Building Cross-Platform Native Apps using Xamarin and C# (iOS, Android, Mac, & Windows Apps)

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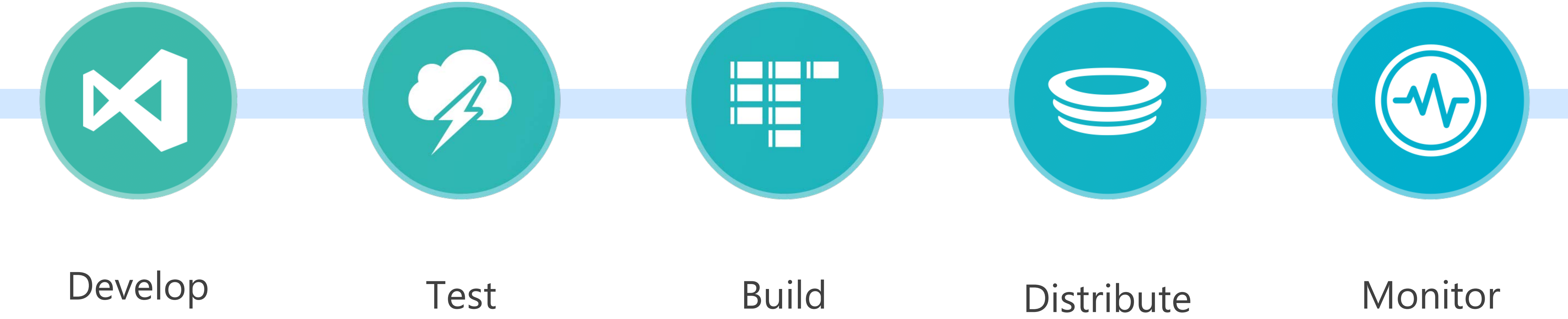
@narainabhishek | abnarain@microsoft.com

