



Esri International Developer Summit  
Palm Springs, CA

# Migrating your Apps to the iOS Platform

Al Pascual

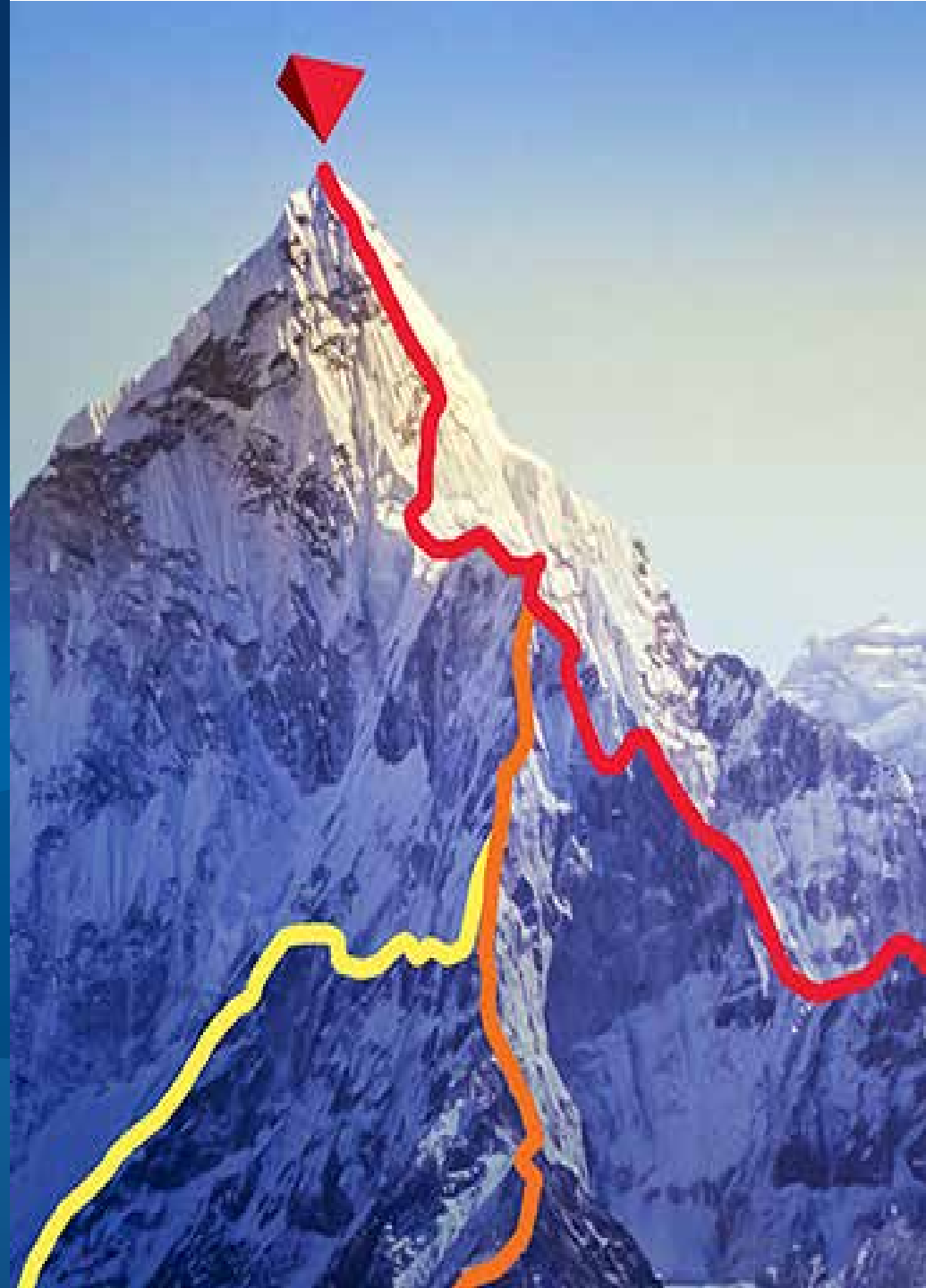
**Presenter**



**Al Pascual**  
**Technical Product Manager**  
**@alpascual**

# Overview

ArcGIS Runtime SDKs



# Native Apps





# Device Platforms



PHONE



TABLET



LAPTOP

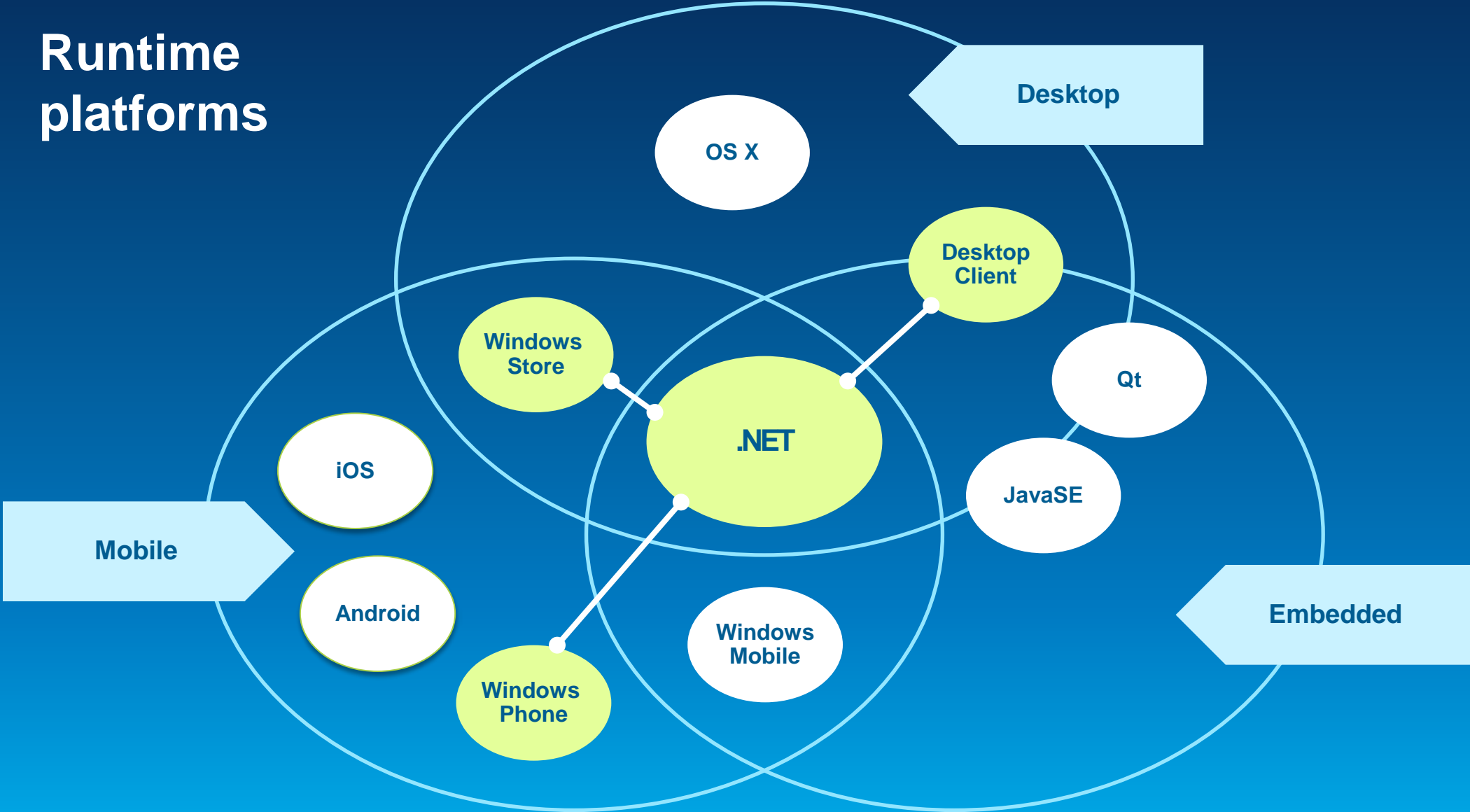


DESKTOP



EMBEDDED

# Runtime platforms



## New Platforms

- 32-bit Linux



- iOS 7

- OS X Mavericks (10.9)



- x86 Android

- Windows Store



SDK

# Language Comparison





# Syntax

	Objective-C	C#	Java
Block delimiter	{ }	{ }	{ }
Statement terminator	;	;	;
End of line comment	//	//	//
Multiple line comment	/* comment */	/* comment */	/* comment */
Local variable	Int = 5;	Int = 5;	Int = 5;
null	NULL	NULL	null

# Hello World Objective-C

```
#include <stdio.h>

int main(int argc, char **argv) {
    printf("Hello, World!\n");
}
```

# Hello World Java

```
public class Hello {  
    public static void main(String[] args) {  
        System.out.println("Hello, World!");  
    }  
}
```

# Hello World C#

```
using System;  
public class Hello {  
    public static void Main() {  
        Console.WriteLine("Hello, World!");  
    }  
}
```

# ArcGIS Runtime

Runtime built using C++

EXPLOITS THE CAPABILITIES OF THE DEVICE

Functionality exposed to developers via an API  
native to the platform

INTUITIVE TO LEARN

Common functionality set and conceptual model

EASES MULTI PLATFORM DEVELOPMENT

# Device Platform Strategy

Built from a common GIS Runtime

## Configurable Apps

ArcGIS for iOS,  
Android, Windows Phone

Collector for  
ArcGIS

Operations  
Dashboard

Additional Apps

## ArcGIS Runtime SDKs

Mac OS X  
(Objective C)

iOS  
(Objective C)

Android  
(Java)

Linux  
(C++, Java)

Windows  
Phone  
(SL, XAML)

Windows  
(Win Store)

Windows  
(WPF)

Windows  
(Java SE)

## Core ArcGIS Runtime Components

Geometry

Sync Framework

Graphics

Symbols

Map Grids

Spatial Reference

Feature Cache

Tiles

Messaging

3D

Map Display

More...



