



by



Diego Bonilla  
@dbonillanareia

# Xamarin – Your Complete Mobile Solution



Develop



Test



Build



Distribute



Monitor

# Develop



# What is Native?

?

?

?

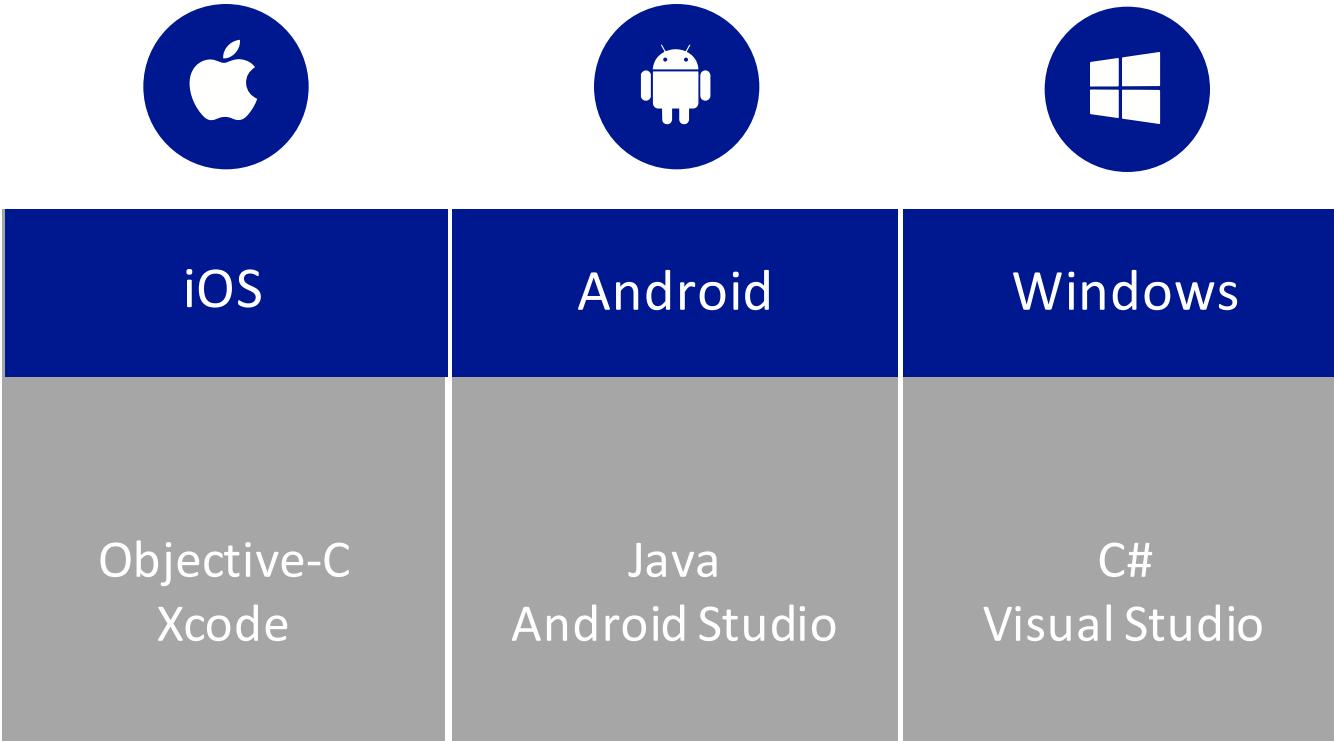


## Quest for a Superbee

Can the world's most important pollinators be saved? How scientists and breeders are trying to create a