Xamarin – Your Complete Mobile Solution



Develop

Test

Build

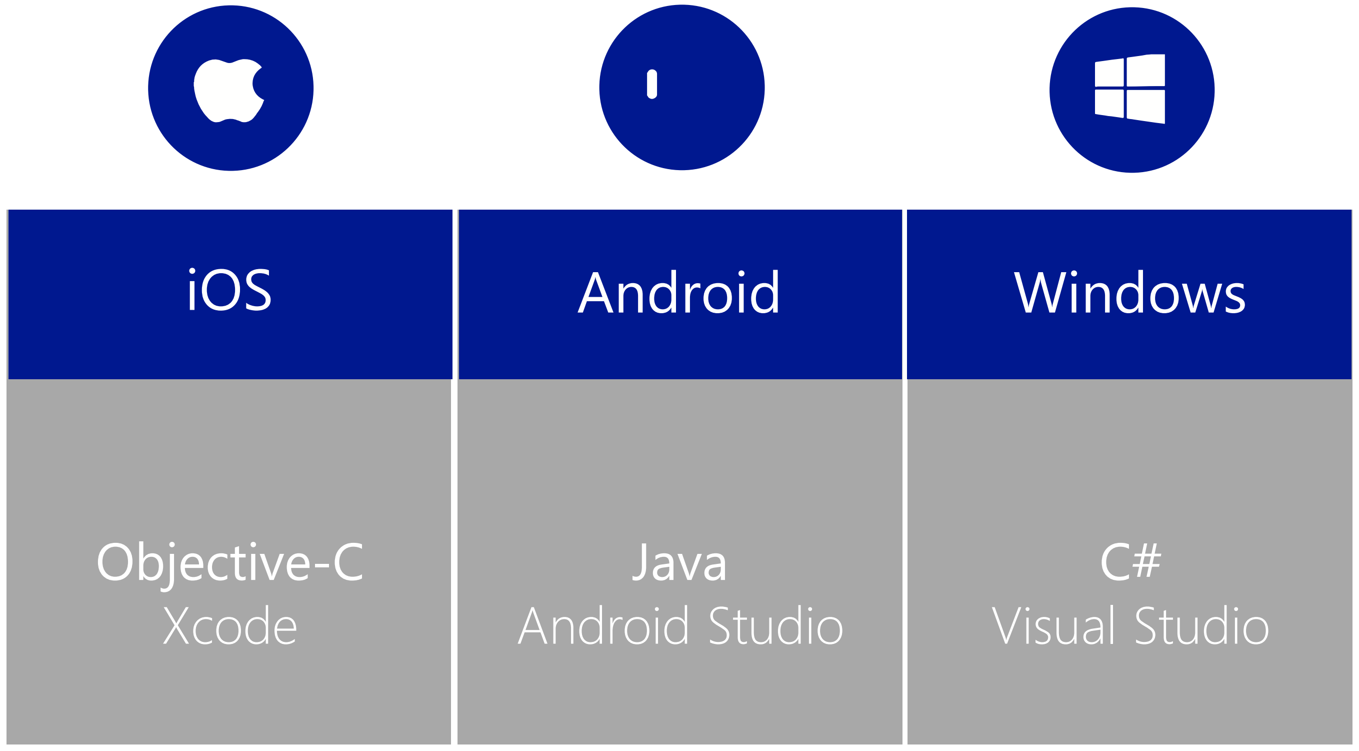
Distribute

Monitor

Develop

Architecting Mobile Apps

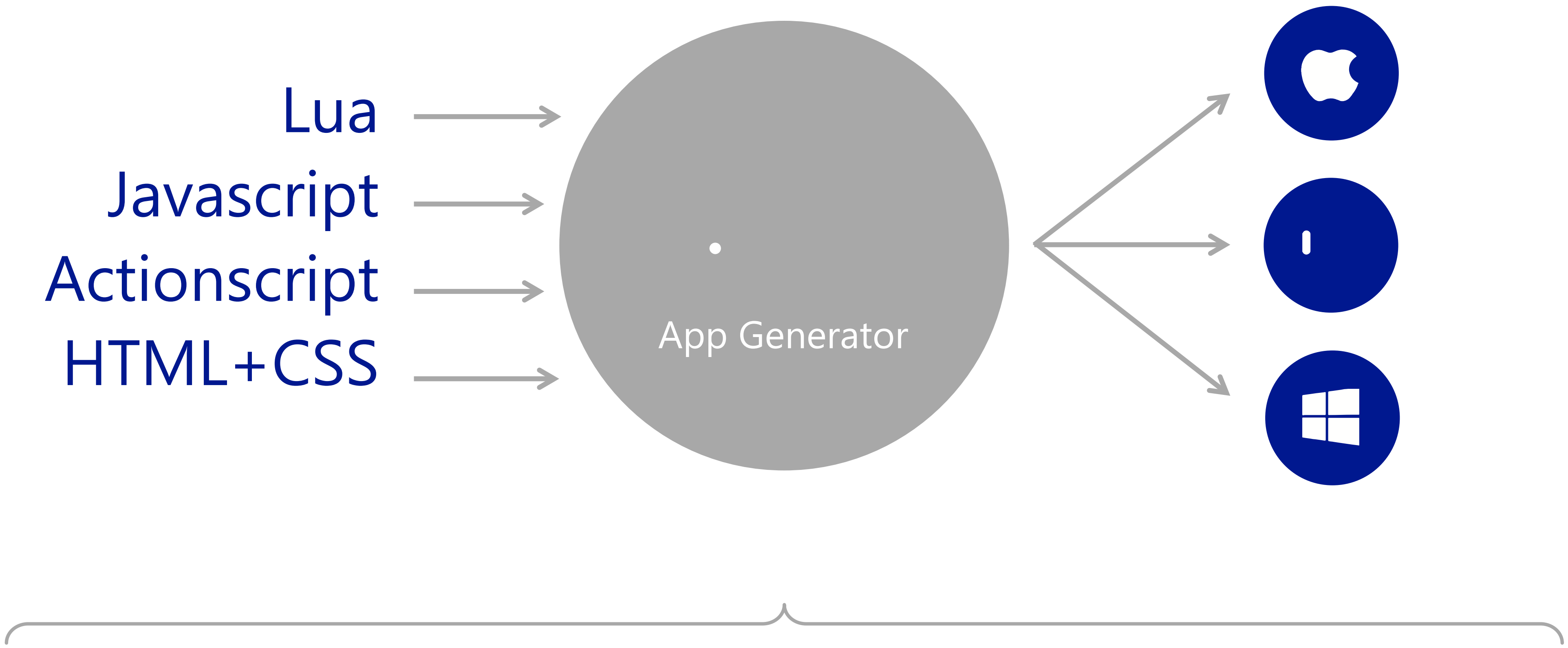
Silo Approach



iOS	Android	Windows
Objective-C Xcode	Java Android Studio	C# Visual Studio

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

Write Once, Run Anywhere



Lua

Javascript

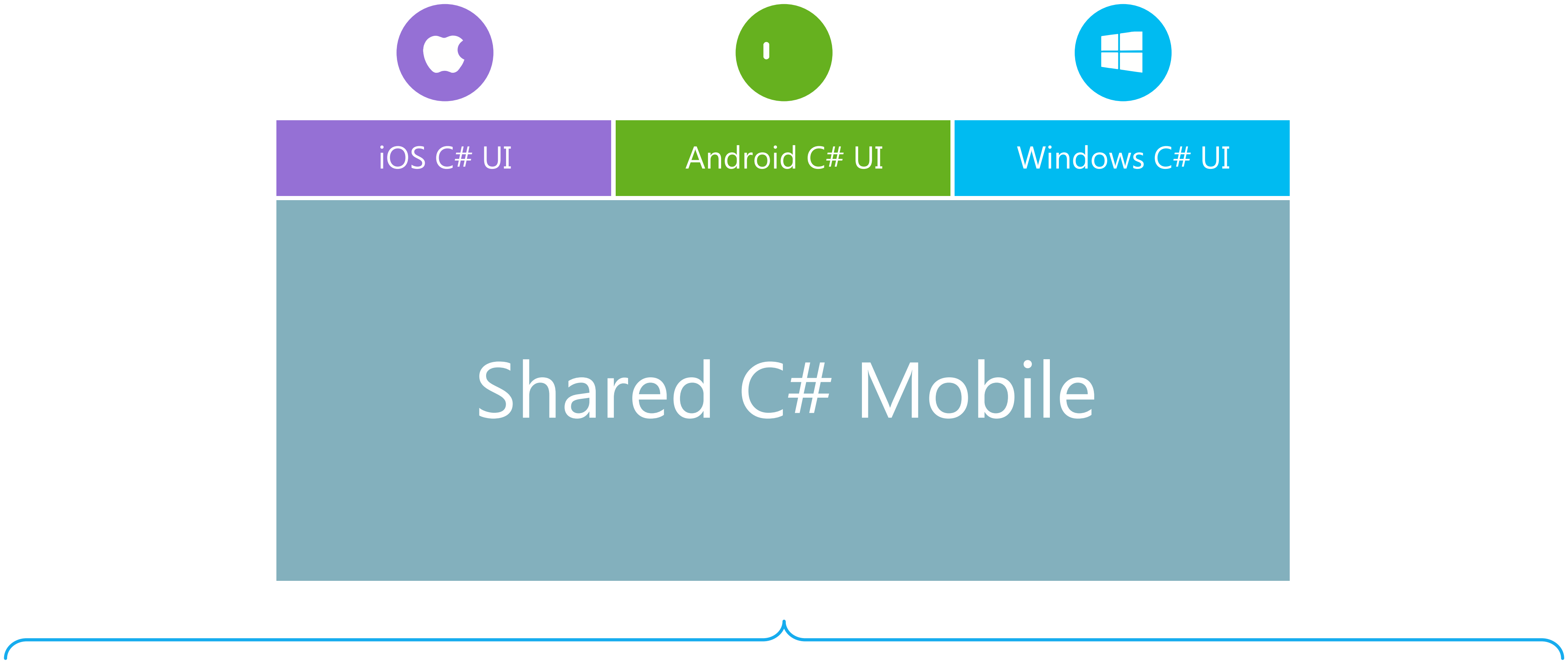
Actionscript

HTML+CSS

App Generator

Limited native API access • Slow performance • Poor user experience

Xamarin’s Unique Approach



iOS C# UI

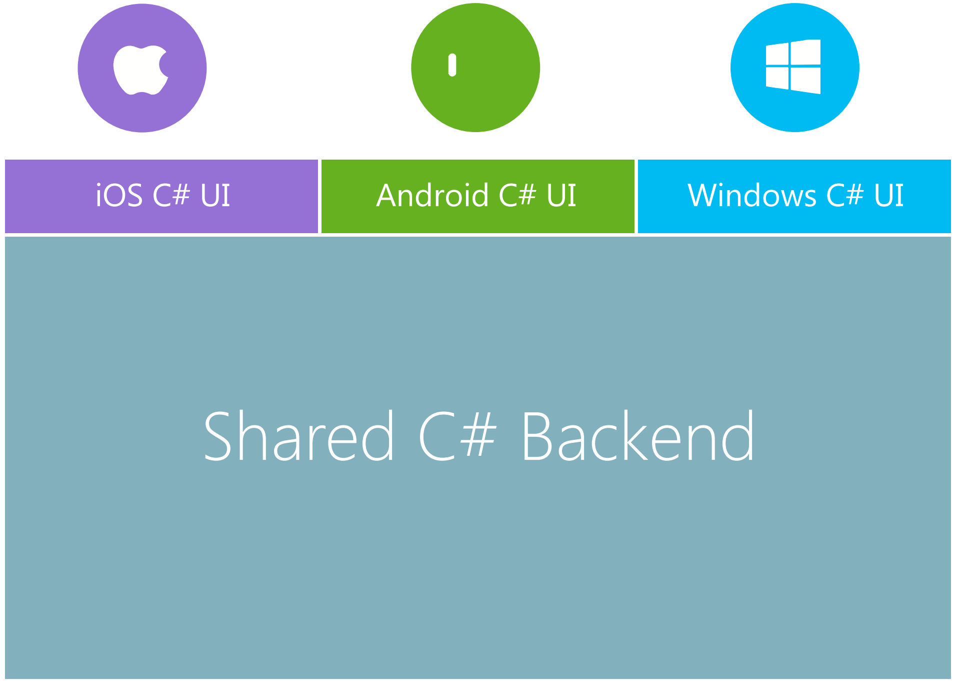
Android C# UI

Windows C# UI

Shared C# Mobile

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

Xamarin + Xamarin.Forms



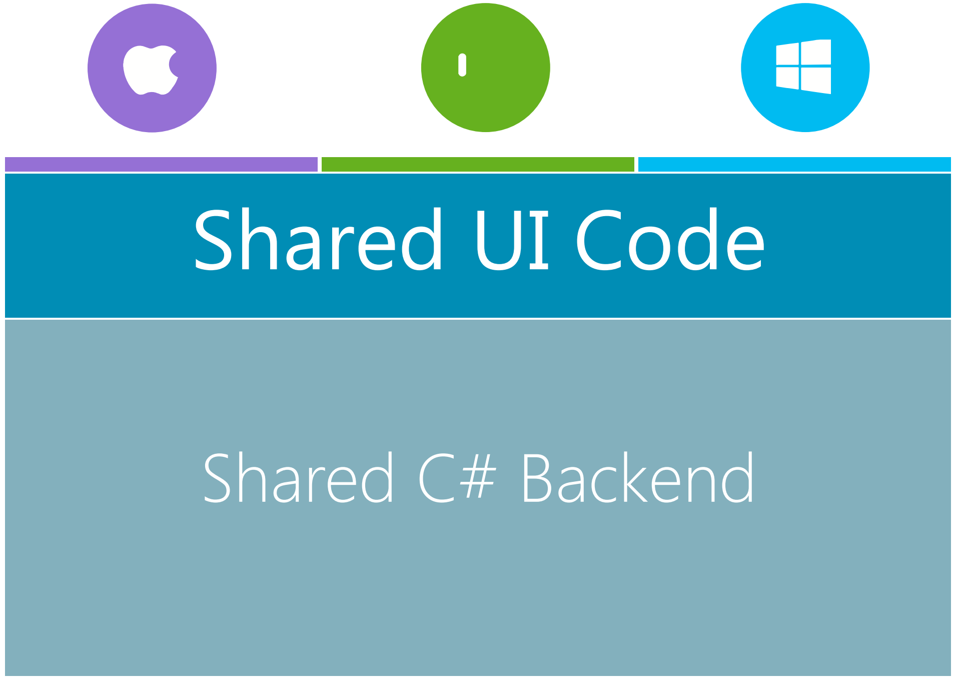
iOS C# UI

Android C# UI

Windows C# UI

Shared C# Backend

Traditional Xamarin Approach

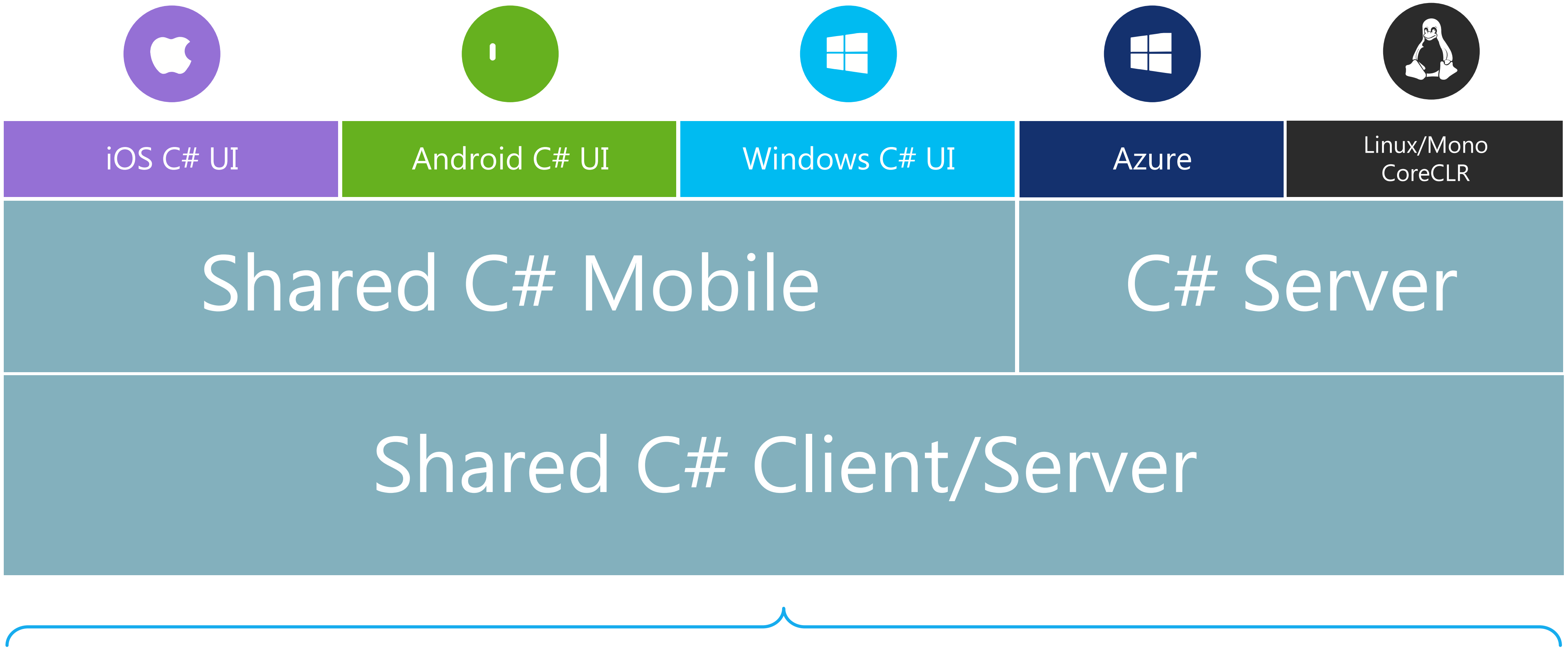


Shared UI Code

Shared C# Backend

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

Xamarin's Unique Approach



iOS C# UI

Android C# UI

Windows C# UI

Azure

Linux/Mono
CoreCLR

Shared C# Mobile

C# Server

Shared C# Client/Server

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

Xamarin is included in Visual Studio

.NET

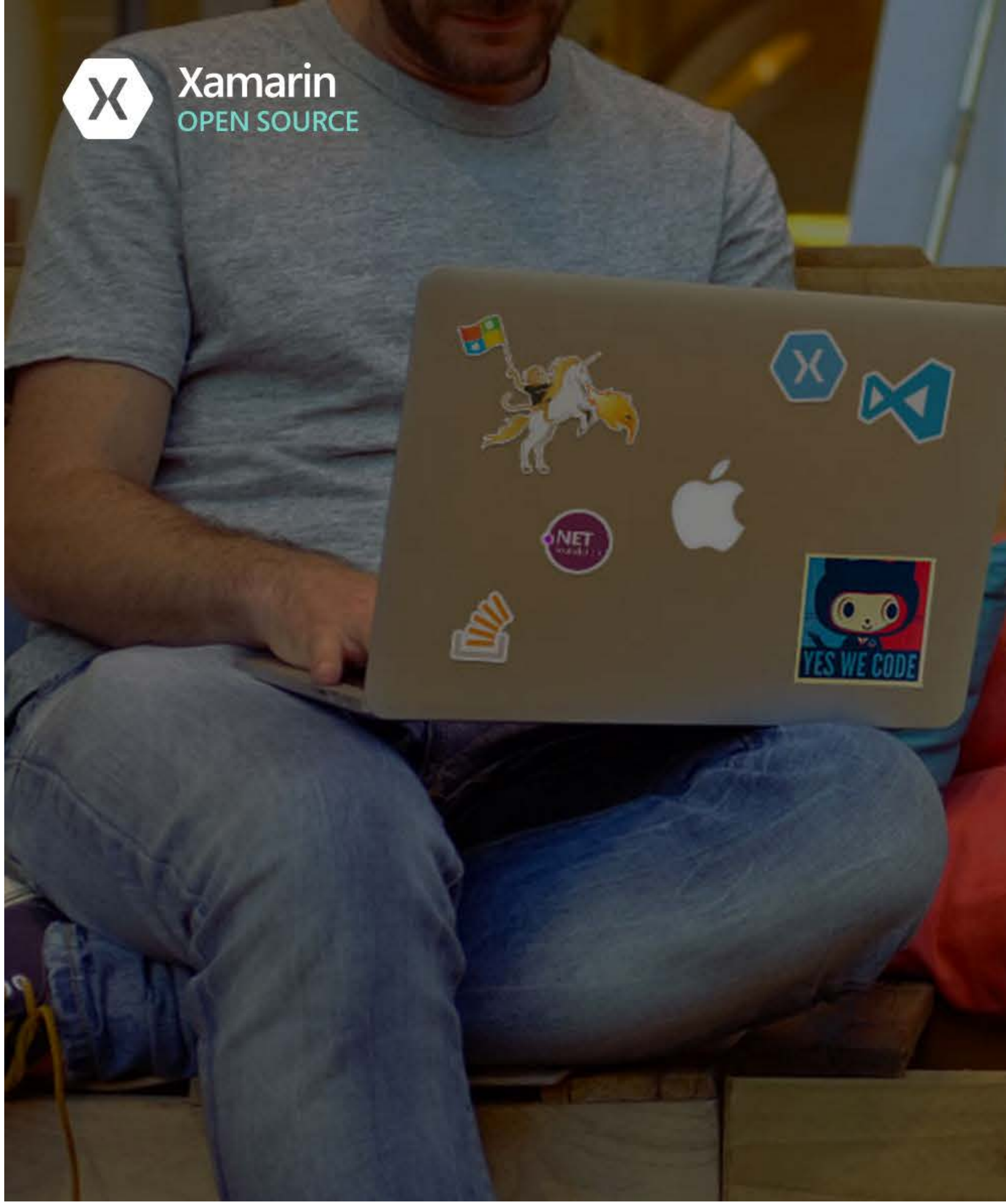
NATIVE
EVERYWHERE
OPEN SOURCE

Open Source

- Xamarin.iOS
- Xamarin.Mac
- Xamarin.Android
- Xamarin.Forms
- Bindings & Plugins