# Comparison

Objective-C	C#	Java
Automatic Reference Counting	Garbage Collection	Garbage Collection
xCode	Visual Studio	Eclipse, NetBeans
Mac	Windows	Everywhere
[@"hello" compare:@"hello"]	"hello".compareTo("world")	"hello".compareTo("world")
[@"HELLO" lowercaseString]	"HELLO".toLowerCase()	HELLO".ToLower()
[@"14" integerValue]	Integer.parseInt("14")	int.Parse("14")

## C# to Objective-C

```
// call SyncGeodatabaseAsync and pass in: sync params, local geodatabase, completion
var gdbResult = await syncTask.SyncGeodatabaseAsync(
    taskParameters,
    gdb,
    this.syncCompleteCallback,
    null,
    new TimeSpan(0,0,30),
    progress,
    cancellationToken);
```

```
[self.gdbTask syncGeodatabase:geodatabase
    params:param
    status:^(AGSAsyncServerJobStatus status, NSDictionary *userInfo) {
        NSLog(@"In Status Block %ld with status %u", (long)number, status);
    }
    completion:^(NSError *error) {
        if (error) {
            NSLog(@"Finished syncGeodatabase with error (%@) : %ld", [error localizedDescription], (long)number);
        }
    }];
```

## More C# and Objective-C

```
// create the geodatabase parameters object
// indicate which layers to write to the geodatabase, as well as the extent, spat
var gdbParameters = new GenerateGeodatabaseParameters(layerIds, MyMapView.Extent)
{
    OutSpatialReference = MyMapView.SpatialReference,
    SyncModel = SyncModel.PerLayer
};

try
{
    // create the GeodatabaseSyncTask, specifying the uri for the feature service
    var geodatabaseTask = new GeodatabaseSyncTask(new Uri(featureServiceUrl));
```

```
// the synchronization model
//The output spatial reference
generateParameters = [[AGSGDBGenerateParameters alloc] initWithExtent:anAreaOfInterest];
generateParameters.syncModel = AGSGDBSyncModelPerLayer;
generateParameters.outSpatialReference = [AGSSpatialReference wgs84SpatialReference];

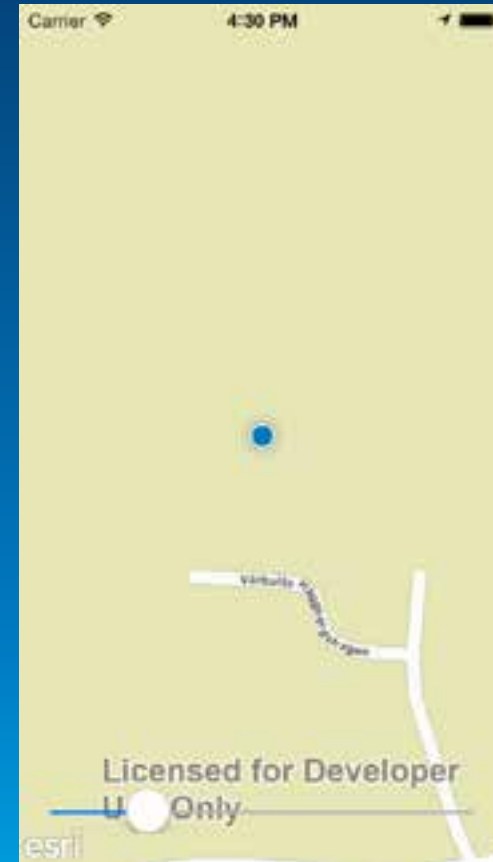
//Create the geodatabase task
geodatabaseTask =
[[AGSGDBSyncTask alloc] initWithURL:[NSURL URLWithString:kFeatureServiceURL] creden
```

## C# and Objective-c Create a Runtime Geodatabase

```
// open the geodatabase file  
Geodatabase gdb = await Esri.ArcGISRuntime.Data.Geodatabase.OpenAsync(@"C:\Temp\Cache\WildlifeLoca
```

```
AGSGDBGeodatabase *gdb = [AGSGDBGeodatabase alloc] initWithPath:thePathString error:(NSError *error
```

