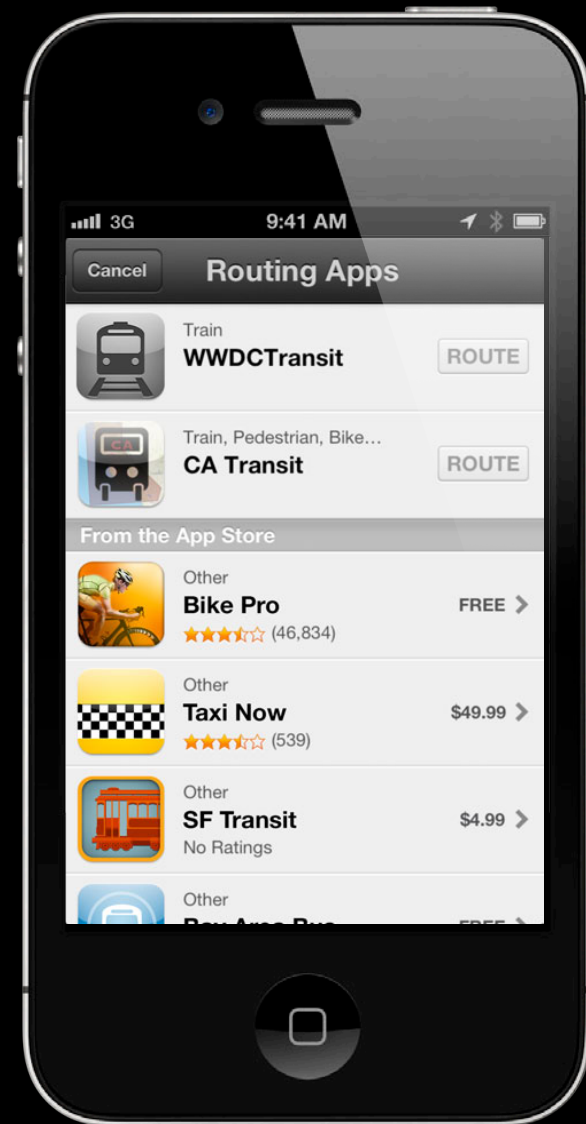
# Routing Apps

- Integrate with Maps
- Increase traffic to your app



# Routing Apps

- Integrate with Maps
- Increase traffic to your app
- Get promoted to users who care