- Getting Started
- Contribution Guides

http://open.xamarin.com

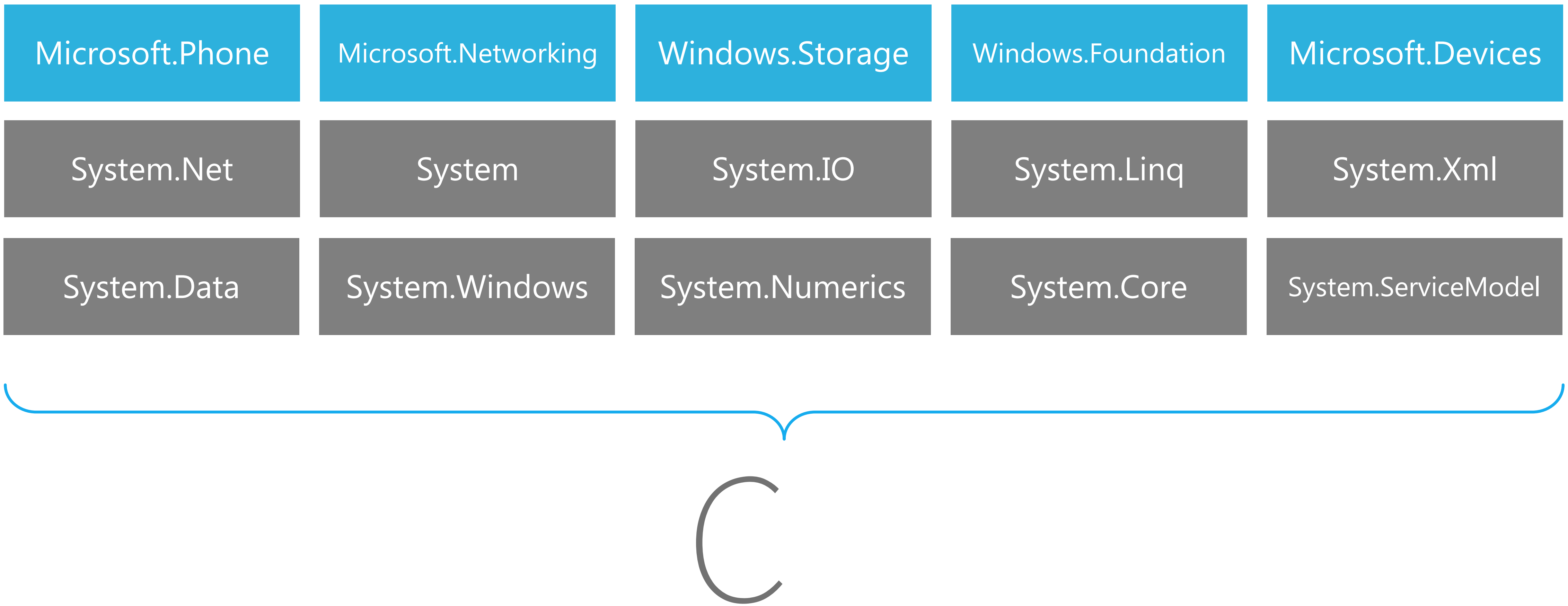


Write Everything in C#

C# Now Runs on 2.6+ Billion Devices

How Xamarin Works

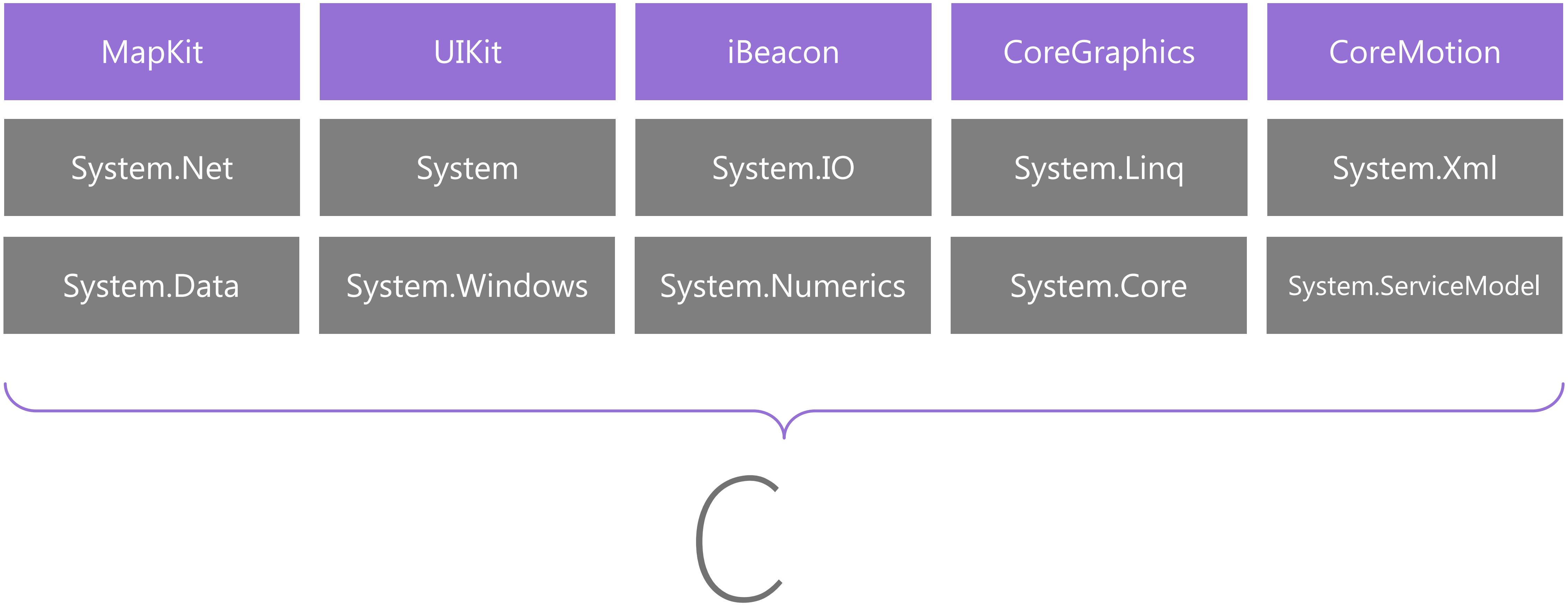
Windows APIs



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

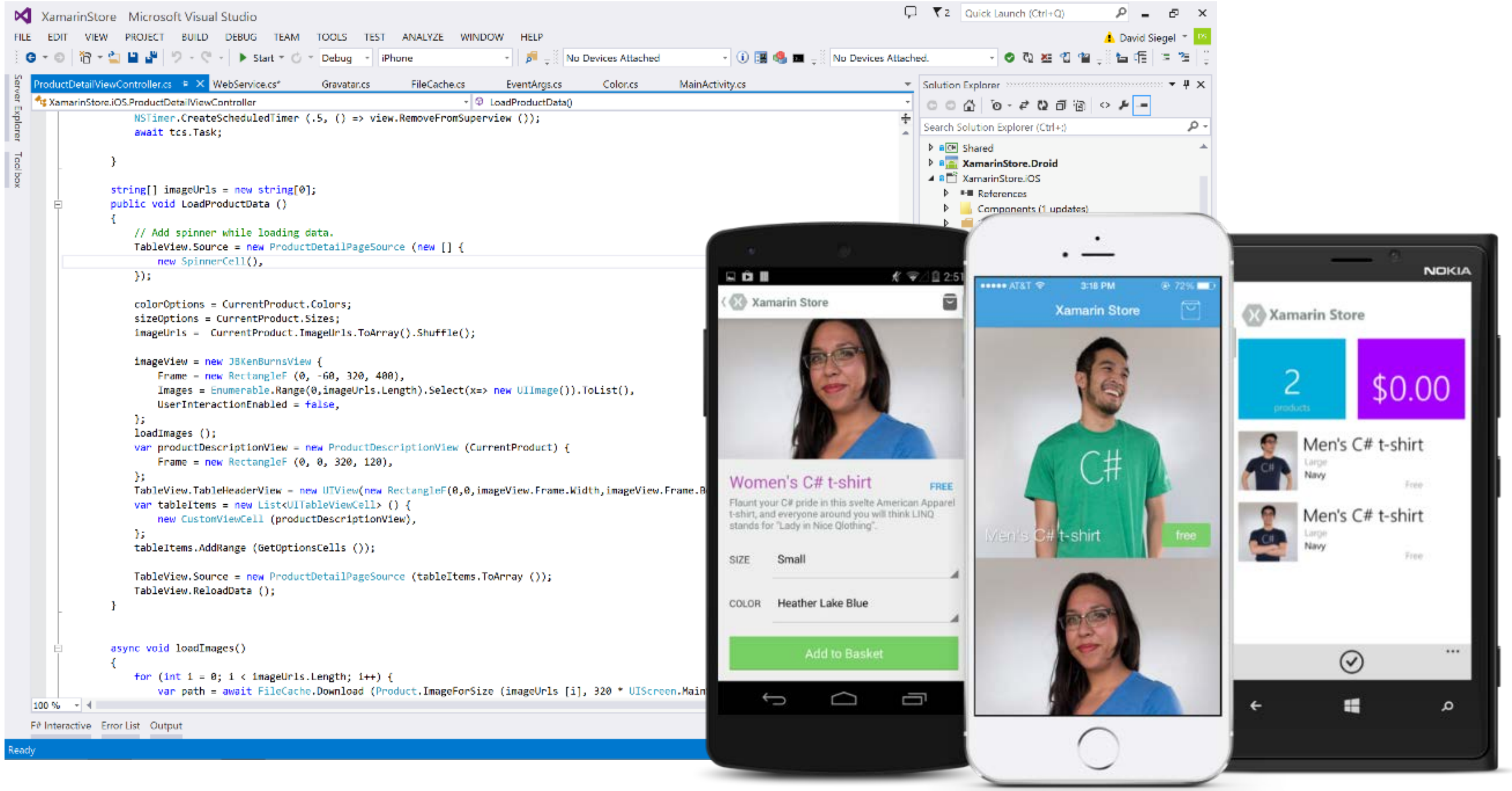
C

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

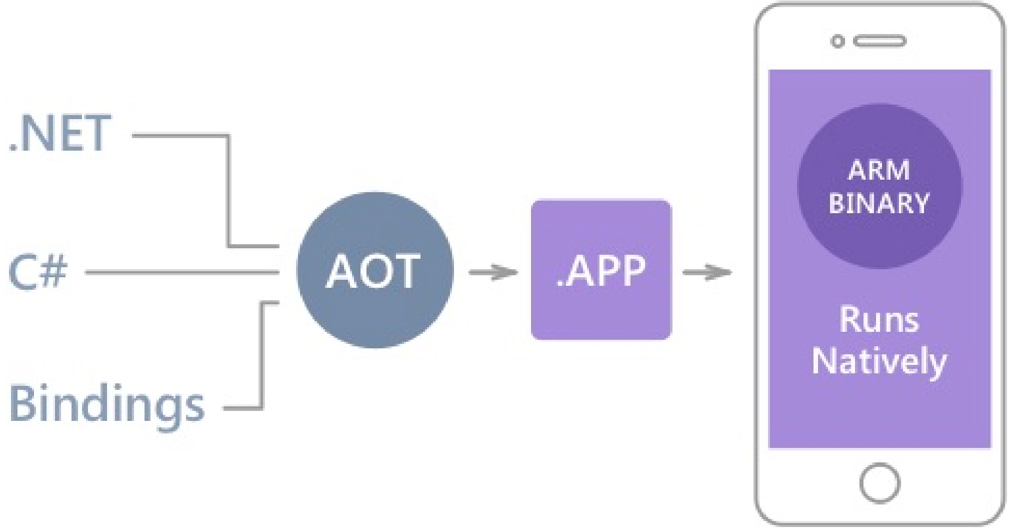
Anything you can do in Objective-C, Swift, or Java can be done **in C# and Visual Studio with Xamarin.**



```
    NSTimer.CreateScheduledTimer (.5, () => view.RemoveFromSuperview ());
    await tcs.Task;

}

string[] imageUrls = new string[0];
public void LoadProductData ()
{
    // Add spinner while loading data.
    TableView.Source = new ProductDetailPageSource (new [] {
        new SpinnerCell(),
    });

    colorOptions = CurrentProduct.Colors;
    sizeOptions = CurrentProduct.Sizes;
    imageUrls =  CurrentProduct.ImageUrls.ToArray().Shuffle();

    imageView = new JBKenBurnsView {
        Frame = new RectangleF (0, -60, 320, 400),
        Images = Enumerable.Range(0,imageUrls.Length).Select(x=> new UIImage()).ToList(),
        UserInteractionEnabled = false,
    };
    loadImages ();
    var productDescriptionView = new ProductDescriptionView (CurrentProduct) {
        Frame = new RectangleF (0, 0, 320, 120),
    };
    TableView.TableHeaderView = new UIView(new RectangleF(0,0,imageView.Frame.Width,imageView.Frame.B
    var tableItems = new List<UITableViewCell> () {
        new CustomViewCell (productDescriptionView),
    };
    tableItems.AddRange (GetOptionsCells ());

    TableView.Source = new ProductDetailPageSource (tableItems.ToArray ());
    TableView.ReloadData ();
}


async void loadImages()
{
    for (int i = 0; i < imageUrls.Length; i++) {
        var path = await FileCache.Download (Product.ImageForSize (imageUrls [i], 320 * UIScreen.Main
```

Flaunt your C# pride in this svelte American Apparel t-shirt, and everyone around you will think LINQ stands for "Lady in Nice Qlothing".