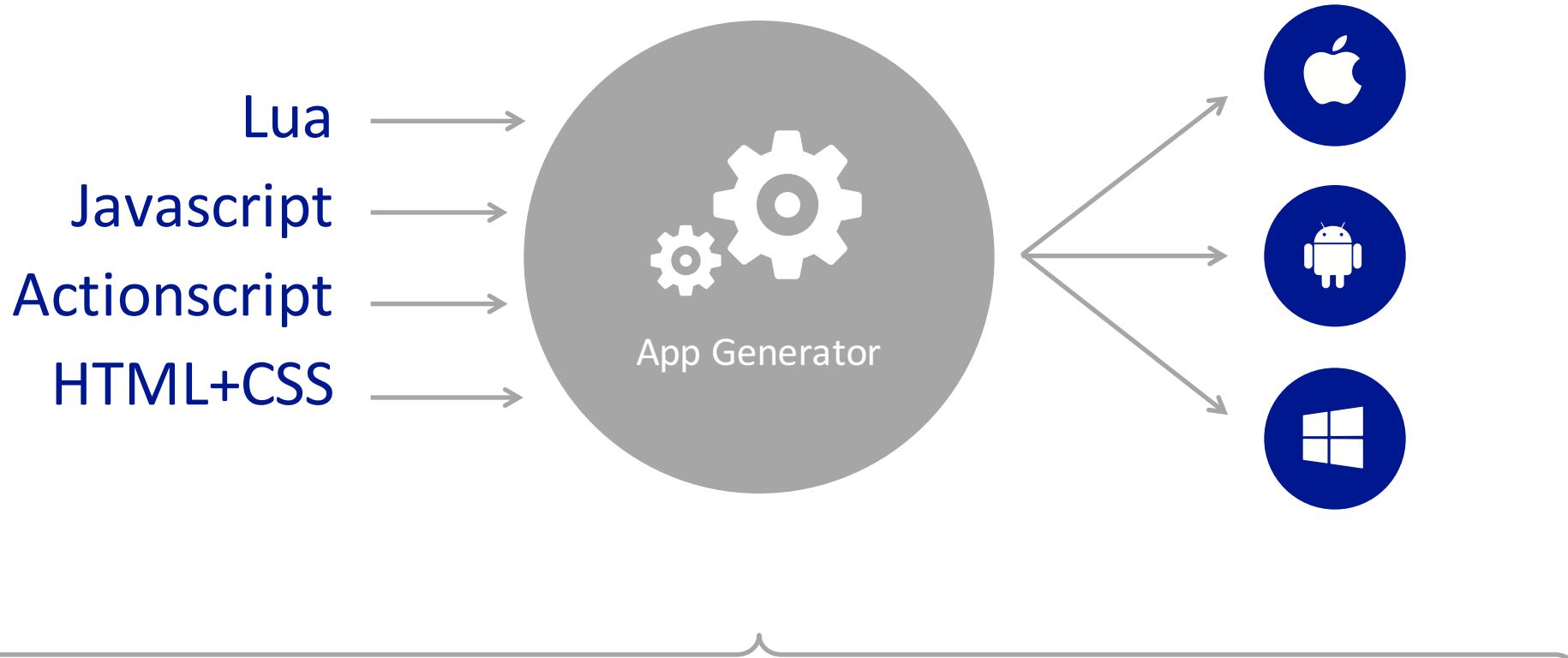
# Architecting Mobile Apps

# Silo Approach

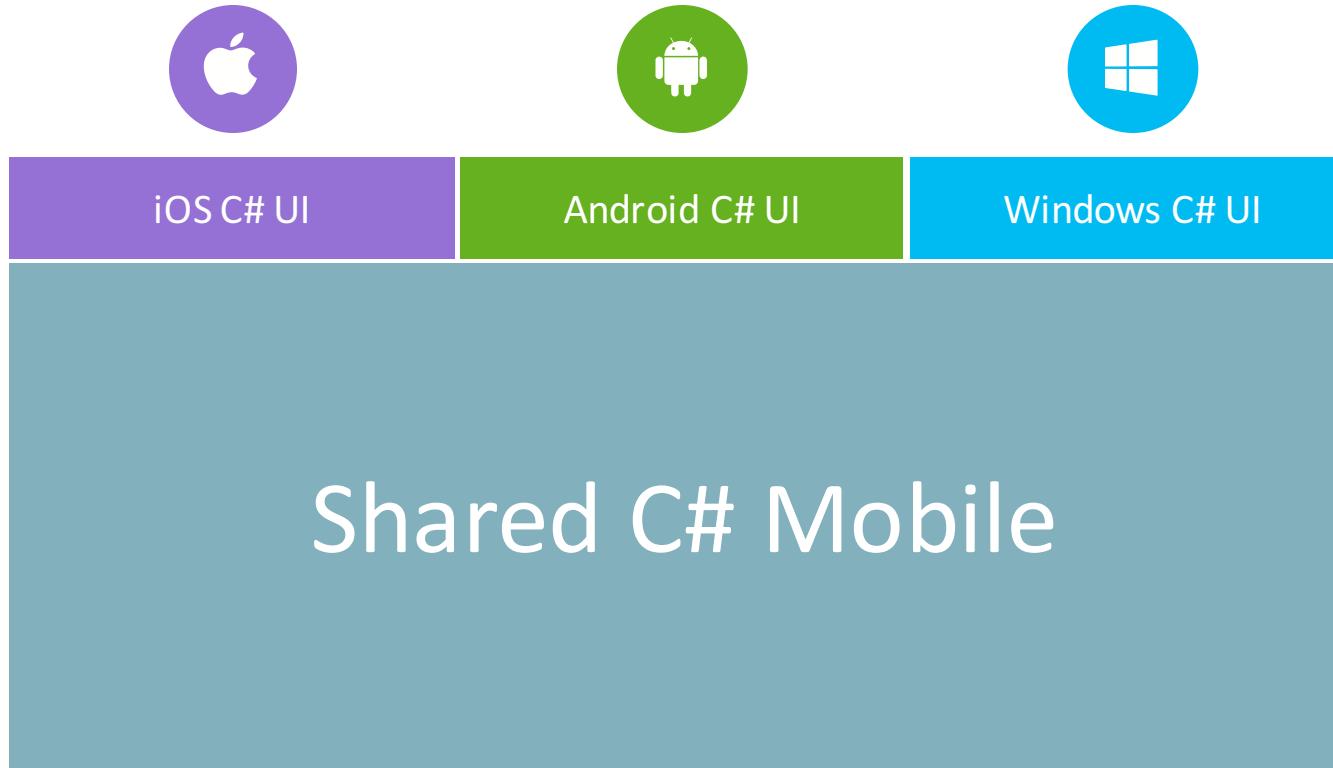


No shared code • Many languages & development environments • Multiple teams

# Write Once, Run Anywhere

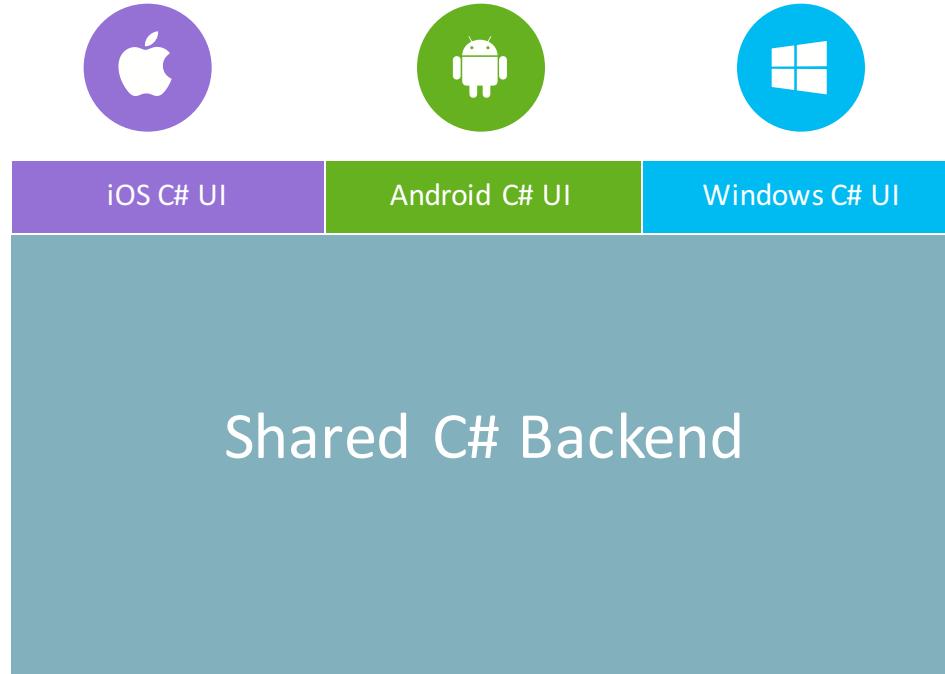


# Xamarin's Unique Approach

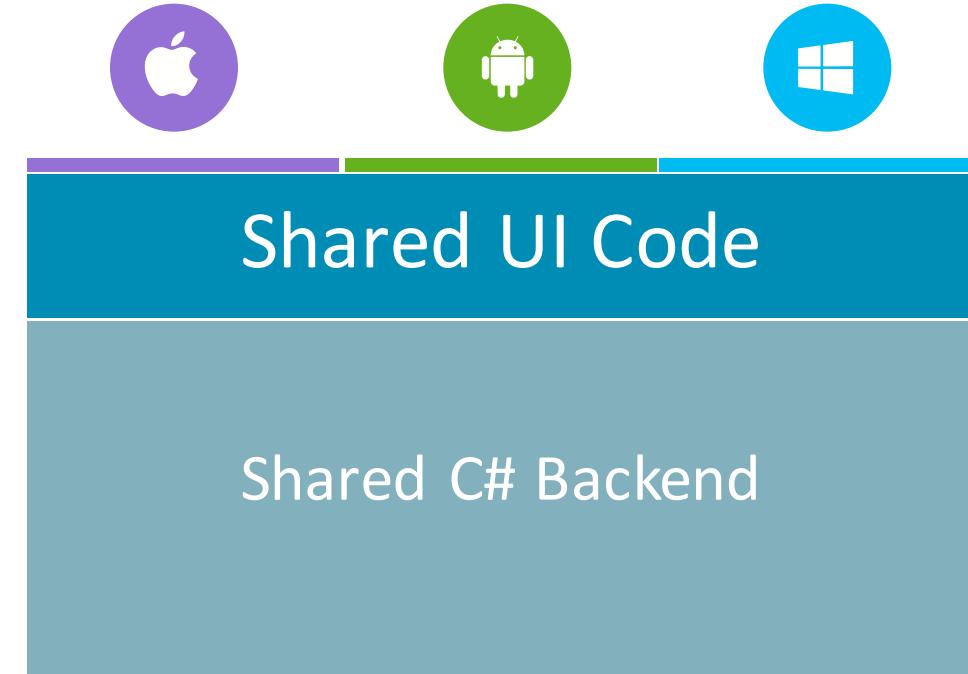


Shared C# codebase • 100% native API access • High performance

# Xamarin + Xamarin.Forms

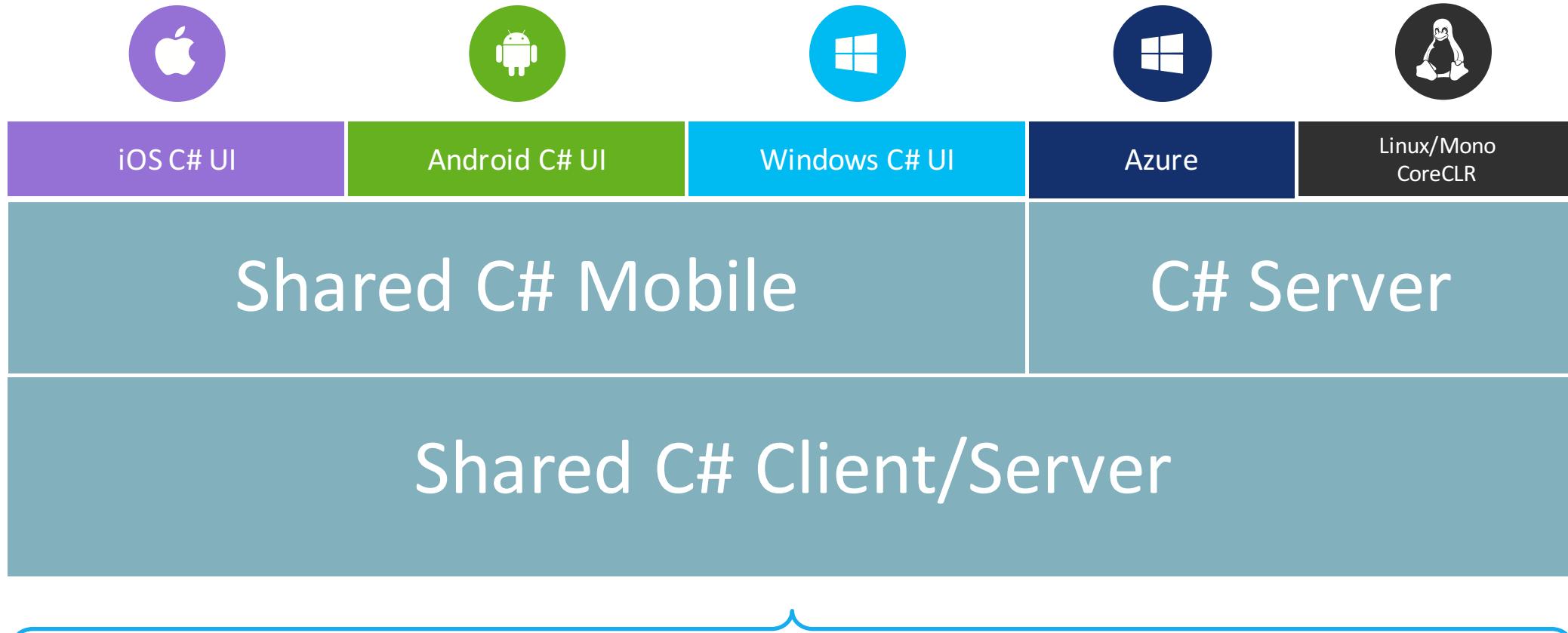


Traditional Xamarin Approach



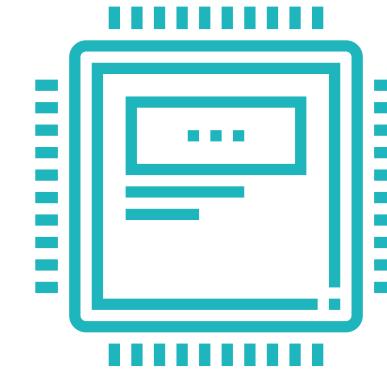
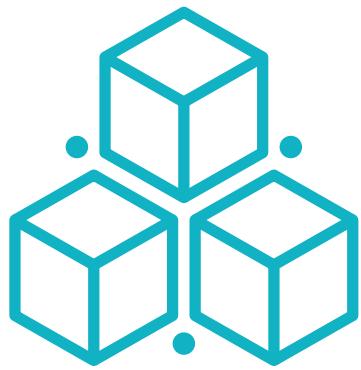
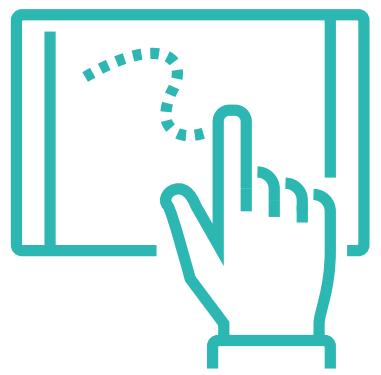
With Xamarin.Forms:  
More code-sharing, all native