- Demo, create a hello world map app



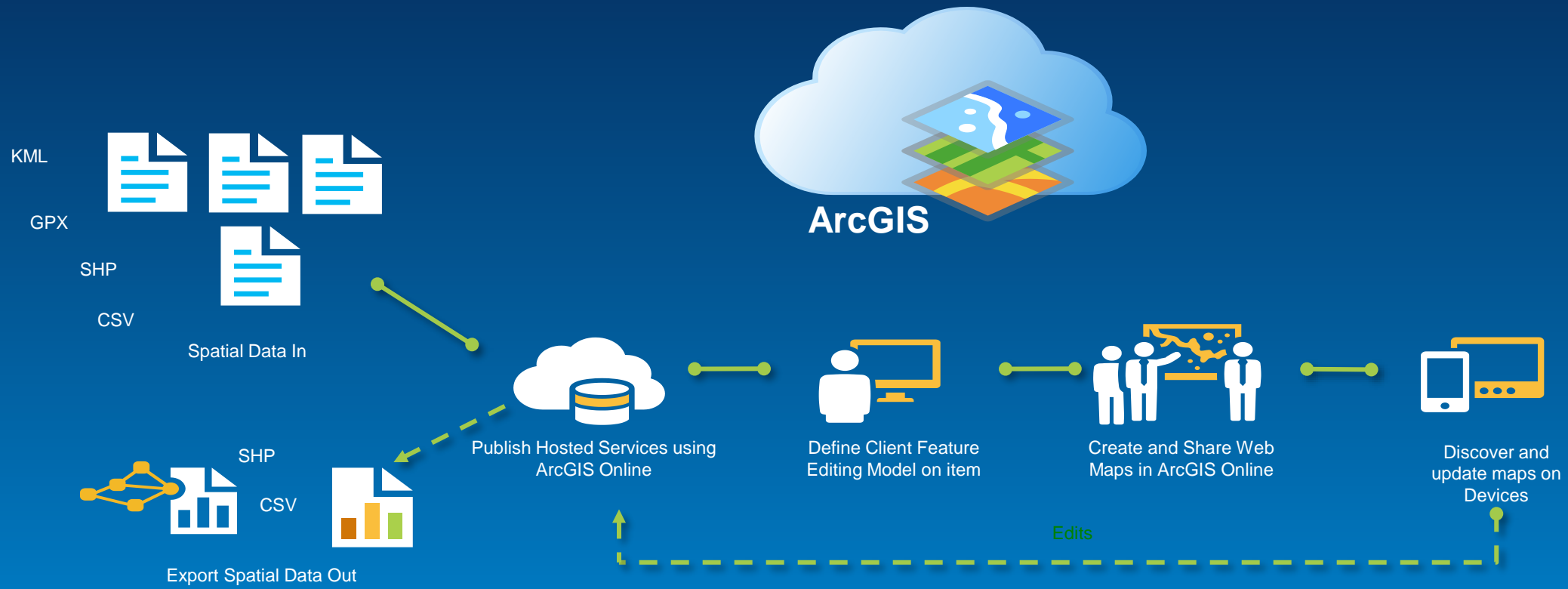
SDK

# Offline API





# Adding data to the ArcGIS cloud



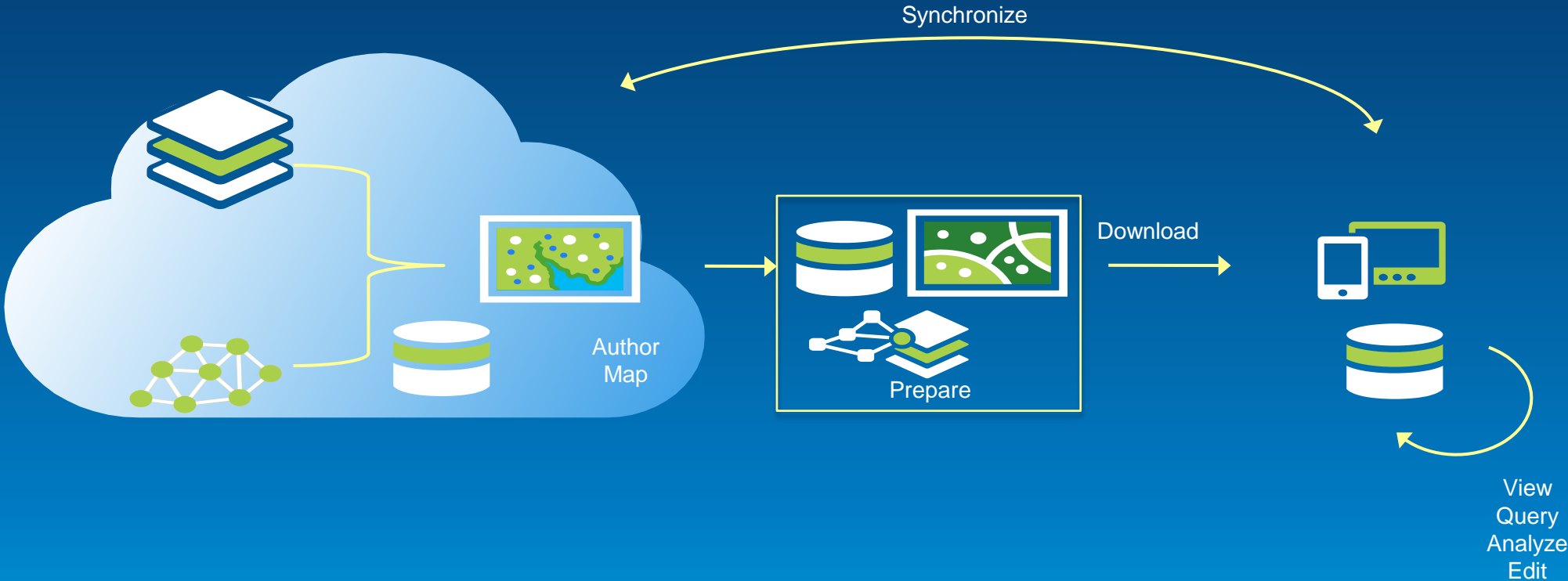
# Offline Map Capabilities – **Final with 10.2.2**

## Disconnected Use of the ArcGIS Platform

- Viewing and Interacting with Maps
- Querying Data
- Editing Features
  - Synchronization
- Spatial Intelligence
  - Find places and locations
  - Get directions
- Pre-planned or On-demand Workflows
- Occasionally Connected Scenarios
- All Runtime SDKs\*