Native Performance



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

.NET
C#
Compile and Link

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

✓Always Up-to-Date

Same-day support:

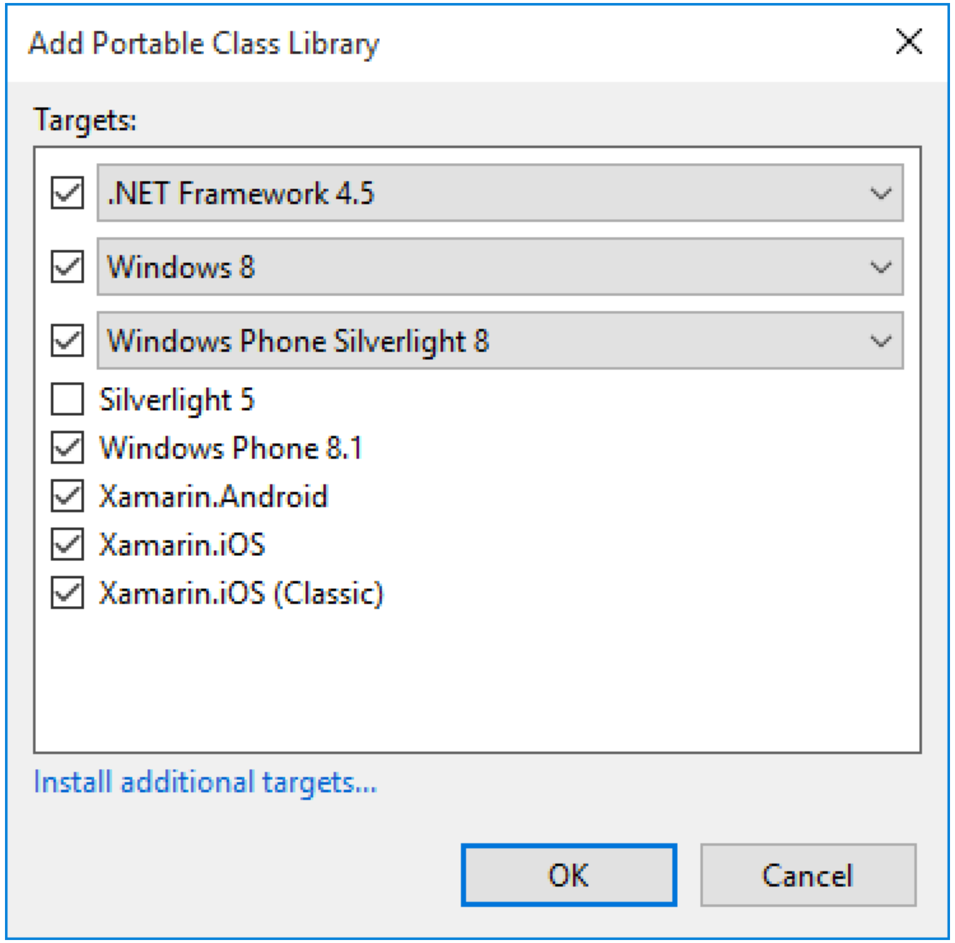
- iOS 5
- iOS 6
- iOS 7
- iOS 7.1
- iOS 8
- iOS 9

Full support for:

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

Sharing Code

Portable Class Libraries



Add Portable Class Library

Targets:

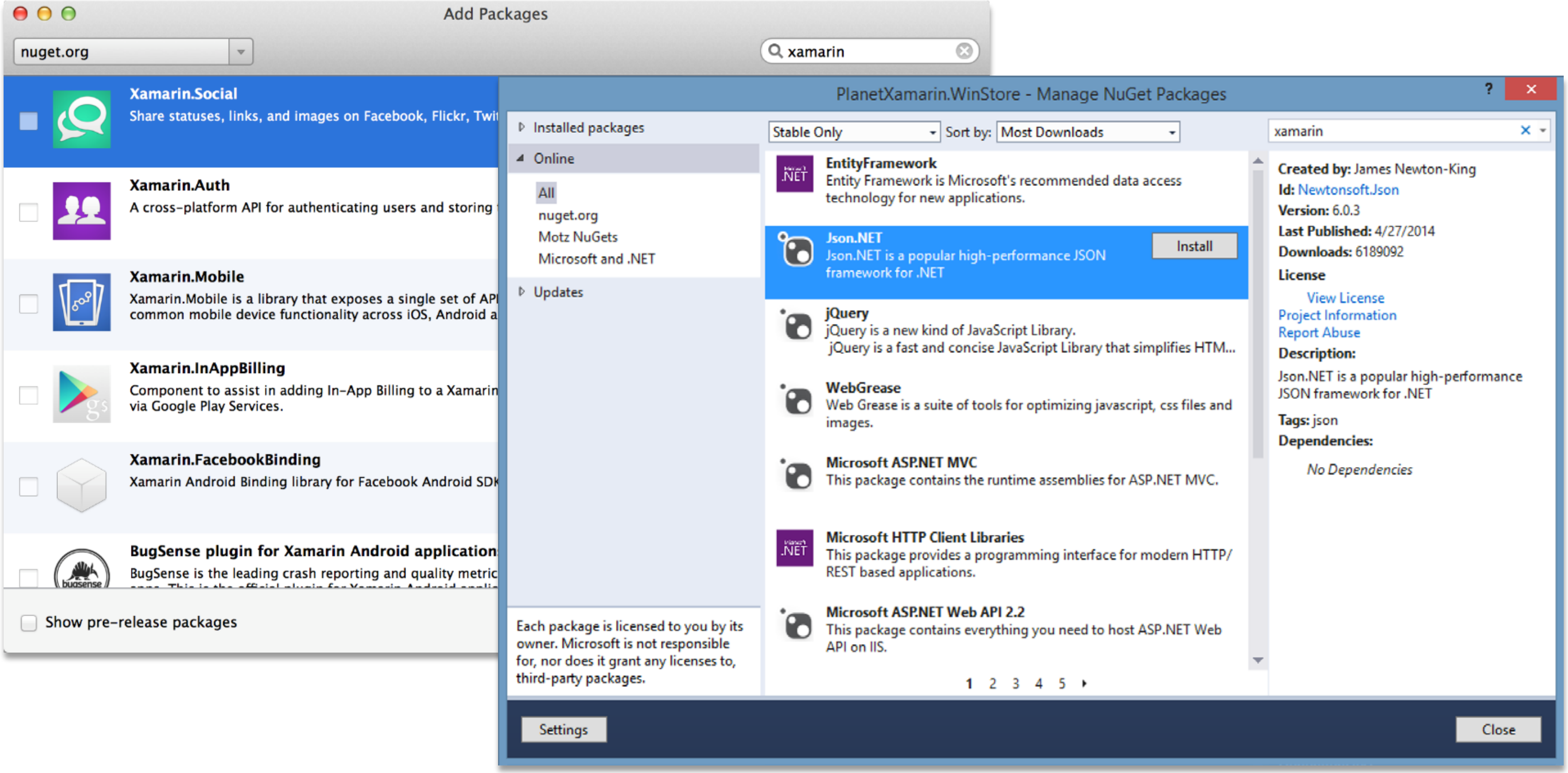
- ☑ .NET Framework 4.5
- ☑ Windows 8
- ☑ Windows Phone Silverlight 8
- □ Silverlight 5
- ☑ Windows Phone 8.1
- ☑ Xamarin.Android
- ☑ Xamarin.iOS
- ☑ Xamarin.iOS (Classic)

1 Assembly
Multiple Platforms

Including:

Xamarin.iOS and Xamarin.Android

NuGet



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

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

Xamarin.Mobile
Xamarin.Mobile is a library that exposes a single set of API
common mobile device functionality across iOS, Android a

Xamarin.InAppBilling
Component to assist in adding In-App Billing to a Xamarin
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

Stable Only · Sort by: Most Downloads · xamarin

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

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

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.

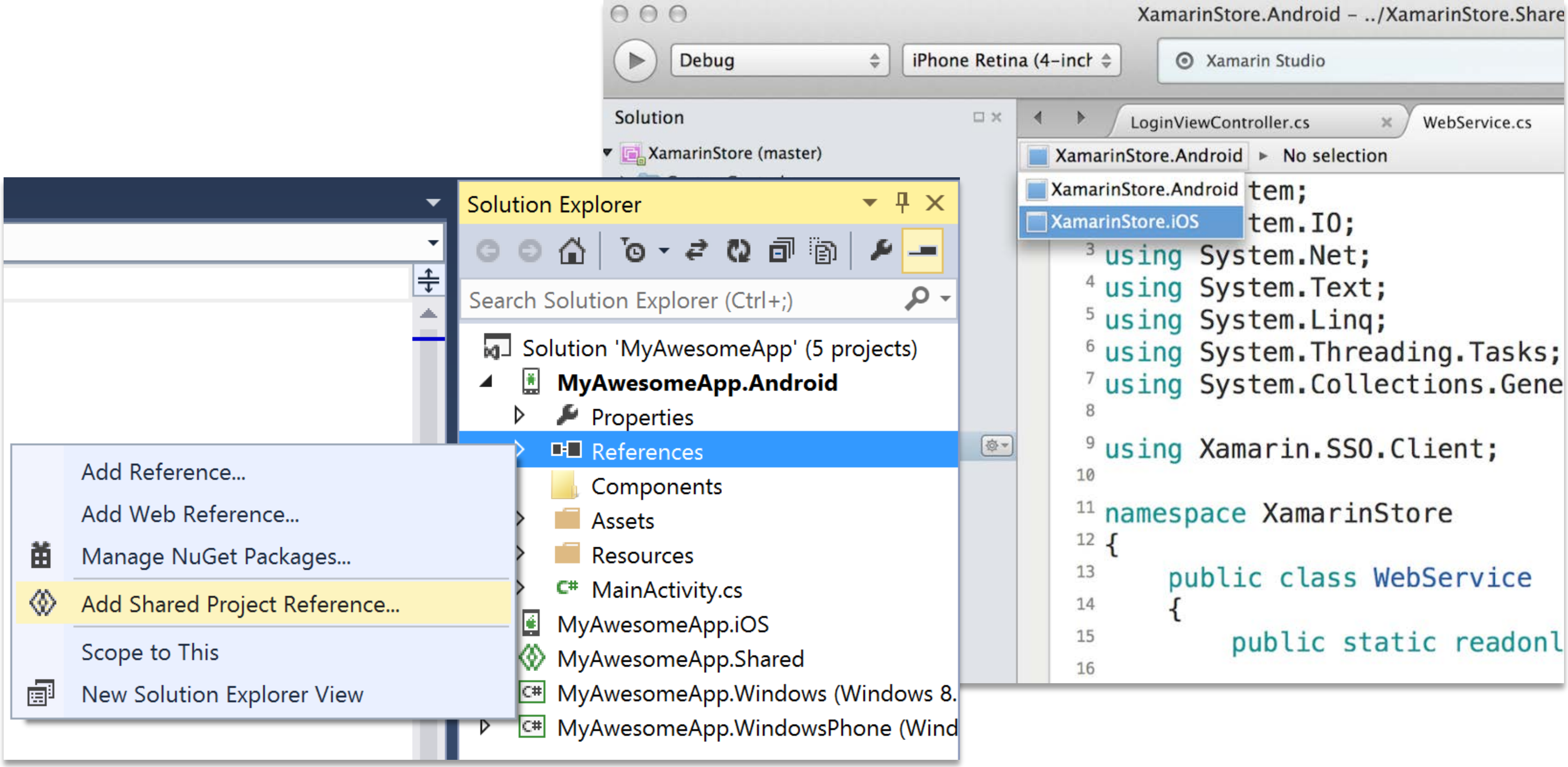
Microsoft HTTP Client Libraries
This package provides a programming interface for modern HTTP/REST based applications.

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

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

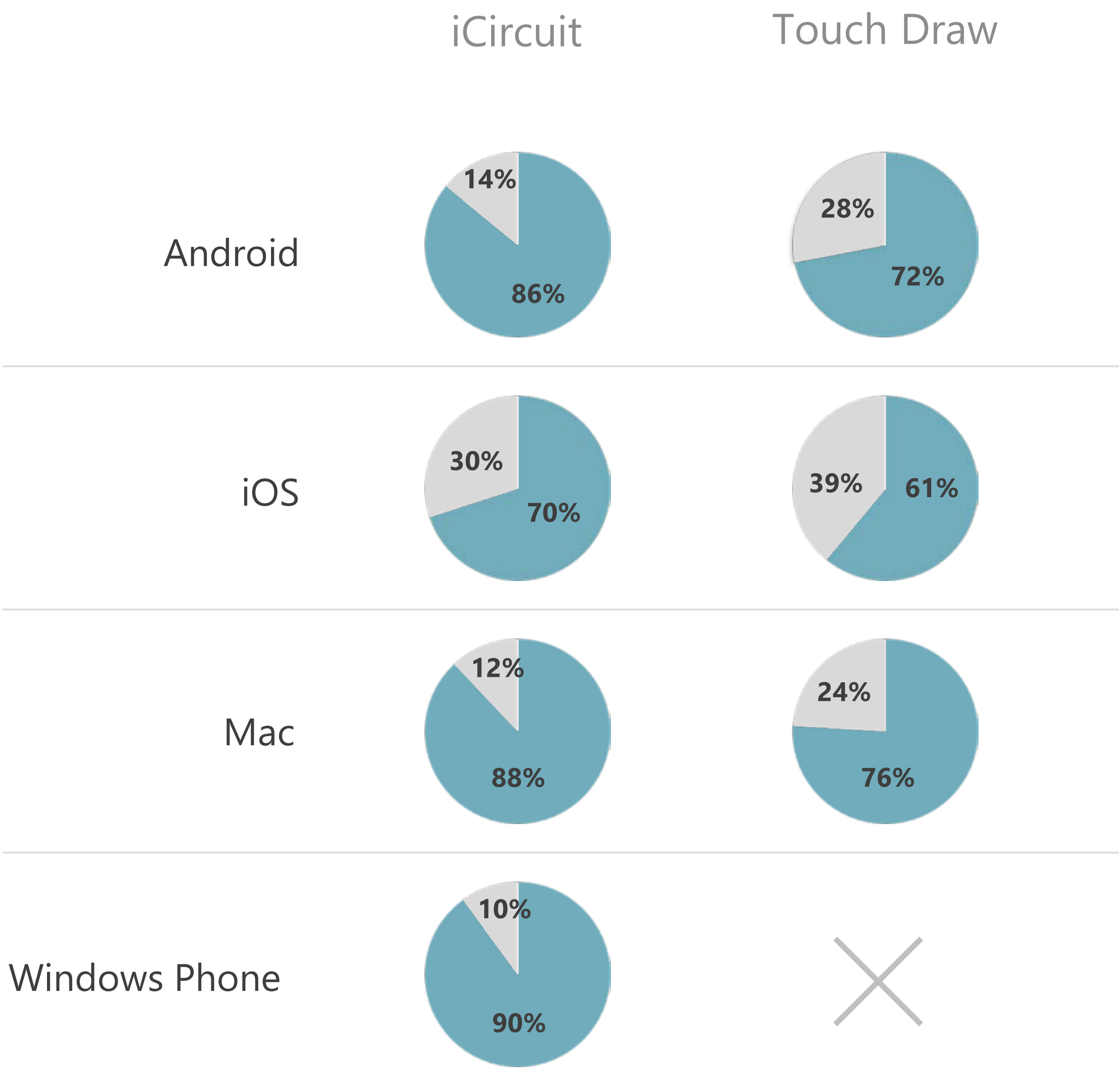
Each package is licensed to you by its owner. Microsoft is not responsible for, nor does it grant any licenses to, third-party packages.