# Xamarin's Unique Approach



Shared C# codebase • 100% native API access • High performance

# Why Xamarin



Xamarin is included  
in Visual Studio



NATIVE  
EVERYWHERE  
OPEN SOURCE

# Open Source – open.xamarin.com



Xamarin SDK

Documentation

Community

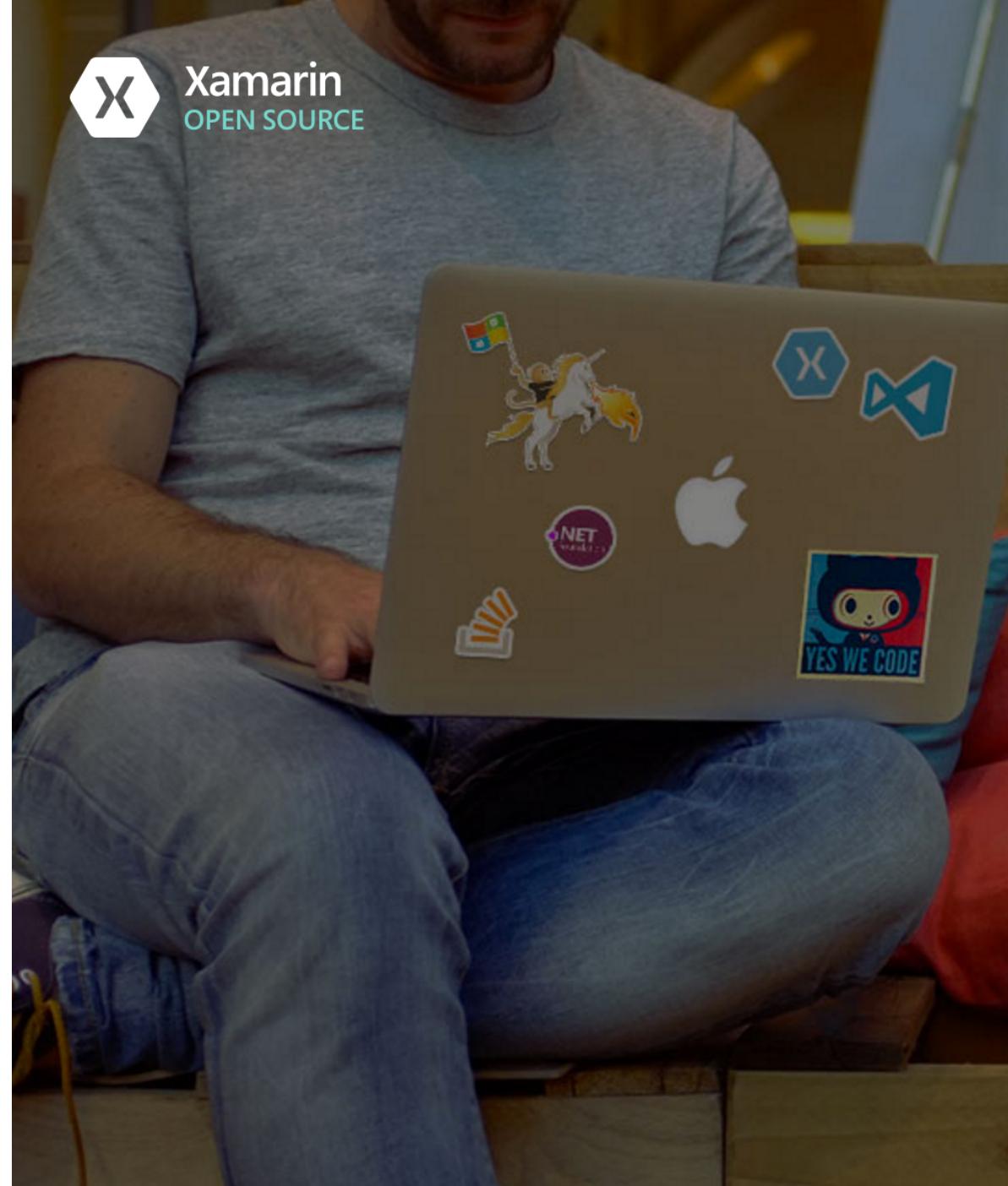
Contribute

Build the future of apps  
with Xamarin.

Xamarin SDK is now fully available under the MIT license.

# Open Source

- Xamarin.iOS
  - Xamarin.Mac
  - Xamarin.Android
  - Xamarin.Forms
  - Bindings & Plugins
- 
- Getting Started
  - Contribution Guides





Write Everything in C#  
C# Now Runs on 2.6+ Billion Devices

# Why C#?

# C# is Awesome

```
from p in Table<Person> ()  
    where p.ID == id  
    select p;
```

## LINQ Support

```
var doc = XDocument.Load(url);  
foreach(var item in doc.Root.Elements()) {  
    var text = item.Value;  
}
```

## Work with XML Easily

```
button.TouchUpInside += (s, o) => {  
    message.Text = "Hello!";  
};
```

## Event Handling & Delegates

# JSON Made Easy

Json.NET offers simple conversations to/from JSON strings and .NET objects:

```
public class Person
{
    public string Name { get; set; }
    public DateTime Birthday { get; set; }
}
var person = new Person { Name = "Bob", Birthday = new DateTime (1987, 2, 2) };
var output = Newtonsoft.Json.JsonConvert.SerializeObject (person);

person = Newtonsoft.Json.JsonConvert.DeserializeObject<Person> (output);
Console.WriteLine ("{0} - {1}", person.Name, person.Birthday);
```

# See the Different – Classes & Methods

```
// Objective-C

@interface Person : NSObject
@property (strong, nonatomic) NSString *name;
@end

@implementation Person
- (id)initWithName:(NSString *)name {
    self = [super init];
    if (self) {
        self.name = name;
    }
    return self;
}

+ (NSArray *)getNames {
    NSArray *people = @[
        [[Person alloc] initWithName:@"David"],
        [[Person alloc] initWithName:@"Vinicius"],
        [[Person alloc] initWithName:@"Serena"],
    ];
    NSMutableArray *names = [NSMutableArray array];
    [people enumerateObjectsUsingBlock:^(Person *person,
                                         NSUInteger idx,
                                         BOOL *stop) {
        [names addObject:person.name];
    }];
    return names;
}
@end
```

```
// C# with Xamarin

class Person : NSObject {
    public string Name { get; set; }

    public static string[] GetNames() {
        var people = new[] {
            new Person { Name="David" },
            new Person { Name="Vinicius" },
            new Person { Name="Serena" },
        };
        return people.Select(person => person.Name).ToArray();
    }
}
```

# Async/Await

```
public async Task ExecuteGetPodcastsCommand()
{
    if (IsBusy)
        return;

    try
    {
        IsBusy = true;
        var client = new HttpClient();
        // Request from server podcast xml
        var podcastString = await client.GetStringAsync(PodcastUrl);

        // Parse Xml into data model and load into list
        var casts = await ParseXml(podcastString);

        foreach (var cast in casts)
        {
            Podcasts.Add(cast);
            FilteredPodcasts.Add(cast);
        }
    }
}
```

Write Beautiful & Maintainable Code

# Simplifying Native Methods with Async/Await

## Objective-C

```
[UIView animateWithDuration:0.2
    animations:^{
        view.alpha = 0.0;
    }
    completion:^(BOOL finished) {
        [view removeFromSuperview];
    }];
}
```

## C# with Xamarin

```
//Animate alpha to 0 asynchronously.
//await animation and then remove from superview
bool success = await UIView.AnimateAsync(2, () => { UIView.Alpha = 0; });
view.RemoveFromSuperview();
```

# See the Difference – Android ItemClick

## Java

```
listView.setOnItemClickListener(new OnItemClickListener() {  
    @Override  
    public void onItemClick(AdapterView<?> parent, View view, int position, long id) {  
  
        // Value of item  
        String itemValue = (String) listView.getItemAtPosition(position);  
  
        // Show Toats  
        Toast.makeText(getApplicationContext(),"Position :" + position + " ListItem : "  
            + itemValue , Toast.LENGTH_LONG).show();  
    }  
});
```