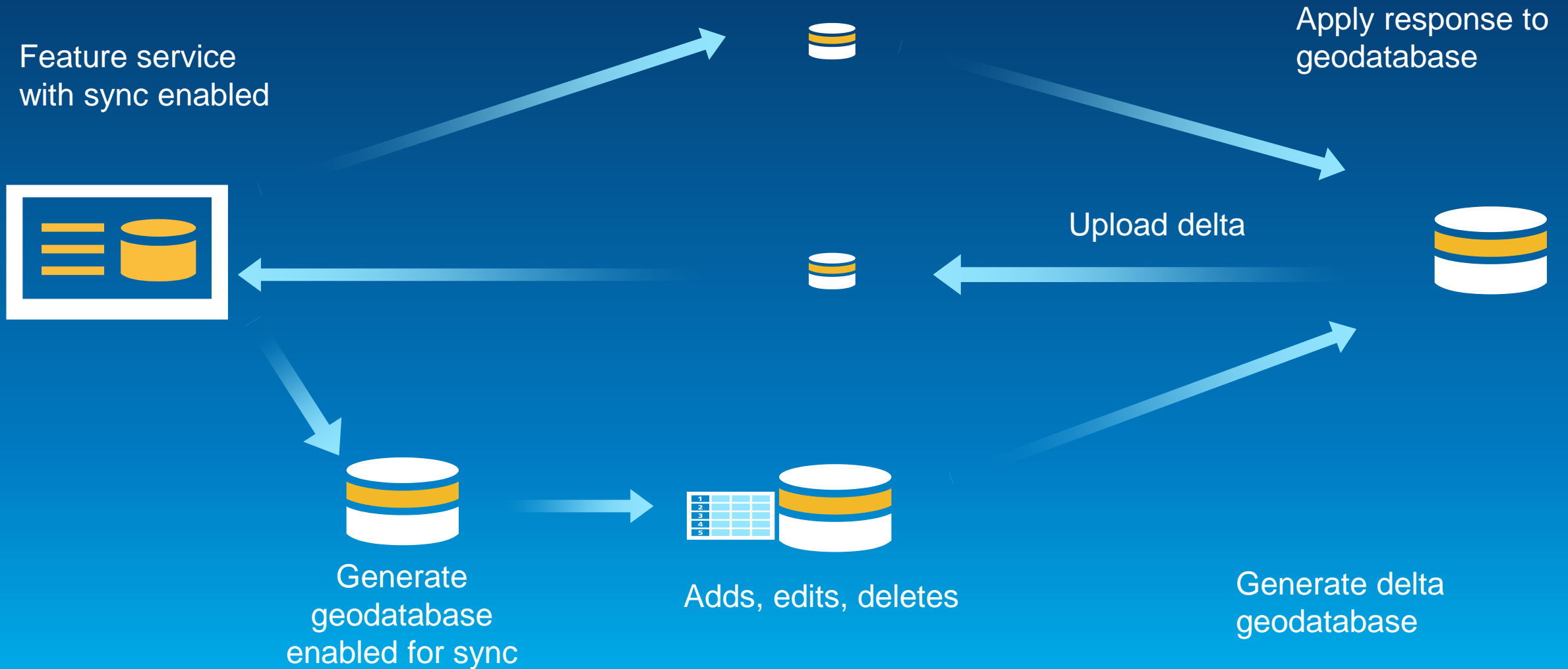


# From ArcGIS Online



# How Does Sync Work?

## The Flow of Data



Skills

# Objective-C

Best practices



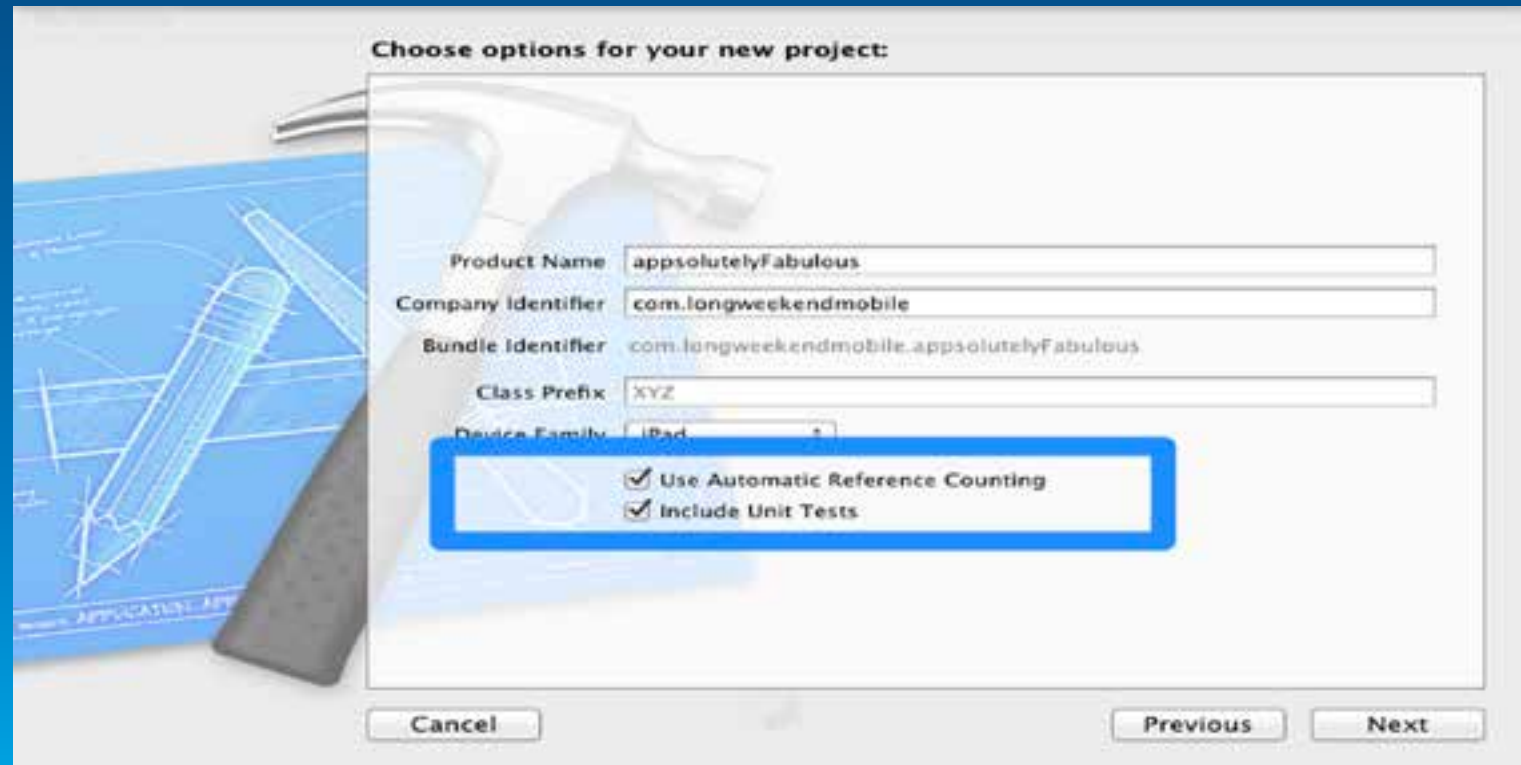
## The Dark Age of Objective-c

- Before iOS development Objective-C didn't progress
- iOS pushed Apple to improve the language closer to C#
- The low-level nature of Objective-C turned into an advantage again and it might at least partly be responsible for the generally better performance of iOS compared to its competitors



# Automatic Reference Counting

- ARC is your friend



# ARC Gotchas

- Death by ARC is a common mistake
- Loops and forcing ARC to release.
- Let the compiler do the releasing for you.
- Always create a property for objects calling delegates.



# Manage memory in Arc

Query Demo for Arc ...

- Let's create a new project ...
- Let's migrate an existing project ...

# Which Delegate?

# (AGSMapView)

Properties	
BOOL	allowMagnifierToPanMap
AGSColor *	calloutColor
AGSCallout *	callout
id< AGSMapViewCalloutDelegate >	calloutDelegate
AGSColor *	gridLineColor
CGFloat	gridLineWidth
CGFloat	gridSize
BOOL	interacting
BOOL	lastChangeFromInteraction
id< AGSMapViewLayerDelegate >	layerDelegate
BOOL	loaded
AGSTimeExtent *	timeExtent
id< AGSMapViewTouchDelegate >	touchDelegate
AGSEnvelope *	visibleAreaEnvelope

# Use the latest xCode 5

- Settings upgrade



## @property and @synthesize

- Objective-C may change at every xCode release.
- Accept the project changes

# NSLog vs DebugLog

- **#if DEBUG**
- **# define DBLog(fmt,...) NSLog(@"%@",[NSString stringWithFormat:(fmt), ##\_\_VA\_ARGS\_\_]);**
- **#else**
- **# define DBLog(...)**
- **#endif**