Shared Projects



```
tem;
tem.IO;
using System.Net;
using System.Text;
using System.Linq;
using System.Threading.Tasks;
using System.Collections.Gene

using Xamarin.SSO.Client;

namespace XamarinStore
{
    public class WebService
    {
        public static readonl
```

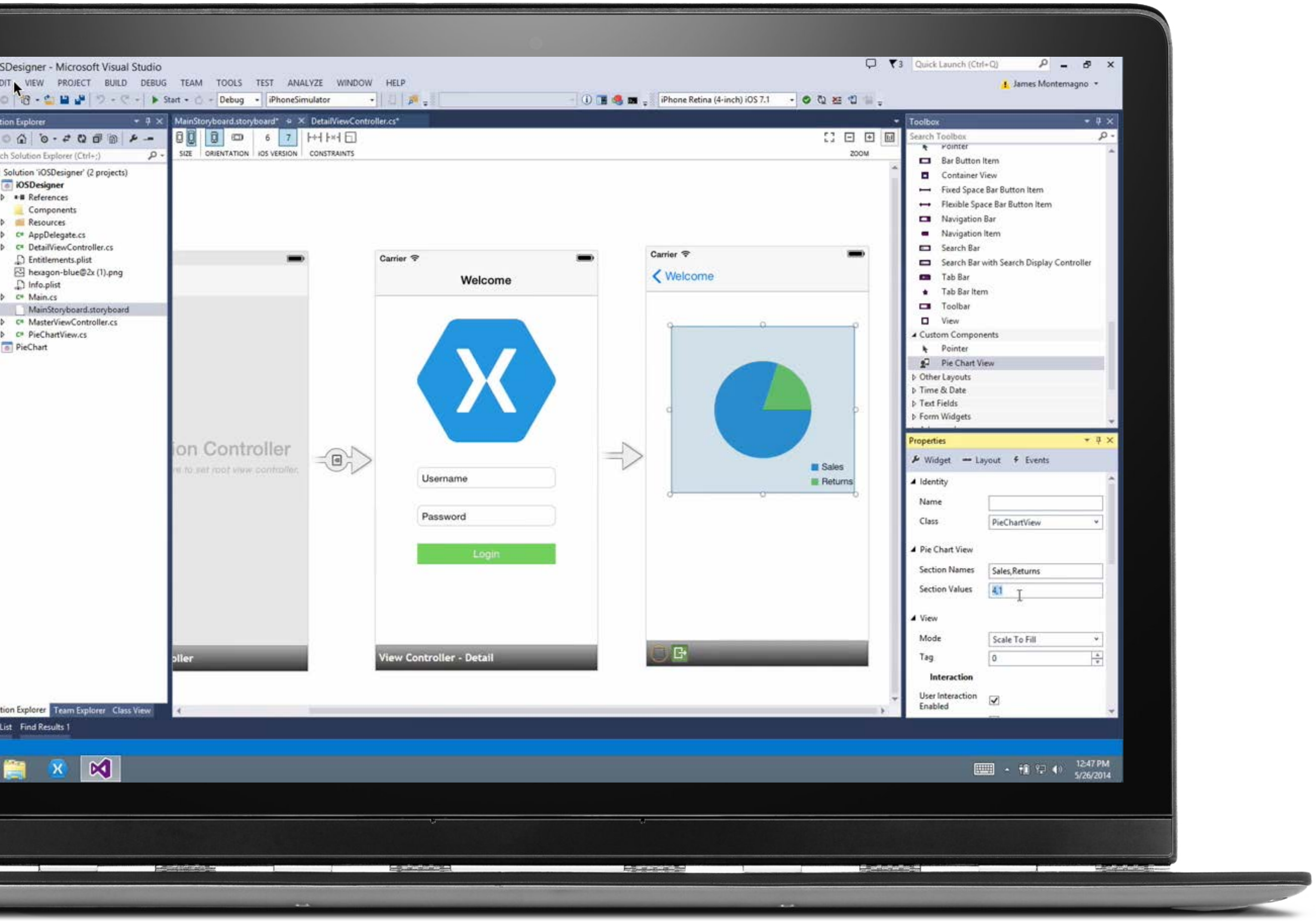
Code Sharing Stats



	iCircuit	Touch Draw
Android	14% 86%	28% 72%
iOS	30% 70%	39% 61%
Mac	12% 88%	24% 76%
Windows Phone	10% 90%	✗

Development Experience

Visual Studio Integration



Name:

Class: PieChartView

Section Names: Sales,Returns

Section Values: 4,1

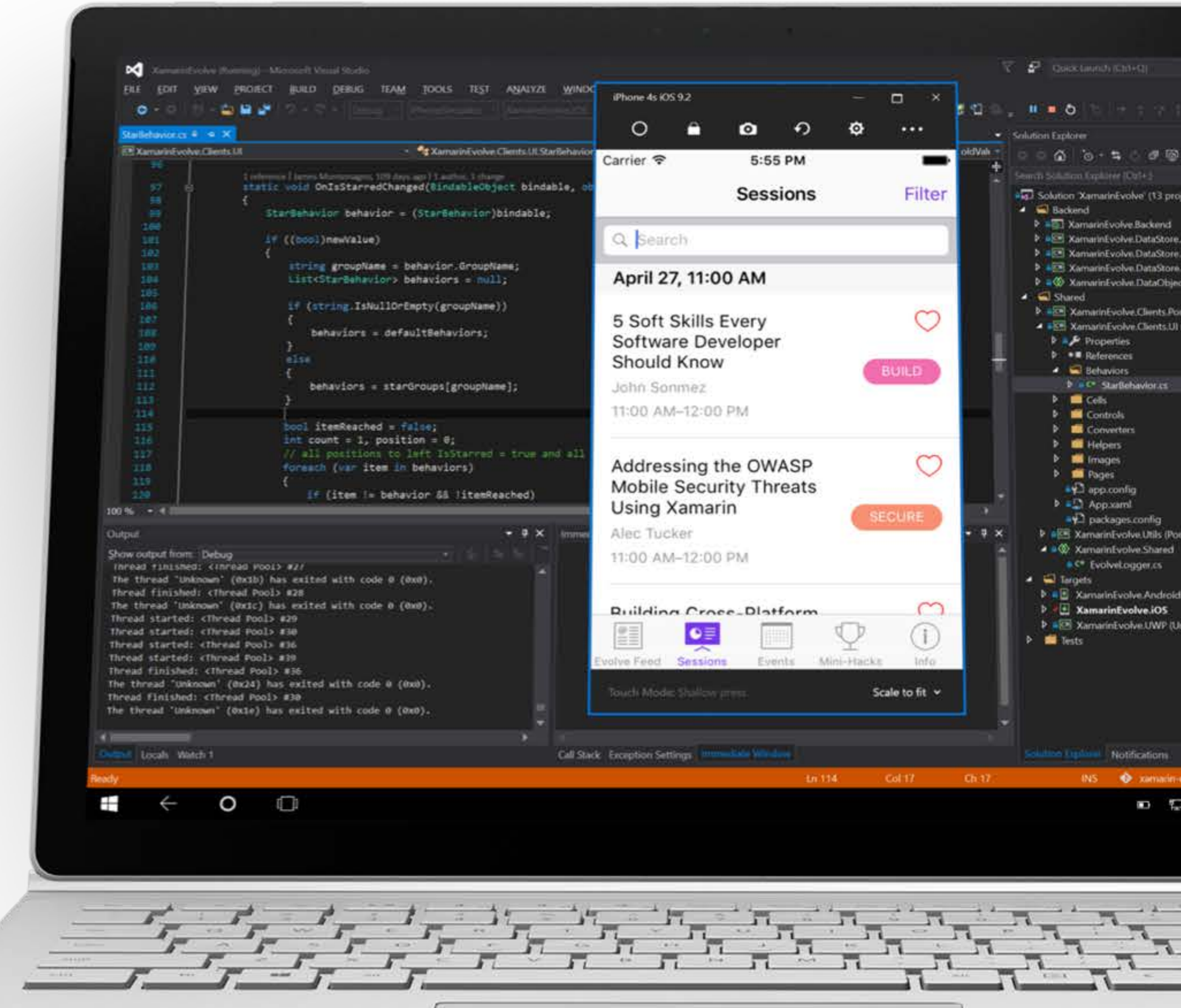
Mode: Scale To Fill

Tag: 0

User Interaction Enabled: ☑

Visual Studio iOS Simulator Remoting

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



```
static void OnIsStarredChanged(BindableObject bindable, ob
{
    StarBehavior behavior = (StarBehavior)bindable;

    if ((bool)newValue)
    {
        string groupName = behavior.GroupName;
        List<StarBehavior> behaviors = null;

        if (string.IsNullOrEmpty(groupName))
        {
            behaviors = defaultBehaviors;
        }
        else
        {
            behaviors = starGroups[groupName];
        }

        bool itemReached = false;
        int count = 1, position = 0;
        // all positions to left IsStarred = true and all
        foreach (var item in behaviors)
        {
            if (item != behavior && !itemReached)
```

```
Thread finished: <Thread Pool> #27
The thread 'Unknown' (0x1b) has exited with code 0 (0x0).
Thread finished: <Thread Pool> #28
The thread 'Unknown' (0x1c) has exited with code 0 (0x0).
Thread started: <Thread Pool> #29
Thread started: <Thread Pool> #30
Thread started: <Thread Pool> #36
Thread started: <Thread Pool> #39
Thread finished: <Thread Pool> #36
The thread 'Unknown' (0x24) has exited with code 0 (0x0).
Thread finished: <Thread Pool> #30
The thread 'Unknown' (0x1e) has exited with code 0 (0x0).
```

Carrier 5:55 PM

Sessions Filter

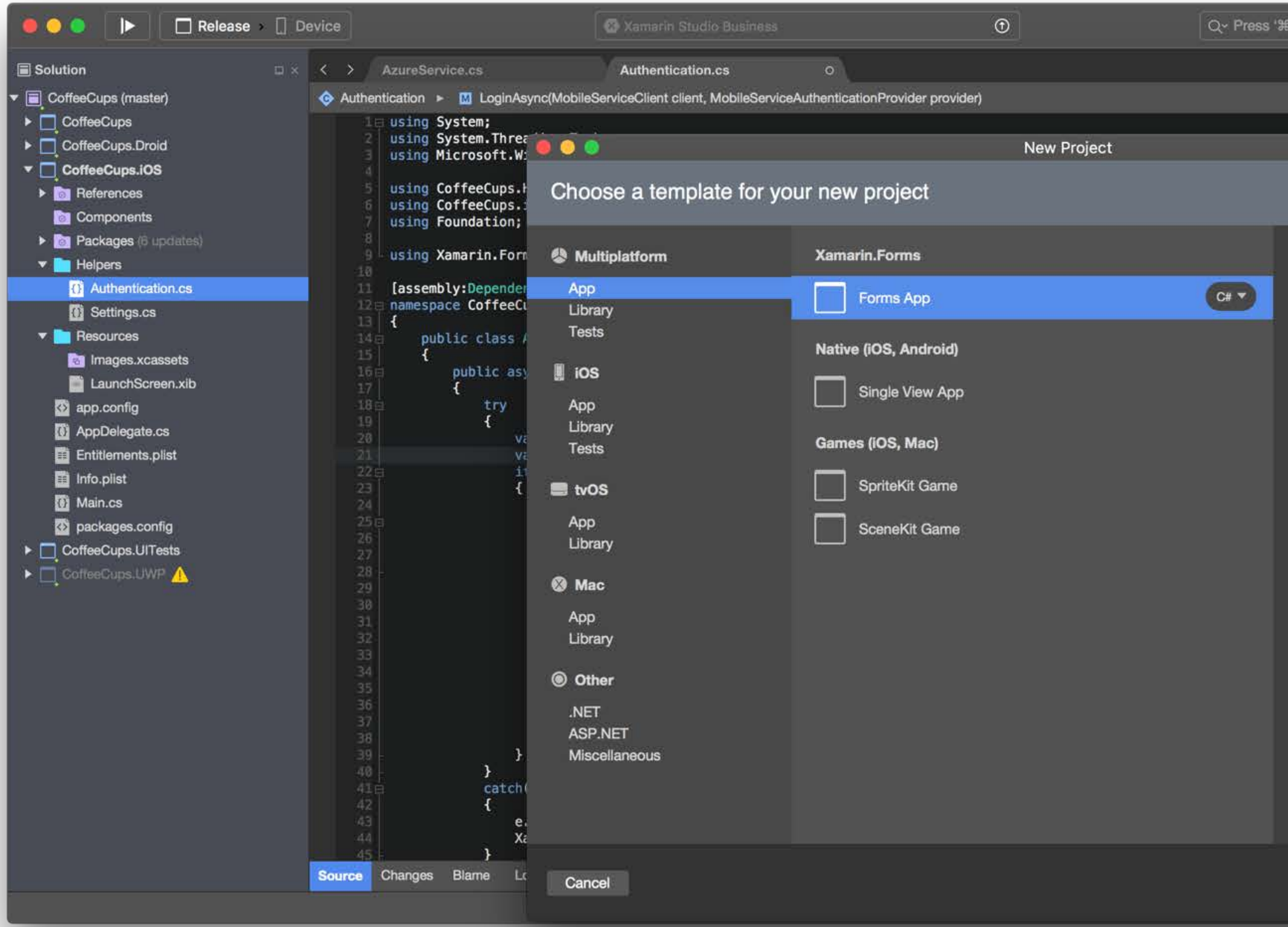
April 27, 11:00 AM

5 Soft Skills Every Software Developer Should Know
John Sonmez
11:00 AM–12:00 PM
BUILD

Addressing the OWASP Mobile Security Threats Using Xamarin
Alec Tucker
11:00 AM–12:00 PM
SECURE