## C# with Xamarin

```
listView.ItemClick += (sender, args) => {  
  
    // Value of item  
    var itemValue = (string)listView.GetItemAtPosition(args.Position);  
  
    //Show Toast  
    Toast.MakeText(this, string.Format("Postition: {0} ListItem: {1}",  
        args.Position, itemValue), ToastLength.Long).Show();  
};
```

## C# & Async with Xamarin

```
listView.ItemClick += async (sender, args) => {  
  
    // Value of item  
    var itemValue = (string)listView.GetItemAtPosition(args.Position);  
  
    //Show Toast  
    Toast.MakeText(this, string.Format("Postition: {0} ListItem: {1}",  
        args.Position, itemValue), ToastLength.Long).Show();  
};
```

# How Xamarin Works

# Windows APIs

Microsoft.Phone	Microsoft.Networking	Windows.Storage	Windows.Foundation	Microsoft.Devices
System.Net	System	System.IO	System.Linq	System.Xml
System.Data	System.Windows	System.Numerics	System.Core	System.ServiceModel



C#

# iOS – 100% API Coverage

MapKit	UIKit	iBeacon	CoreGraphics	CoreMotion
System.Net	System	System.IO	System.Linq	System.Xml
System.Data	System.Windows	System.Numerics	System.Core	System.ServiceModel



C#

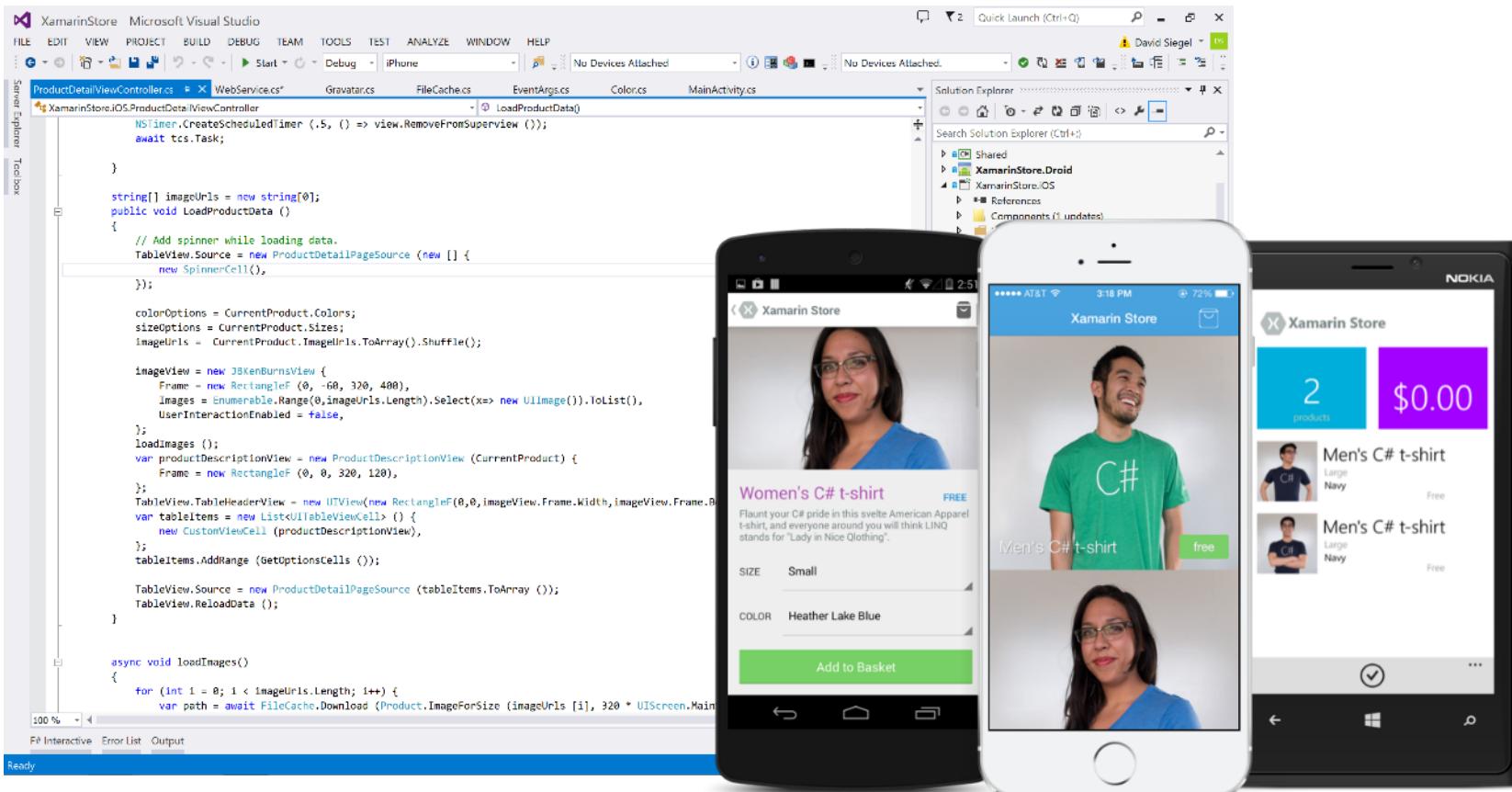
# Android – 100% API Coverage

Text-to-speech	ActionBar	Printing Framework	Renderscript	NFC
System.Net	System	System.IO	System.Linq	System.Xml
System.Data	System.Windows	System.Numerics	System.Core	System.ServiceModel

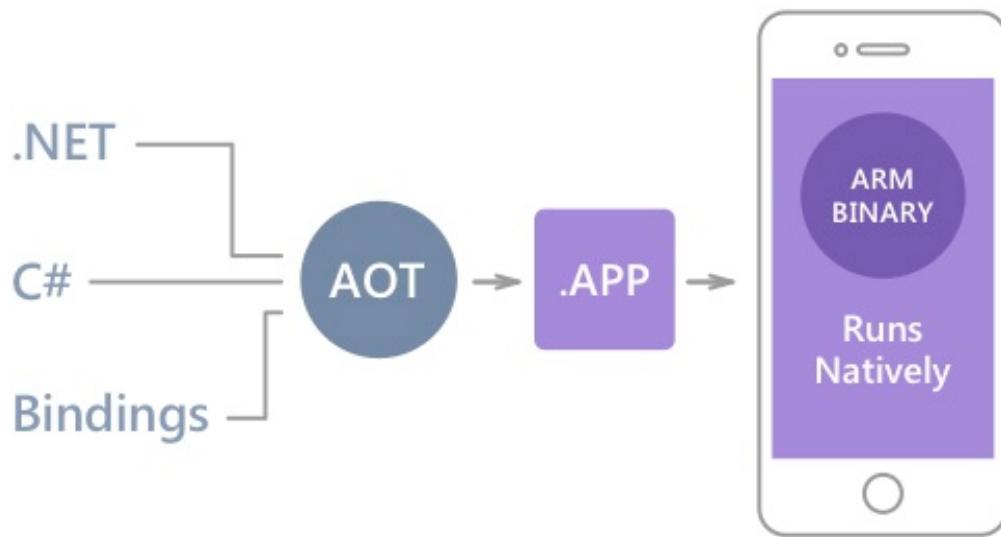


C#

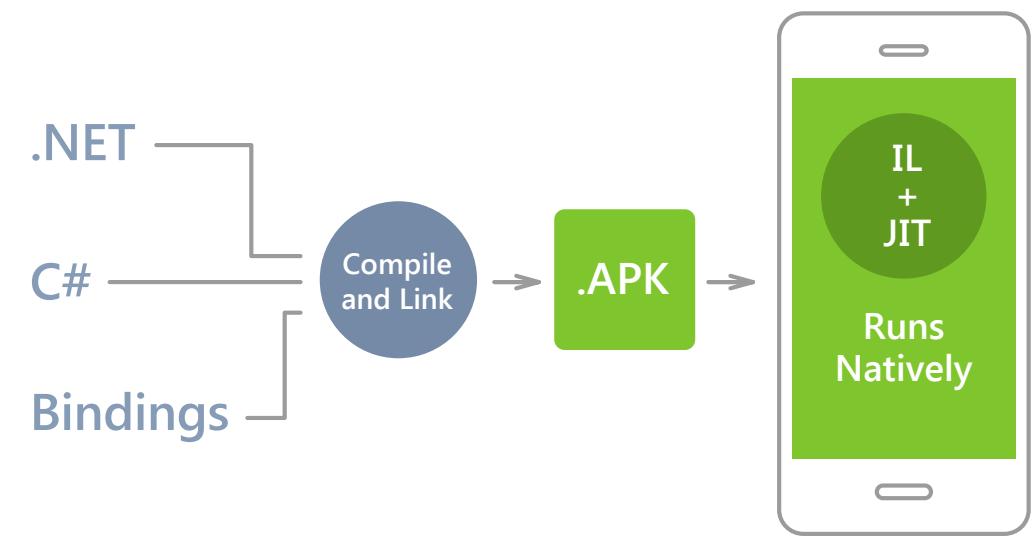
# Anything you can do in Objective-C, Swift, or Java can be done in C# and Visual Studio with Xamarin.