# Runtime Licensing

## Development and Deployment Workflow



1. Download and Install



2. Develop and Test



3. Deploy and Distribute



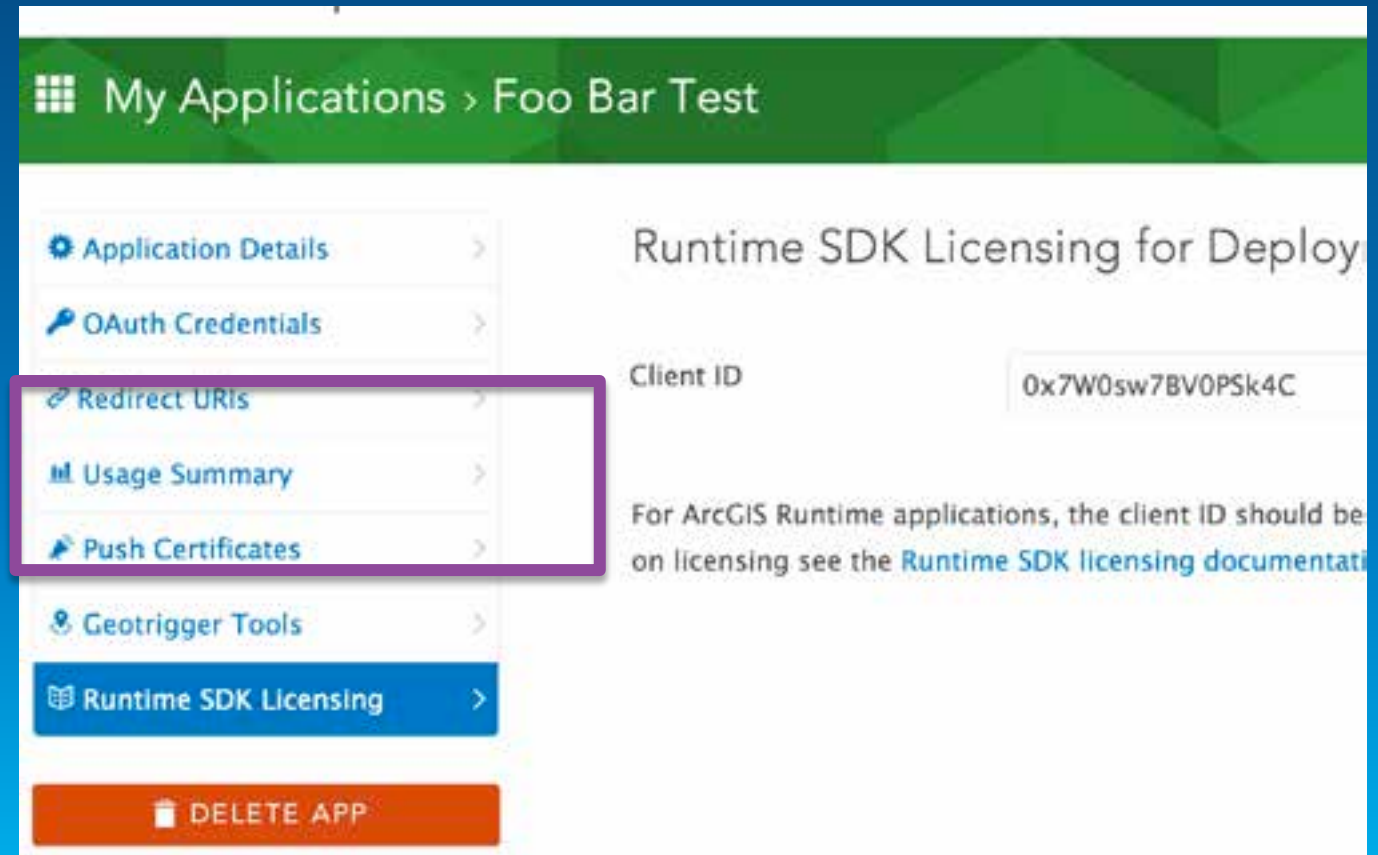
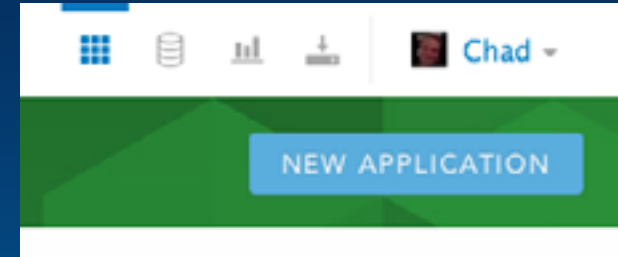
## License levels and functionality

License Level	Available functionality
Developer (development and testing only)	All functionality (watermarks and debug messages will be generated, nag screens with local server*)
Basic	Connected - all functionality Offline - map viewing only
Standard	Connected and offline - all functionality, includes: <ul style="list-style-type: none"><li>• Local locators (geocoding)</li><li>• Local routing</li><li>• Local geodatabase editing</li><li>• Local geodatabase sync operations</li><li>• Local server*</li></ul>

\* For those SDKs that support it

# How to license your app at the basic level

- <http://developers.arcgis.com>
- Under Application section, create a New Application (or select existing)
- Click on Runtime SDK Licensing
- Copy the Client ID and use it to set your clientID