Visual Studio iOS USB Remoting

Xamarin Studio – Mac



```
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
```

```
using System;
using System.Threa
using Microsoft.Wi

using CoffeeCups.H
using CoffeeCups.I
using Foundation;

using Xamarin.Form

[assembly:Depender
namespace CoffeeCu
{
    public class A
    {
        public asy
        {
            try
            {
                va
                va
                i
                {



















                }
            }
            catch(
            {
                e.
                Xa
            }
```

New Project

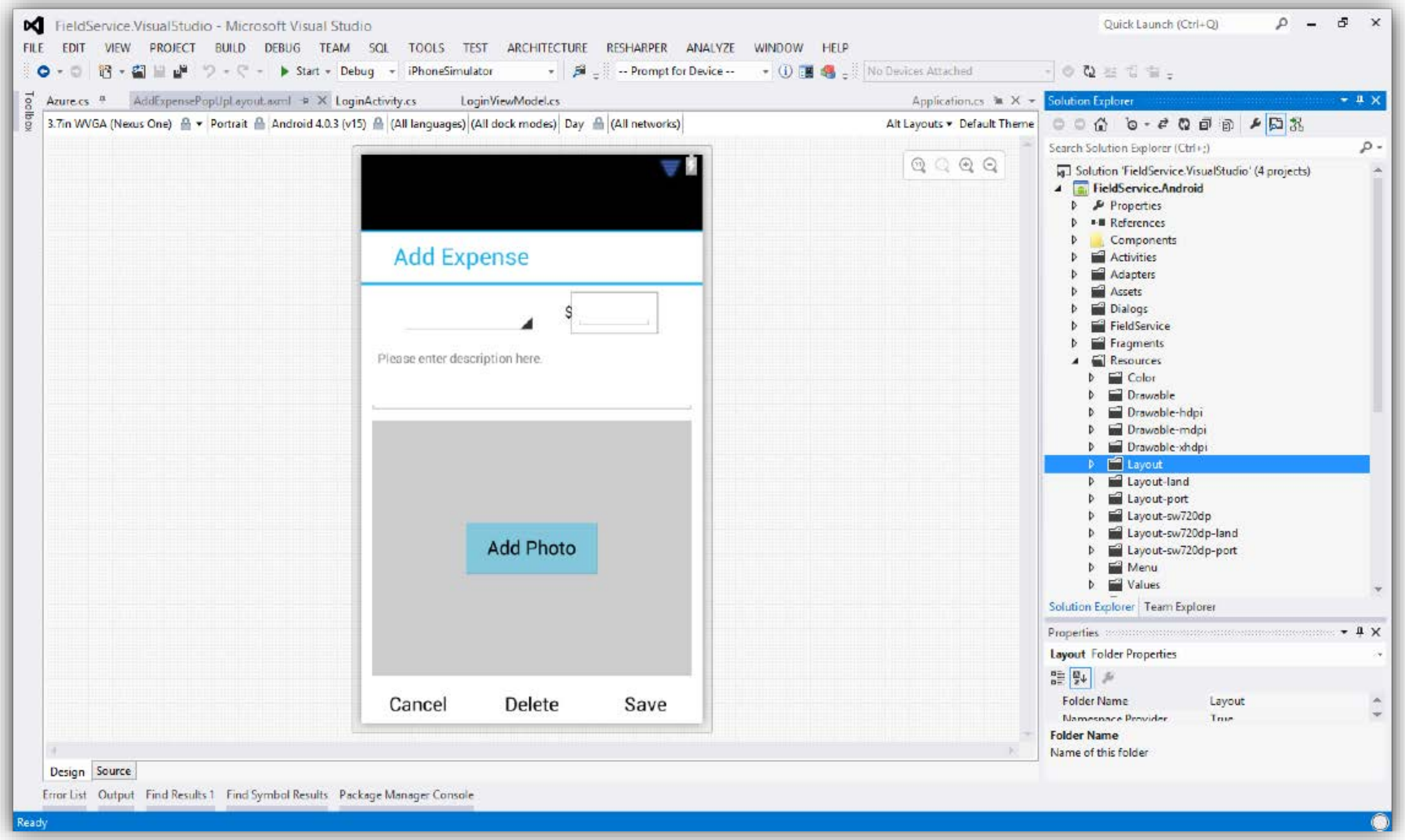
Choose a template for your new project

Multiplatform App Library Tests	**Xamarin.Forms** □ Forms App C#
iOS App Library Tests	**Native (iOS, Android)** □ Single View App
tvOS App Library	**Games (iOS, Mac)** □ SpriteKit Game □ SceneKit Game
Mac App Library	
Other .NET ASP.NET Miscellaneous	

Cancel

Android Designer

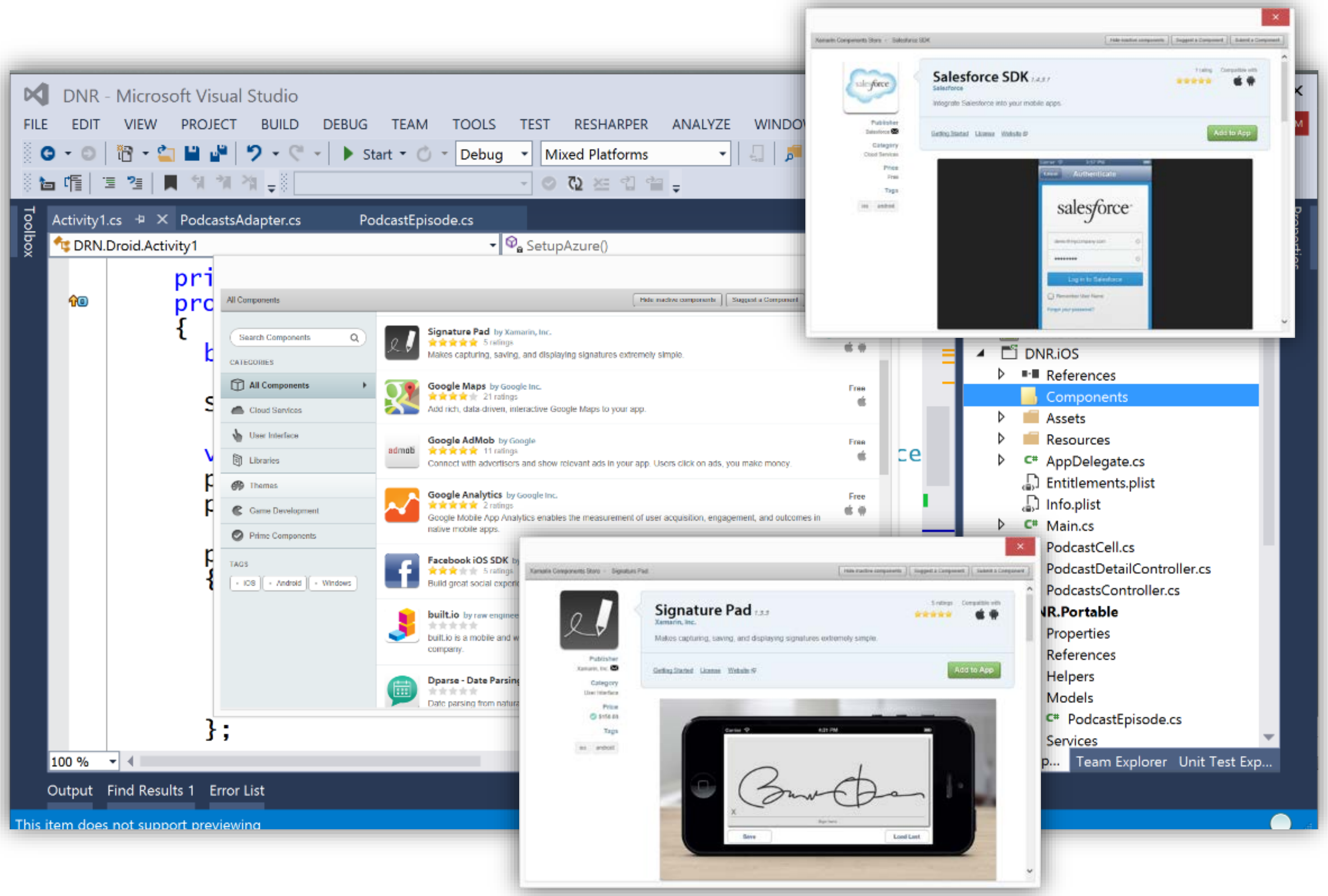
- Available in:
  - Xamarin Studio
  - Visual Studio
- Create UI with drag & drop simplicity
- Target multiple screen sizes, resolutions and Android versions
- Layouts saved in standard Android XML files



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 3rd party components
- Live preview of changes to properties

Xamarin Component Store

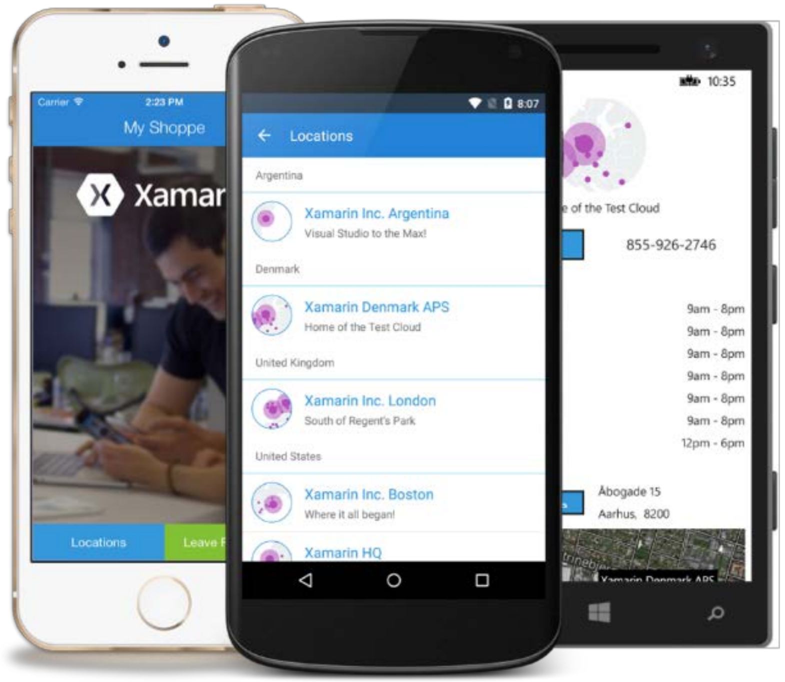

DNR - Microsoft Visual Studio
FILE EDIT VIEW PROJECT BUILD DEBUG TEAM TOOLS TEST RESHARPER ANALYZE WINDO
Start
Debug
Mixed Platforms
Activity1.cs
PodcastsAdapter.cs
PodcastEpisode.cs
DRN.Droid.Activity1
SetupAzure()
Toolbox
All Components
Hide inactive components
Suggest a Component
Search Components
CATEGORIES
All Components
Cloud Services
User Interface
Libraries
Themes
Game Development
Prime Components
TAGS
iOS
Android
Windows
Signature Pad by Xamarin, Inc.
Makes capturing, saving, and displaying signatures extremely simple.
Google Maps by Google Inc.
Add rich, data-driven, interactive Google Maps to your app.
Google AdMob by Google
Connect with advertisers and show relevant ads in your app. Users click on ads, you make money.
Google Analytics by Google Inc.
Google Mobile App Analytics enables the measurement of user acquisition, engagement, and outcomes in native mobile apps.
Facebook iOS SDK
Build great social experi
built.io
built.io is a mobile and w company.
Dparse - Date Parsing
Date parsing from natura
Free
Salesforce SDK
Salesforce
Integrate Salesforce into your mobile apps.
Getting Started License Website
Add to App
Authenticate
salesforce
Log in to Salesforce
Signature Pad
Xamarin, Inc.
Makes capturing, saving, and displaying signatures extremely simple.
Save
Load Last
DNR.iOS
References
Components
Assets
Resources
AppDelegate.cs
Entitlements.plist
Info.plist
Main.cs
PodcastCell.cs
PodcastDetailController.cs
PodcastsController.cs
NR.Portable
Properties
References
Helpers
Models
PodcastEpisode.cs
Services
Team Explorer
Unit Test Exp...
100 %
Output
Find Results 1
Error List
This item does not support previewing