# Native Performance



Xamarin.iOS does full Ahead Of Time (AOT) compilation to produce an ARM binary for Apple's App Store.



Xamarin.Android takes advantage of Just In Time (JIT) compilation on the Android device.



# Always Up-to-Date

Same-day support:

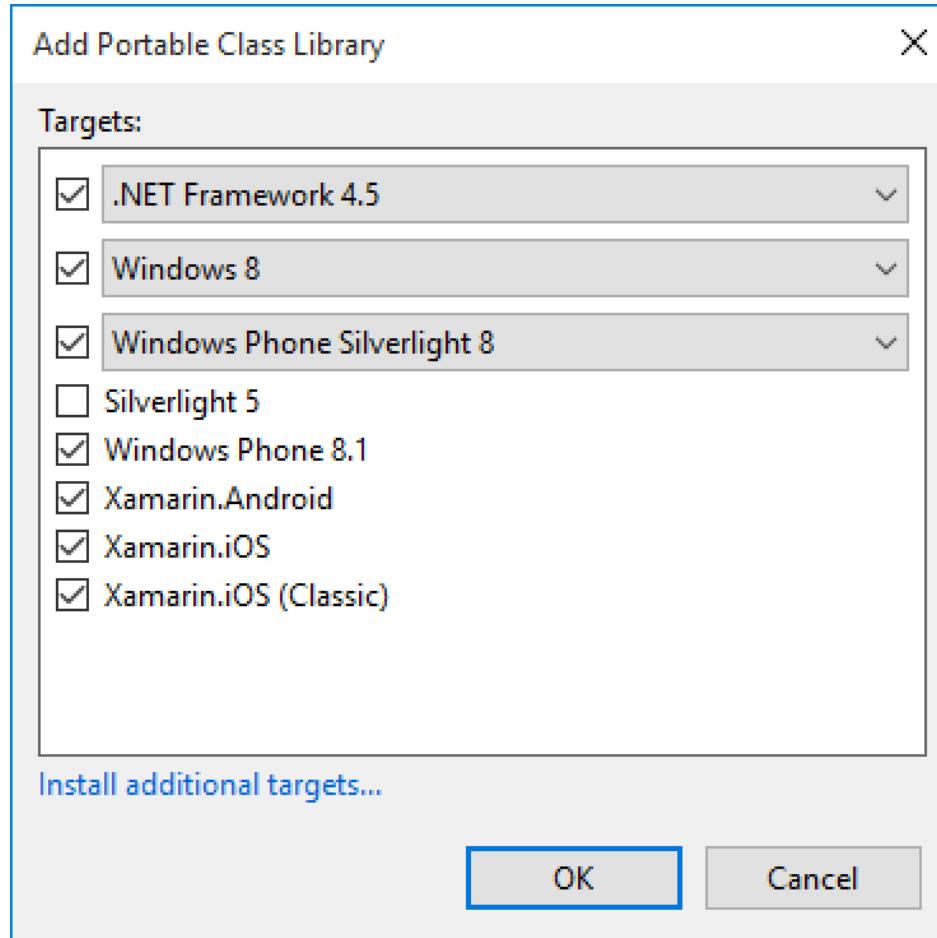
- iOS 5
- iOS 6
- iOS 7
- iOS 7.1
- iOS 8
- iOS 9

Full support for:

- Apple Watch
- Apple TV
- Google Glass
- Android Wear
- Amazon Fire TV
- and much more

# Sharing Code

# Portable Class Libraries



1 Assembly  
Multiple Platforms

Including:  
Xamarin.iOS and Xamarin.Android

# NuGet

Add Packages

nuget.org

xamarin

Xamarin.Social  
Share statuses, links, and images on Facebook, Flickr, Twitter, and more.

Xamarin.Auth  
A cross-platform API for authenticating users and storing their information.

Xamarin.Mobile  
Xamarin.Mobile is a library that exposes a single set of APIs for common mobile device functionality across iOS, Android and Windows Phone.

Xamarin.InAppBilling  
Component to assist in adding In-App Billing to a Xamarin application via Google Play Services.

Xamarin.FacebookBinding  
Xamarin Android Binding library for Facebook Android SDK.

BugSense plugin for Xamarin Android application  
BugSense is the leading crash reporting and quality metric tool. This is the official plugin for Xamarin Android applications.

Show pre-release packages

Each package is licensed to you by its owner. Microsoft is not responsible for, nor does it grant any licenses to, third-party packages.

Settings

PlanetXamarin.WinStore - Manage NuGet Packages

? X

xamarin

Created by: James Newton-King  
Id: Newtonsoft.Json  
Version: 6.0.3  
Last Published: 4/27/2014  
Downloads: 6189092  
License  
View License  
Project Information  
Report Abuse  
Description:  
Json.NET is a popular high-performance JSON framework for .NET  
Tags: json  
Dependencies:  
No Dependencies

Stable Only Sort by: Most Downloads

.NET EntityFramework  
Entity Framework is Microsoft's recommended data access technology for new applications.

Json.NET  
Json.NET is a popular high-performance JSON framework for .NET

Install

jQuery  
jQuery is a new kind of JavaScript Library.  
jQuery is a fast and concise JavaScript Library that simplifies HTML...

WebGrease  
Web Grease is a suite of tools for optimizing javascript, css files and images.

Microsoft ASP.NET MVC  
This package contains the runtime assemblies for ASP.NET MVC.

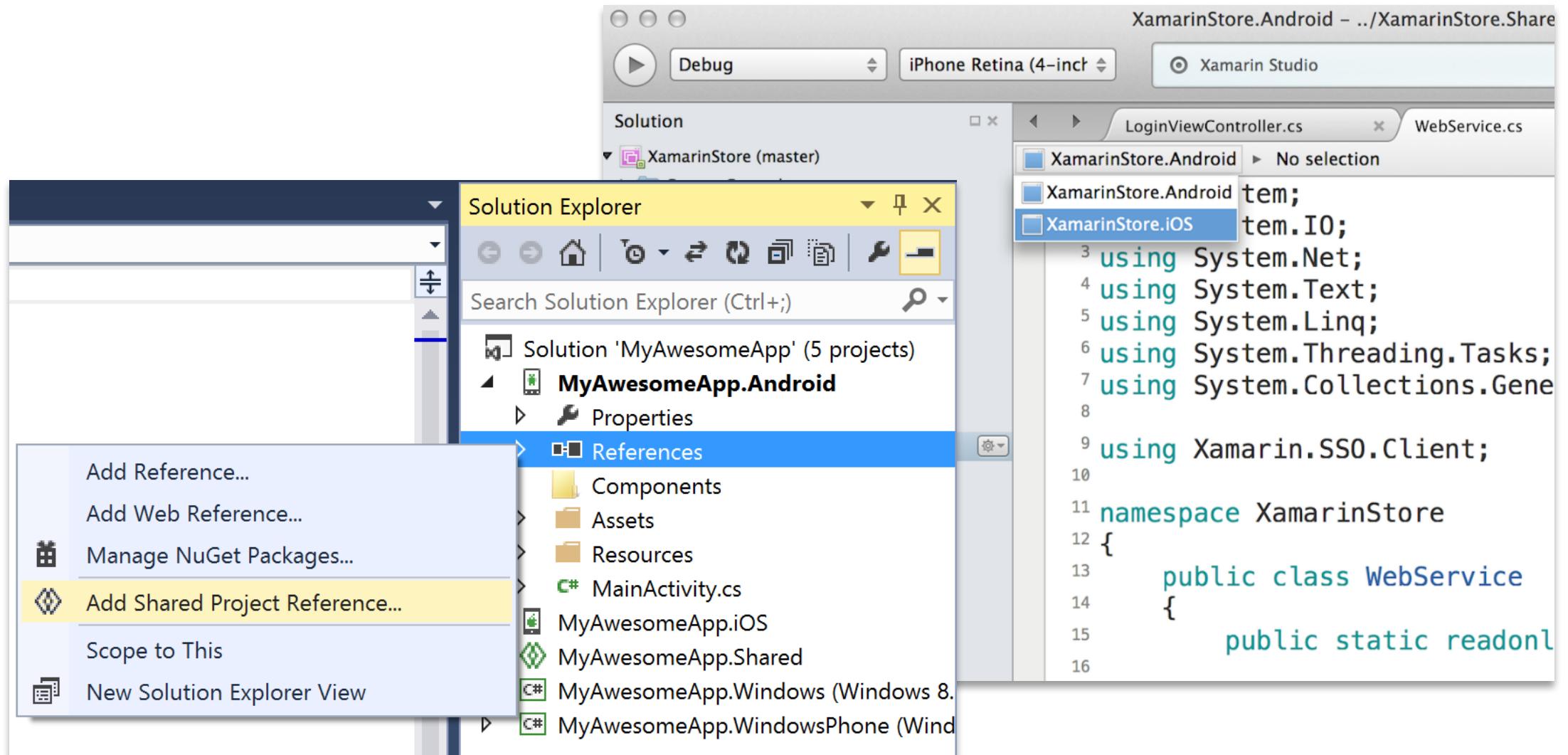
Microsoft HTTP Client Libraries  
This package provides a programming interface for modern HTTP/REST based applications.