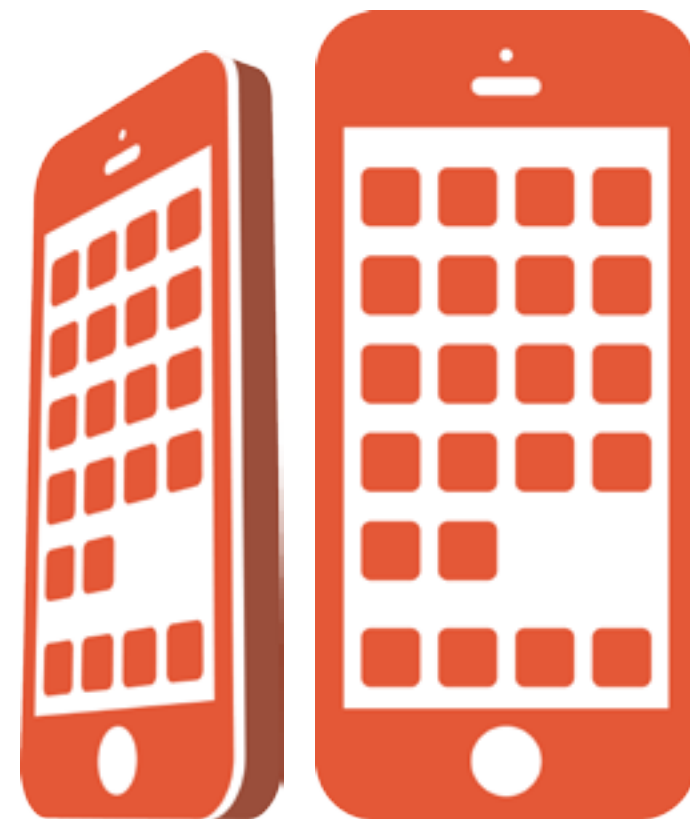


# How to license your app at the standard level

- **You have 2 options:**
  1. **Use an organization account (ArcGIS Online or Portal for ArcGIS)**
    - Requires users of your app to log in with their account
  1. **Use a license string obtained from Customer Service or your international distributor**
    - License burnt into the app
    - Extensions can also be added with this option

**For more info speak to sales or product management**

**One more thing**



# Esri GeoChase - Get in on the Chase!

- A geospatial scavenger hunt around Palm Springs, powered by the Esri® Geotrigger Service.
- Free download in the iOS App Store and Google Play
- Register for the contest to win some great prizes!
- For more information
  - Apps and SDKs island in the Esri Showcase
  - [App web page](#)
- Please encourage users to download and participate

Get in On the Chase



# Esri GeoChase iPhone/Android App - Contest

- **Every time you unlock a location in the app, you are entered into a prize drawing.**
- **Contest Prizes**
  - Grand Prize: 16 GB ASUS Nexus 7 and a ticket to the 2015 Dev Summit**
  - First Prize: 16 GB iPad Air**
  - Second Prize: (2) Wowee MiP Robots**
  - Third Prize: (10) Winners choice – Mapman T-shirt, Mapgirl T-shirt, Esri water bottle**
- **Winners announced at the closing session**

# ArcGIS Runtime Sessions



## ArcGIS Runtime SDK sessions Wednesday – Part 1

Session Name	Time	Location
Building WPF Apps with the New .NET ArcGIS Runtime SDK	10:30am – 11:30am	Pasadena/Ventura/Sierra
Building iOS Apps with ArcGIS Runtime SDK	10:30am – 11:30am 1:00pm – 2:00pm	Smoketree A – E Mesquite G-H
Animating Thousands of Graphics and Features with the ArcGIS Runtime SDK for Java	1:00pm – 2:00pm	Demo Theater 1 – Oasis 1
Building Mac Apps with ArcGIS Runtime SDK	1:00pm – 2:00pm	Mojave Learning Center
Building Windows Store and Windows Phone Apps with ArcGIS Runtime SDK	1:00pm – 2:00pm	Primrose C/D
Getting Started with ArcGIS Runtime SDK for Qt	1:00pm – 2:00pm	Smoketree F



## ArcGIS Runtime SDK sessions Wednesday – Part 2

Session Name	Time	Location
20 Things You Didn't Know You Can Do with ArcGIS Runtime SDK for iOS	2:30pm – 3:00pm	Demo Theater 1 – Oasis 1
Building Android Apps with ArcGIS Runtime SDK	2:30pm – 3:30pm	Smoketree A – E
Building Offline Apps for iOS and the Mac	2:30pm – 3:30pm	Mojave Learning Center
Building Qt Apps with ArcGIS Runtime SDK	2:30pm – 3:30pm	Smoketree F
Building WPF Apps with Runtime SDK	2:30pm – 3:30pm	Demo Theater 2 – Oasis 1
Building Java Apps with ArcGIS Runtime SDK	4:00pm – 5:00pm	Smoketree F

## ArcGIS Runtime SDK sessions Wednesday – Part 3

Session Name	Time	Location
Building Offline Apps with ArcGIS Runtime SDK – Part 1	4:00pm – 5:00pm	Primrose B
Building Offline Apps with ArcGIS Runtime SDK – Part 2	5:30pm – 6:30pm	Primrose B

## ArcGIS Runtime SDK sessions Thursday –

Session Name	Time	Location
The Road Ahead: ArcGIS Runtime SDKs	8:30am – 9:30am	Primrose A
Everything (or Anything) You Wanted to Know about the ArcGIS Runtime SDKs	10:00am – 11:00am	Primrose A
Building Windows Store and Windows Phone Apps with ArcGIS Runtime SDK	1:00pm – 2:00pm	Mesquite B
Building iOS Apps with ArcGIS Runtime SDK	1:00pm – 2:00pm	Mesquite GH
Migrating Your WPF Apps to the New ArcGIS Runtime SDK for .NET	1:00pm – 2:00pm	Pasadena/Ventura/Sierra
Building Android Apps with ArcGIS Runtime SDK	2:30pm – 3:30pm	Mesquite GH
Building WPF Apps with the New .NET ArcGIS Runtime SDK	2:30pm – 3:30pm	Mesquite B

# Questions?



<http://flowchainsensei.files.wordpress.com/2012/09/megaphone.jpg>



Understanding our world.