Build Apps Faster

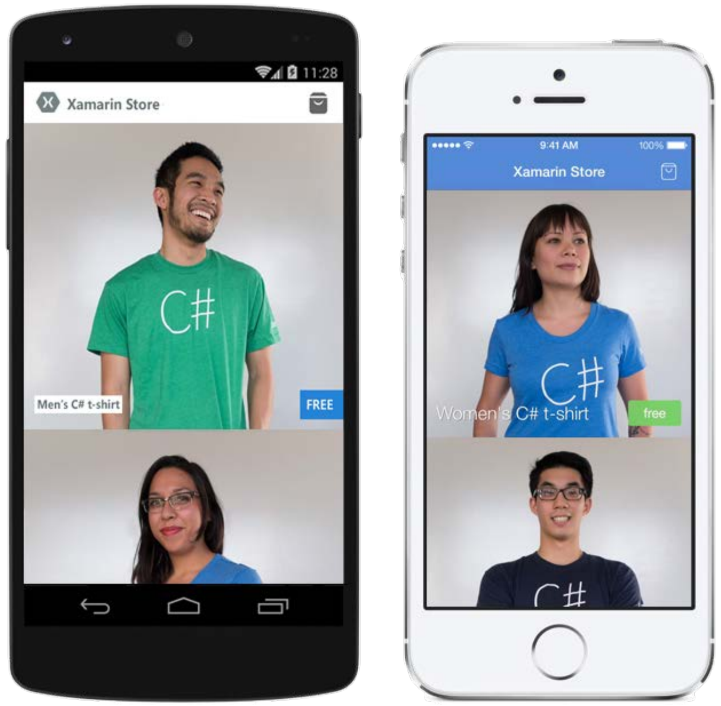
- Add high quality pre-built app components directly from Visual Studio and Xamarin Studio
- Beautiful, cross-platform UI controls, cloud services, and enterprise backend integrations are just a few clicks away

Pre-built App Templates

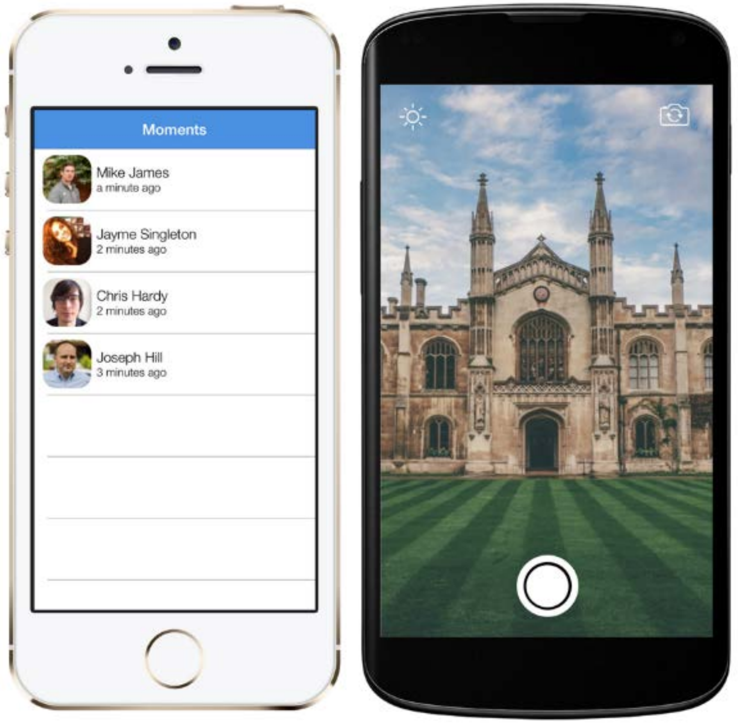
- `Xamarin.com/prebuilt`



My Shoppe
Connect with consumers



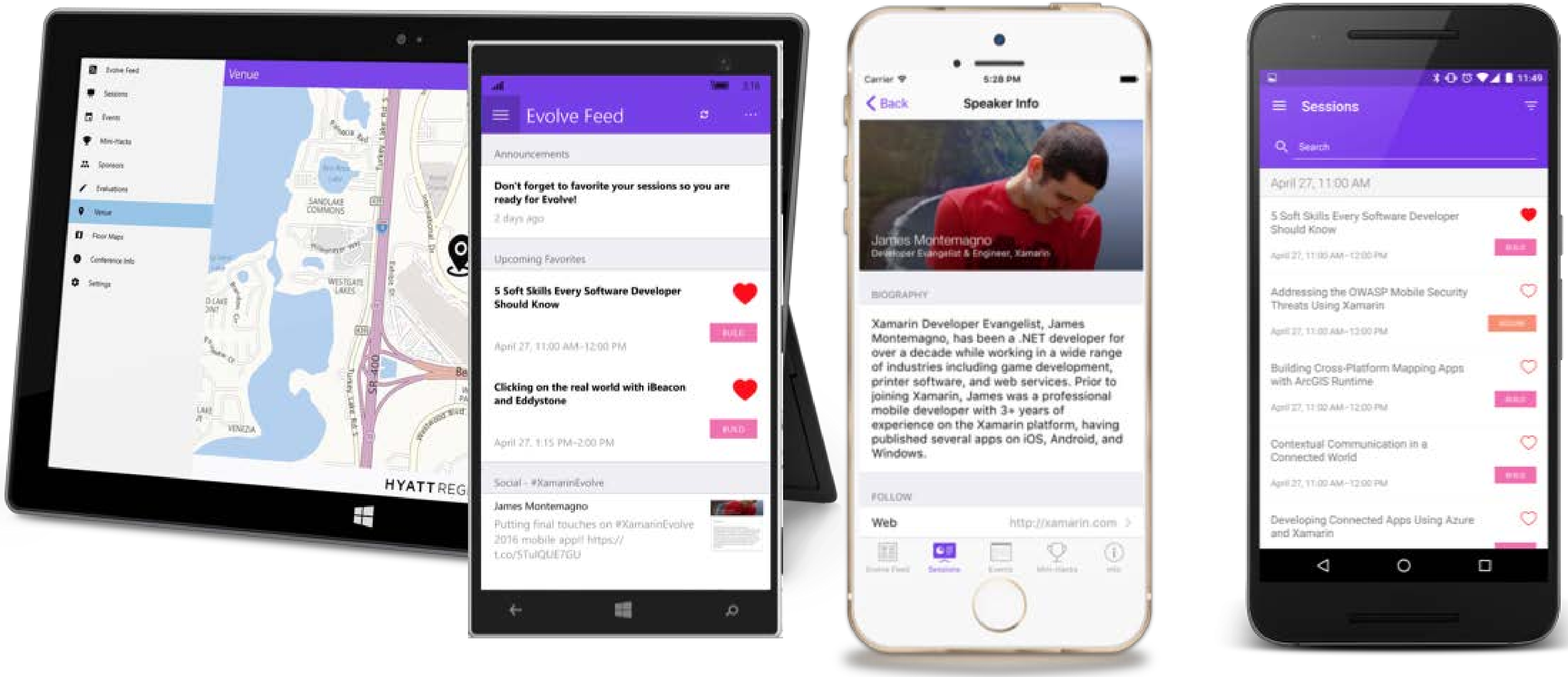
Store Application



Moments
Photo Sharing App

Let’s take a look

Meet Xamarin.Forms



Don't forget to favorite your sessions so you are ready for Evolve!

2 days ago

5 Soft Skills Every Software Developer Should Know

April 27, 11:00 AM–12:00 PM

Clicking on the real world with iBeacon and Eddystone

April 27, 1:15 PM–2:00 PM

James Montemagno

Putting final touches on #XamarinEvolve 2016 mobile app! https://t.co/5TulQUE7GU

James Montemagno
Developer Evangelist & Engineer, Xamarin

Xamarin Developer Evangelist, James Montemagno, has been a .NET developer for over a decade while working in a wide range of industries including game development, printer software, and web services. Prior to joining Xamarin, James was a professional mobile developer with 3+ years of experience on the Xamarin platform, having published several apps on iOS, Android, and Windows.

5 Soft Skills Every Software Developer Should Know

April 27, 11:00 AM–12:00 PM

Addressing the OWASP Mobile Security Threats Using Xamarin

April 27, 11:00 AM–12:00 PM

Building Cross-Platform Mapping Apps with ArcGIS Runtime

April 27, 11:00 AM–12:00 PM

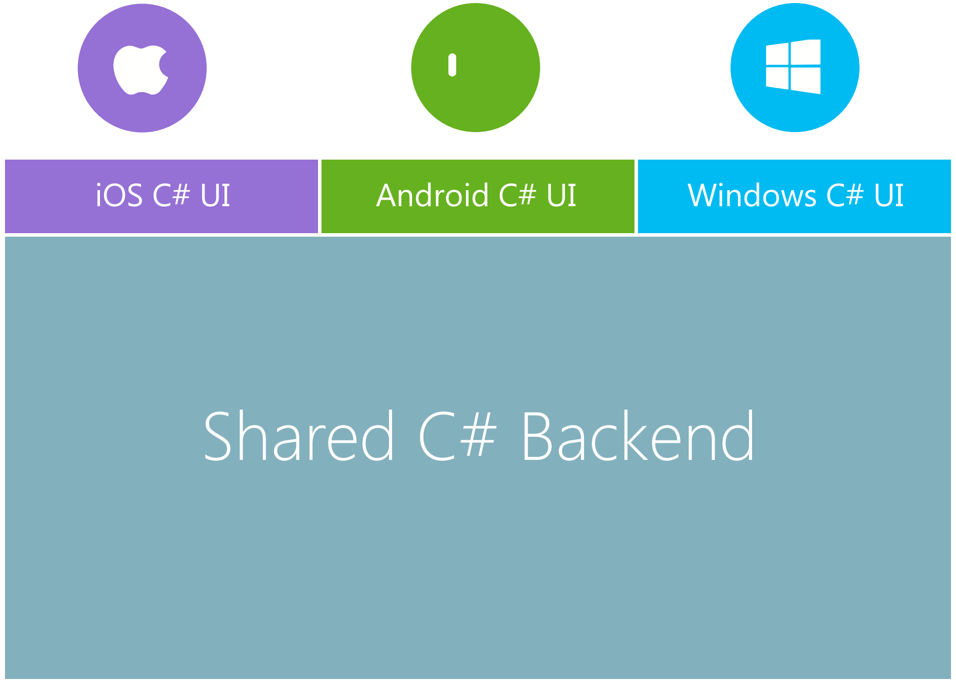
Contextual Communication in a Connected World

April 27, 11:00 AM–12:00 PM

Developing Connected Apps Using Azure and Xamarin

Build native UIs for iOS, Android, and Windows Phone
from a single, shared C# codebase.