Microsoft ASP.NET Web API 2.2  
This package contains everything you need to host ASP.NET Web API on IIS.

1 2 3 4 5

Close

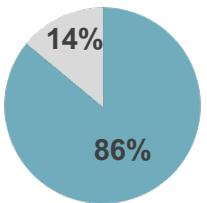
# Shared Projects



# Code Sharing Stats

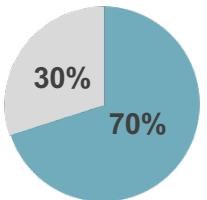
iCircuit

Android

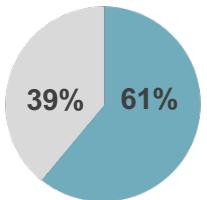


Touch Draw

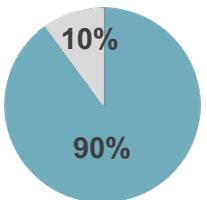
iOS



Mac

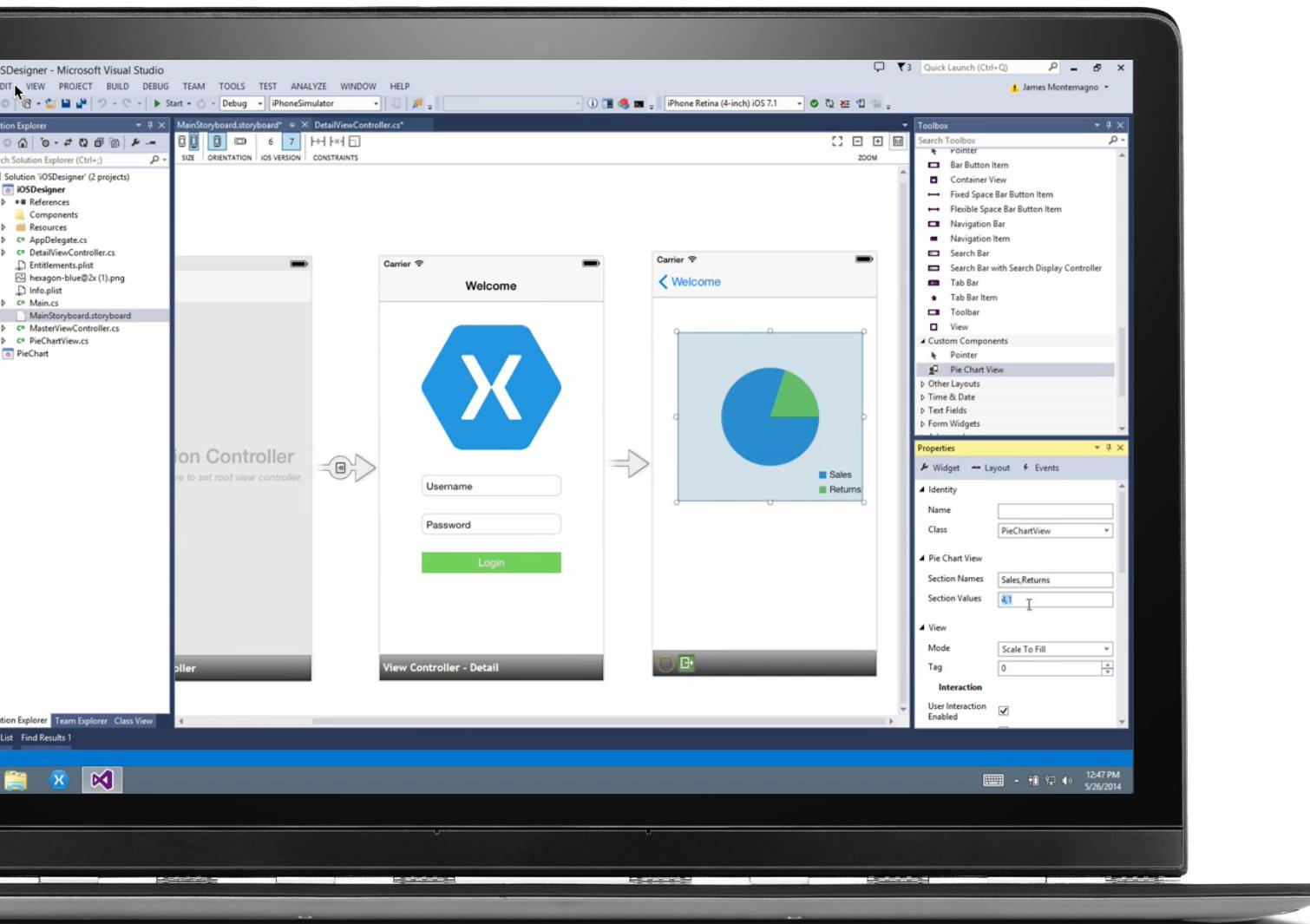


Windows Phone



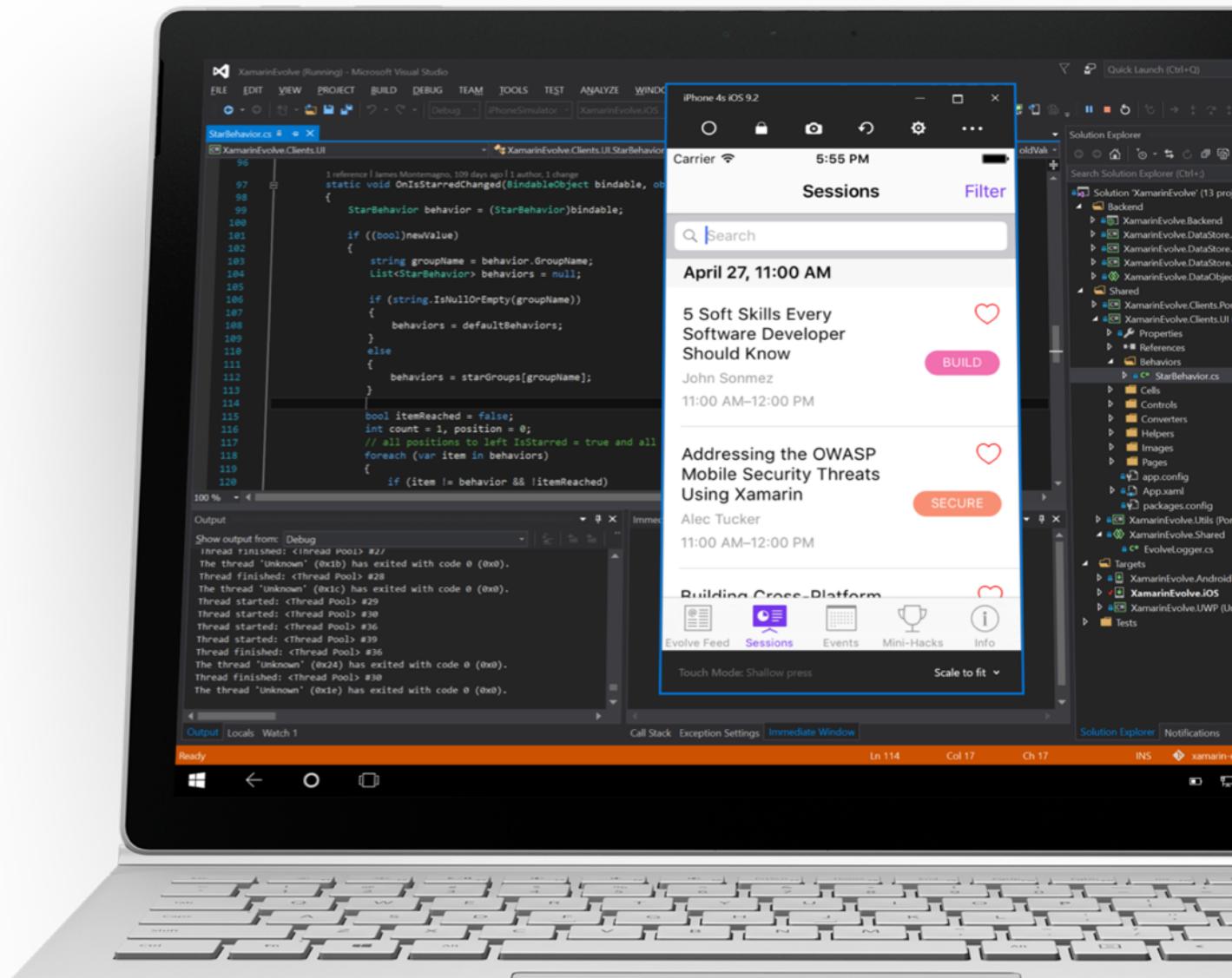
# Development Experience

# Visual Studio Integration



# Visual Studio iOS Simulator Remoting

- Multi-Touch Enabled
- Pressure Sensitive
- Super Fast
- Rotate, screenshots, location changes
- Never leave VS