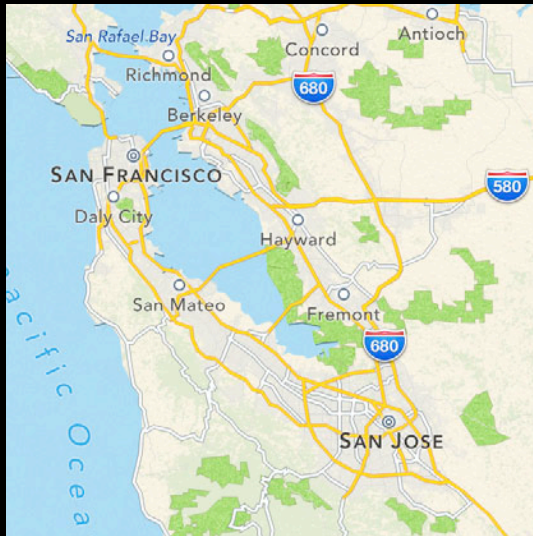
# Summary

**Apple Store Locator**

Select One

- Apple Store - San Francisco >
- Apple Store - Chestnut >

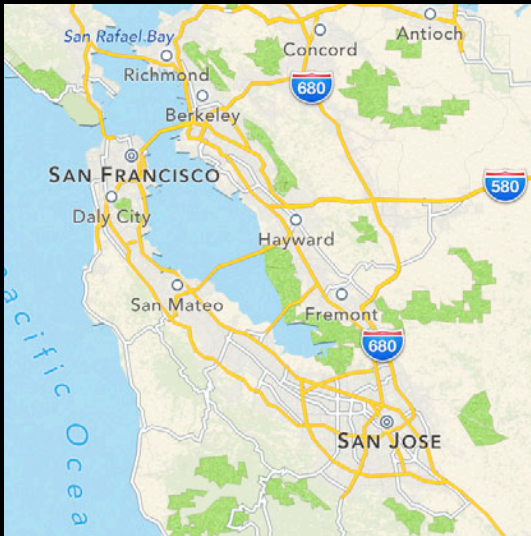
# Summary



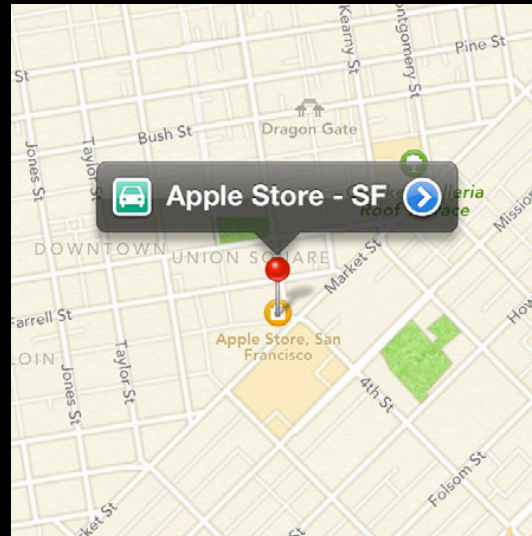
**New Maps. Same API.**



# Summary

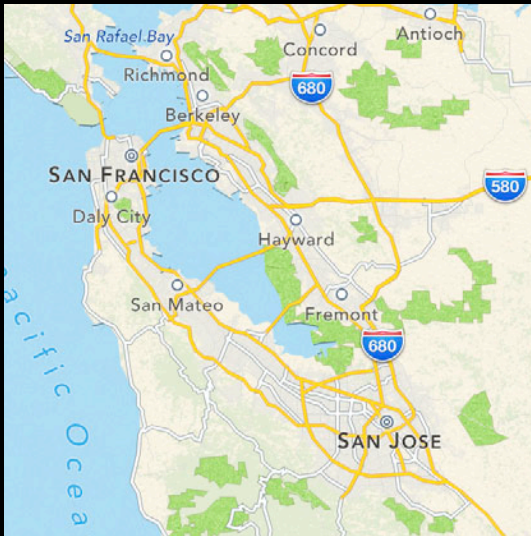


**New Maps. Same API.**

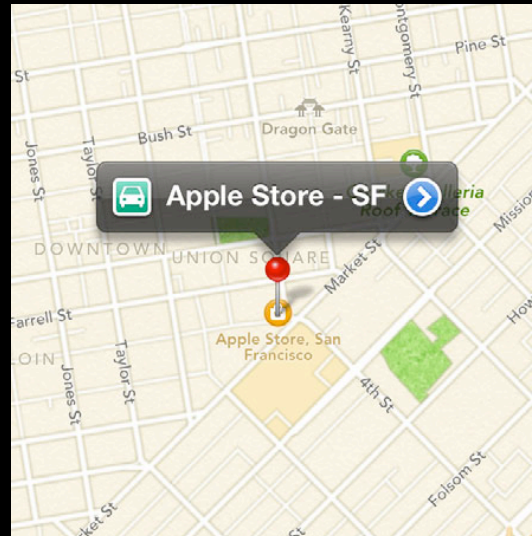


**Open Maps with  
MKMapView**

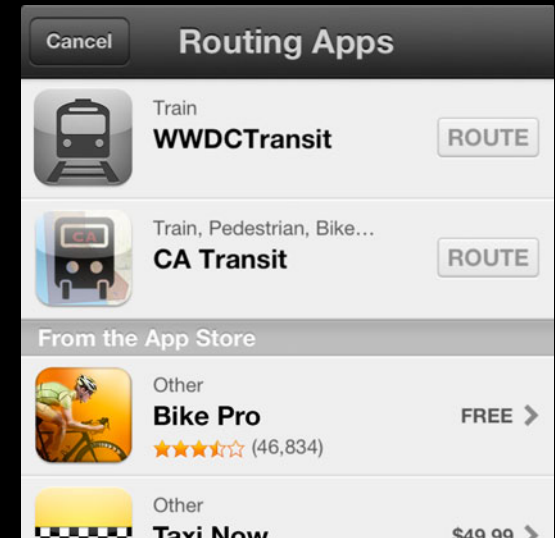
# Summary



New Maps. Same API.



Open Maps with MKMapView



Routing Apps

# More Information

## Paul Marcos

Application Services Evangelist  
[pmarcos@apple.com](mailto:pmarcos@apple.com)

## Documentation

MKMapView

[http://developer.apple.com/library/ios/#documentation/MapKit/Reference/MKMapView\\_Class/](http://developer.apple.com/library/ios/#documentation/MapKit/Reference/MKMapView_Class/)

Location Awareness Programming Guide

<http://developer.apple.com/library/ios/#DOCUMENTATION/UserExperience/Conceptual/LocationAwarenessPG/>

## WWDC 2011

“Visualizing Information Geographically with MapKit”

## Apple Developer Forums

<http://devforums.apple.com>

# Related Sessions

Getting Around with Map Kit (Repeat)

Pacific Heights  
Tuesday 3:15PM

What's new in iTunes Connect for App Developers

Nob Hill  
Thursday 9:00AM

Staying on Track with Location Services

Nob Hill  
Wednesday 2:00PM

# Labs

MapKit Lab #1

App Services Lab B  
Tuesday 4:30PM

MapKit Lab #2

App Services Lab B  
Thursday 11:30AM

 **WWDC2012**