# Visual Studio – Mac



Xamarin Studio Business

New Project

Choose a template for your new project

Multiplatform

- App
- Library
- Tests

iOS

- App
- Library
- Tests

tvOS

- App
- Library

Mac

- App
- Library

Other

- .NET
- ASP.NET
- Miscellaneous

C# ▾

Solution

- CoffeeCups (master)
  - CoffeeCups
  - CoffeeCups.Droid
  - CoffeeCups.iOS**
    - References
    - Components
    - Packages (6 updates)
    - Helpers
      - Authentication.cs
      - Settings.cs
    - Resources
      - Images.xcassets
      - LaunchScreen.xib
    - app.config
    - AppDelegate.cs
    - Entitlements.plist
    - Info.plist
    - Main.cs
    - packages.config
  - CoffeeCups.UITests
  - CoffeeCups.UWP

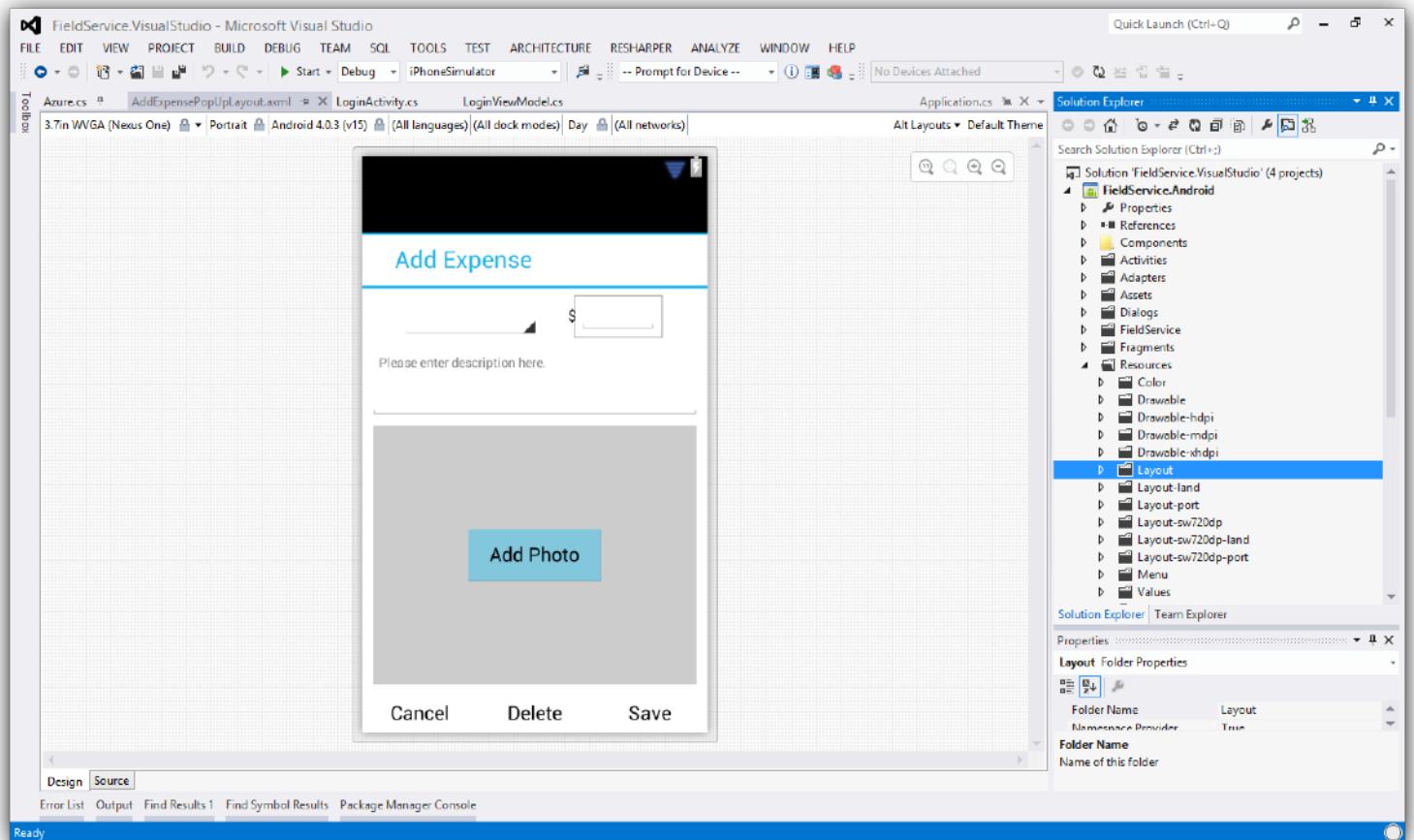
Authentication.cs

```
1 using System;
2 using System.Threading.Tasks;
3 using Microsoft.WindowsAzure.MobileServices;
4 using CoffeeCups.iOS;
5 using CoffeeCups.iOS;
6 using Foundation;
7 using Xamarin.Forms;
8
9 [assembly: Dependency(typeof(Authentication))]
10 namespace CoffeeCups.iOS
11 {
12     public class Authentication : IAuthentication
13     {
14         public async Task<MobileServiceUser> LoginAsync(MobileServiceClient client, MobileServiceAuthProvider provider)
15         {
16             try
17             {
18                 var result = await client.LoginAsync(provider);
19                 return result;
20             }
21             catch (Exception e)
22             {
23                 throw;
24             }
25         }
26     }
27 }
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45 }
```

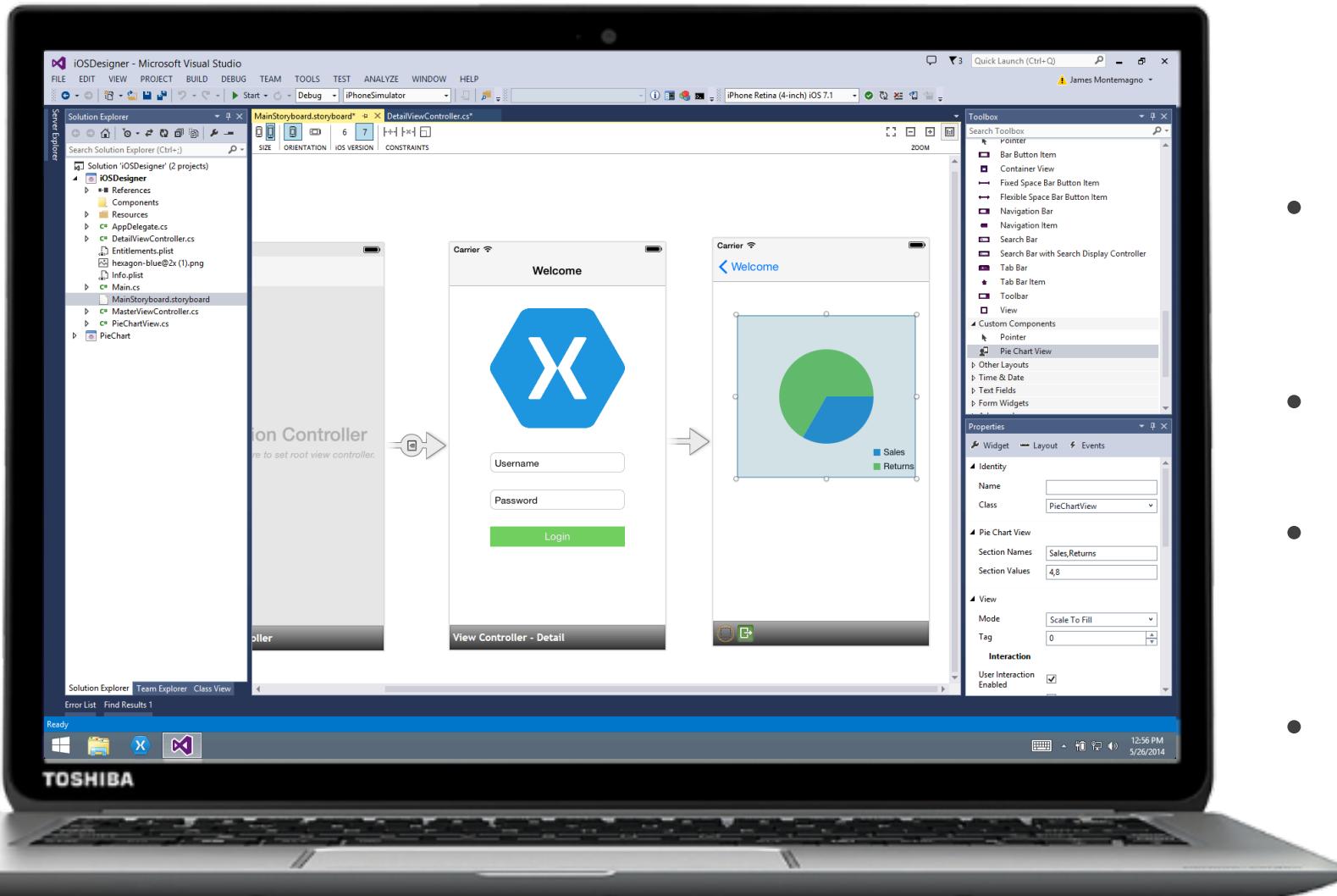
Source Changes Blame Log Cancel

# Android Designer

- Available in:
  - Xamarin Studio
  - Visual Studio
- Create UI with drag & drop simplicity
- Target multiple screen sizes, resolutions and Android versions
- Layouts saved in standard Android XML files

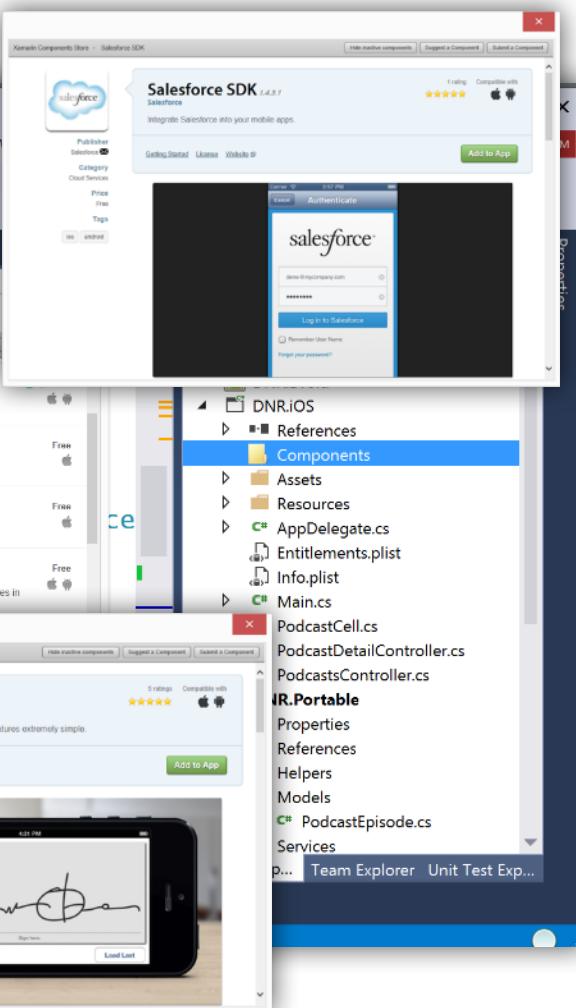
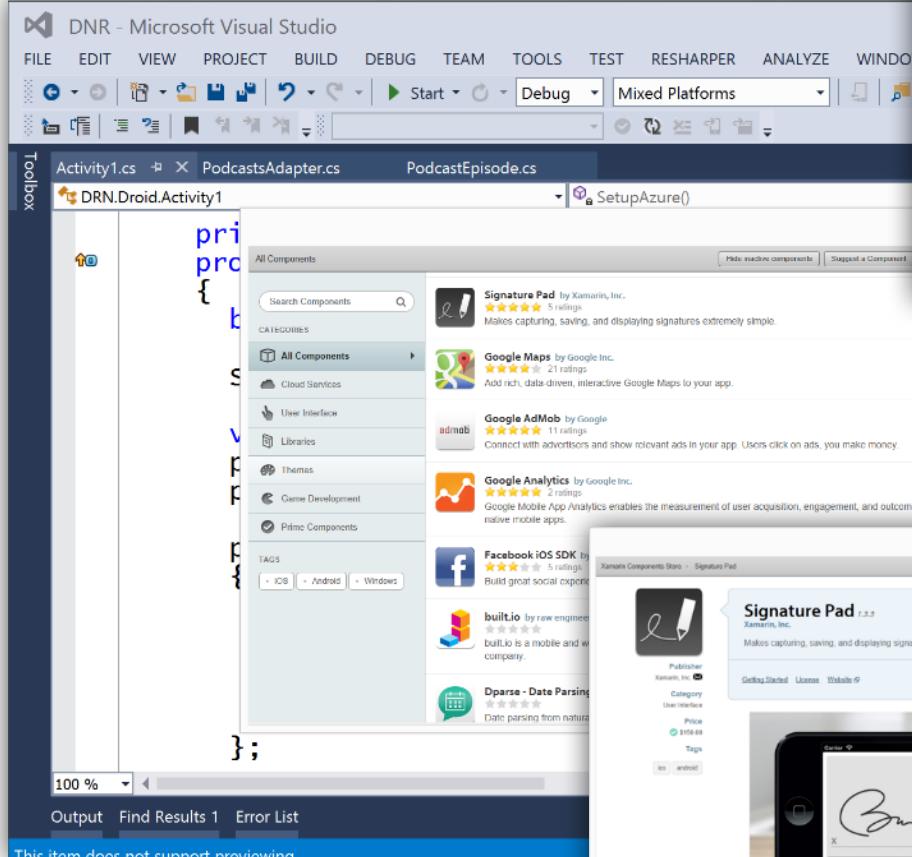


# Xamarin Designer for iOS



- World's first iOS Designer available in Xamarin Studio and Visual Studio
- Follows familiar Visual Studio designer idioms
- Supports all UIKit elements
- Edit custom and 3<sup>rd</sup> party components
- Live preview of changes to properties

# Xamarin Component Store

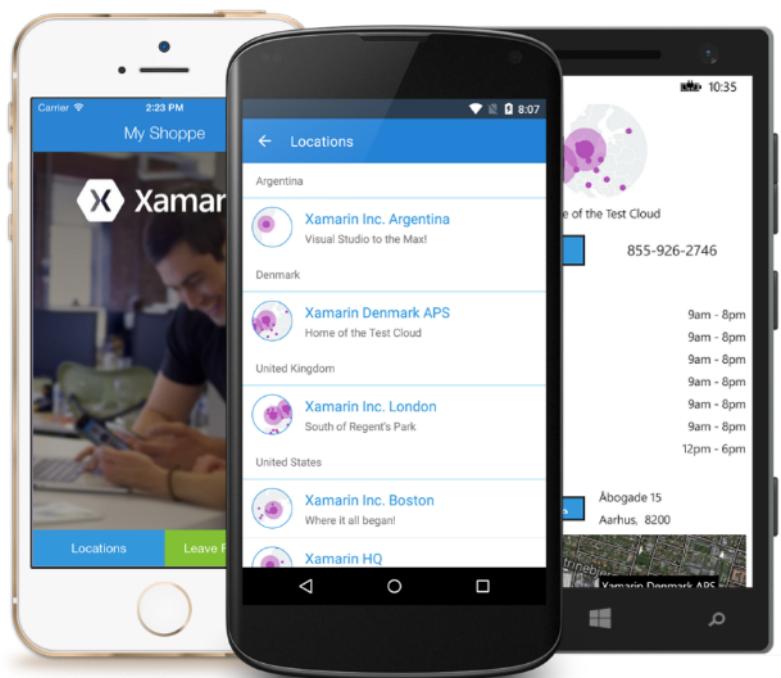


## Build Apps Faster

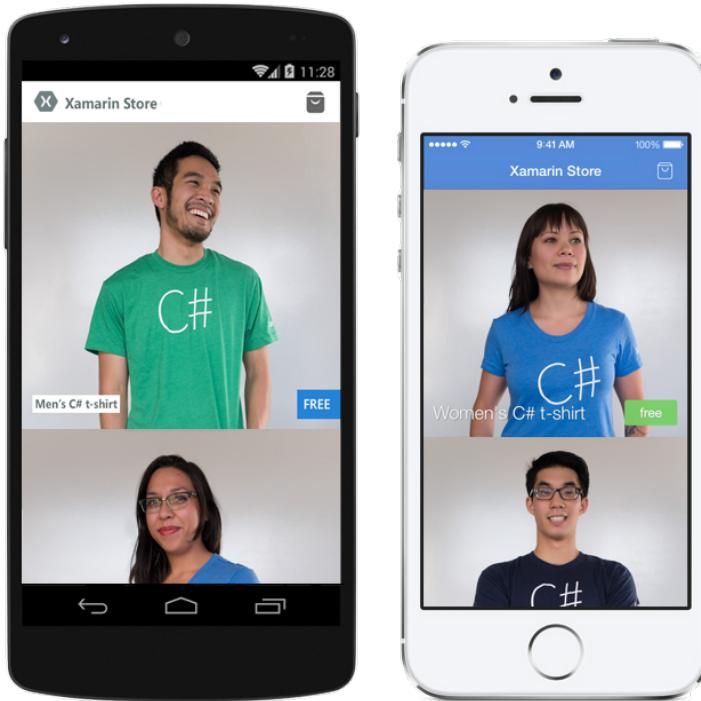
- Add high quality pre-built app components directly from Visual Studio and Xamarin Studio
- Beautiful, cross-platform UI controls, cloud services, and enterprise backend integrations are just a few clicks away

# Pre-built App Templates

- [Xamarin.com/prebuilt](http://Xamarin.com/prebuilt)



My Shoppe  
Connect with consumers



Store Application



Moments  
Photo Sharing App



Meetup  
@XamarinUY



# Thank You! Questions?

Diego Bonilla

---

[diego.bonilla@nareia.com.uy](mailto:diego.bonilla@nareia.com.uy)

@dbonillanareia