Xamarin + Xamarin.Forms



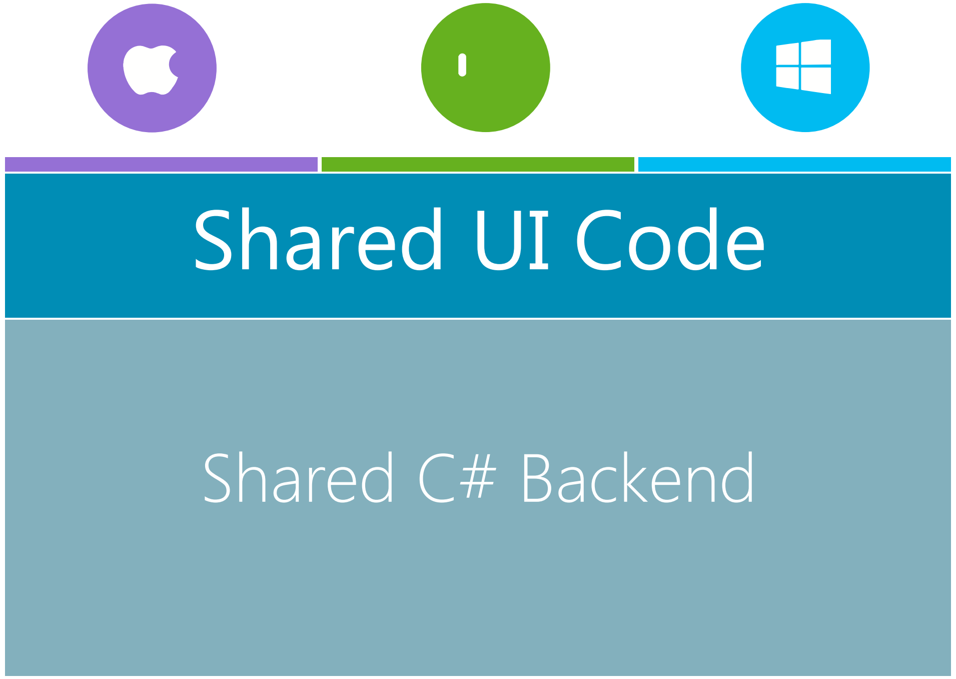
iOS C# UI

Android C# UI

Windows C# UI

Shared C# Backend

Traditional Xamarin Approach

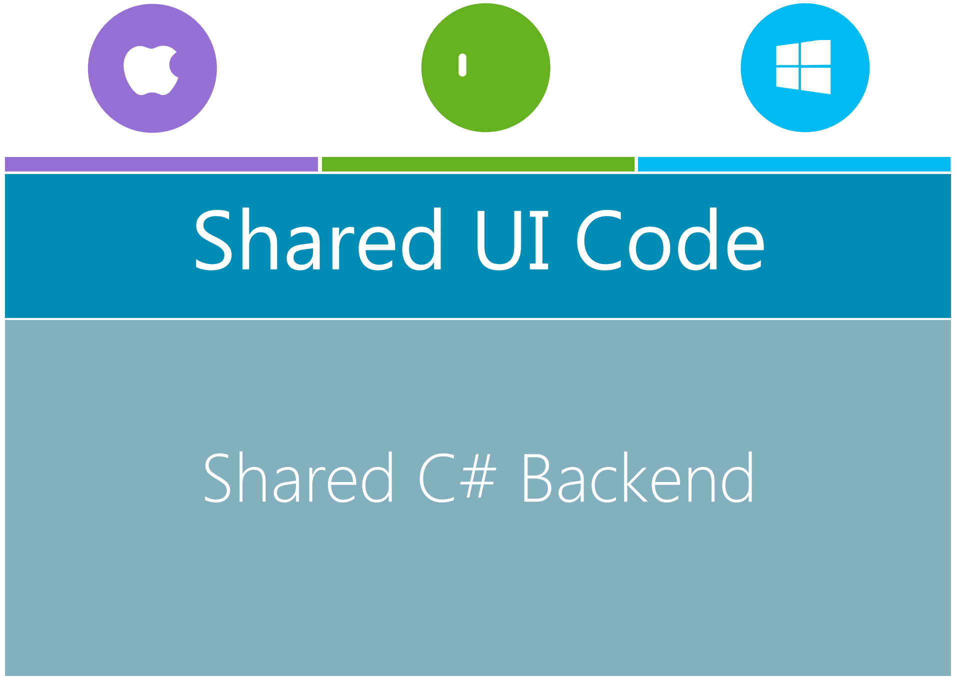


Shared UI Code

Shared C# Backend

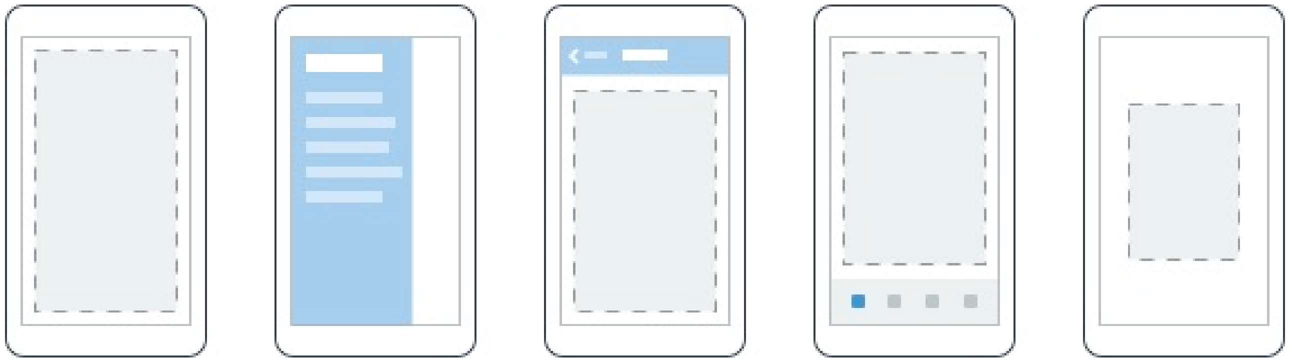
With Xamarin.Forms:
More code-sharing, all native

What's included



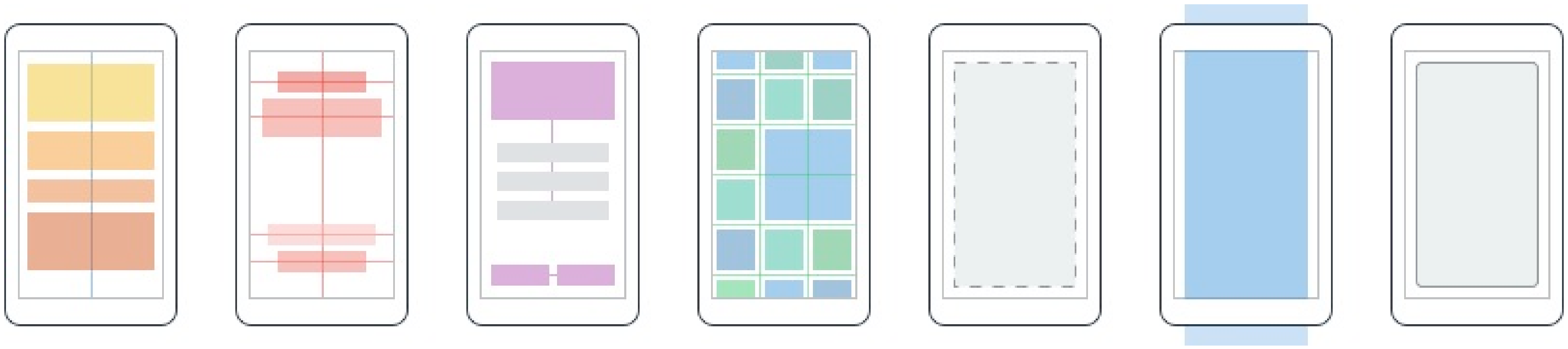
- ✓ 40+ Pages, layouts, and controls
  (Build from code behind or XAML)
- ✓ Two-way data binding
- ✓ Navigation
- ✓ Animation API
- ✓ Dependency Service
- ✓ Messaging Center

Pages



Content MasterDetail Navigation Tabbed Carousel

Layouts

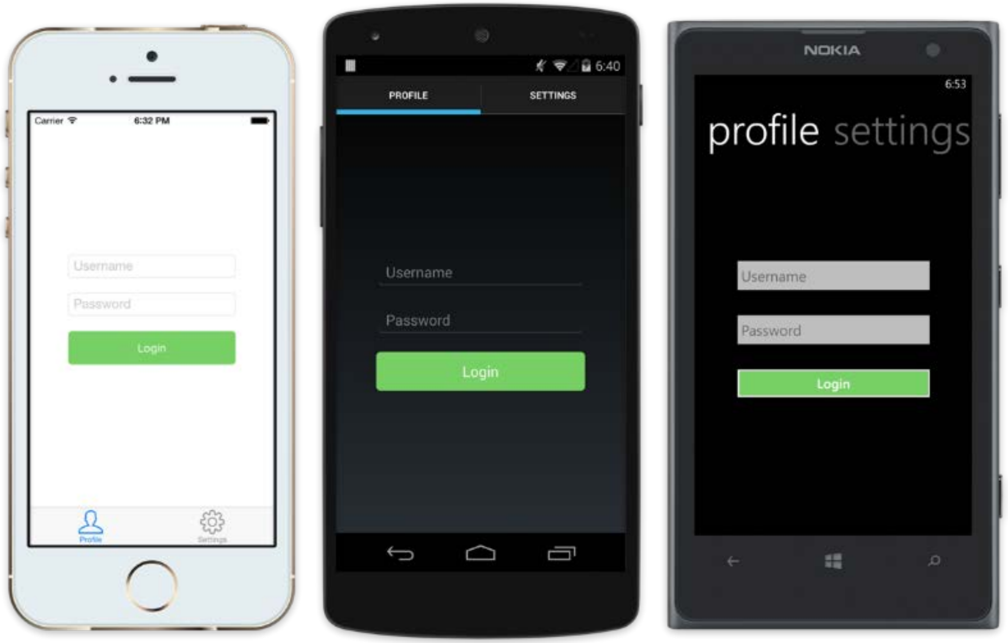


Stack Absolute Relative Grid ContentView ScrollView Frame

Controls

- ActivityIndicator
- BoxView
- Button
- DatePicker
- Editor
- Entry
- Image
- Label
- ListView
- Map
- OpenGLView
- Picker
- ProgressBar
- SearchBar
- Slider
- Stepper
- TableView
- TimePicker
- WebView
- EntryCell
- ImageCell
- SwitchCell
- TextCell
- ViewCell

Native UI from shared code

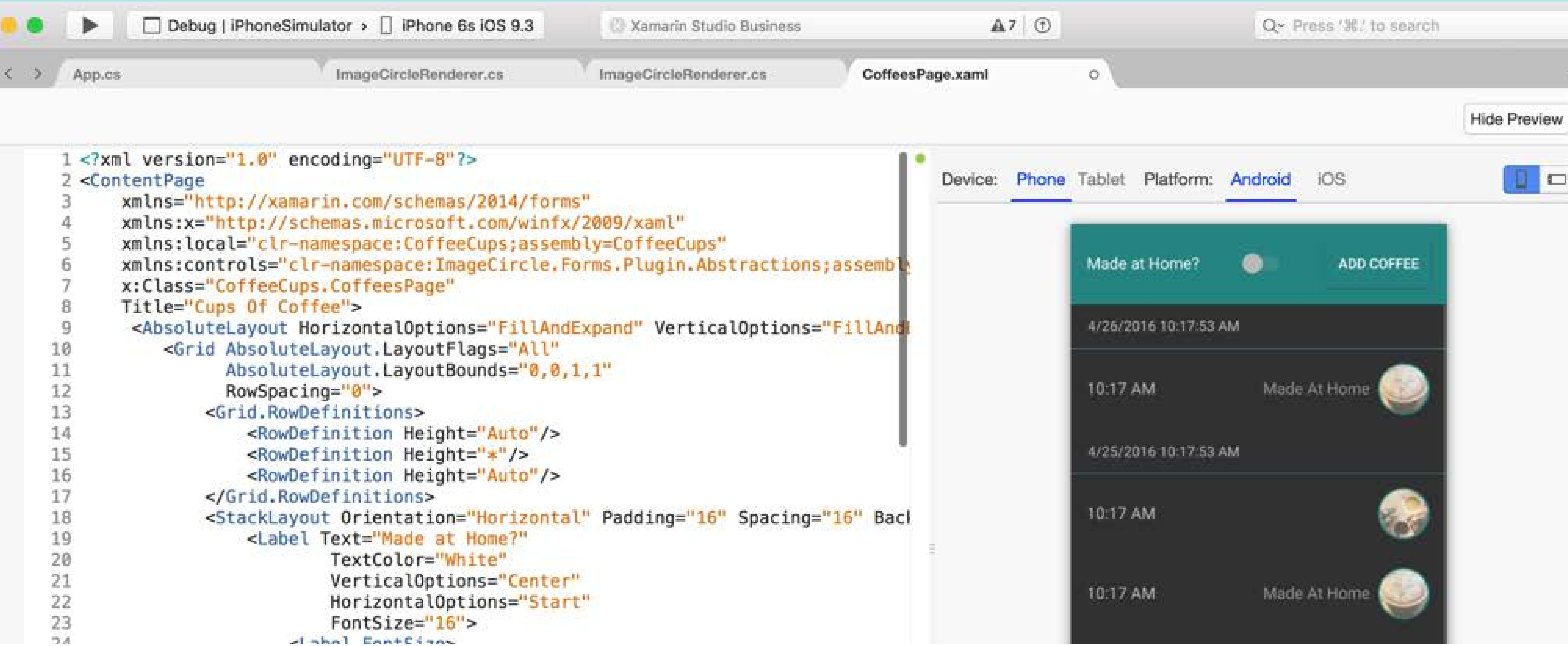


```
<?xml version="1.0" encoding="UTF-8"?>
<TabbedPage xmlns="http://xamarin.com/schemas/2014/forms"
            xmlns:x="http://schemas.microsoft.com/winfx/2009/xaml"
            x:Class="MyApp.MainPage">
<TabbedPage.Children>
<ContentPage Title="Profile" Icon="Profile.png">
    <StackLayout Spacing="20" Padding="20"
                 VerticalOptions="Center">
        <Entry Placeholder="Username"
               Text="{Binding Username}"/>
        <Entry Placeholder="Password"
               Text="{Binding Password}"
               IsPassword="true"/>
        <Button Text="Login" TextColor="White"
                BackgroundColor="#77D065"
                Command="{Binding LoginCommand}"/>
    </StackLayout>
</ContentPage>
<ContentPage Title="Settings" Icon="Settings.png">
    <!-- Settings -->
</ContentPage>
</TabbedPage.Children>
```

Let’s Take a Look

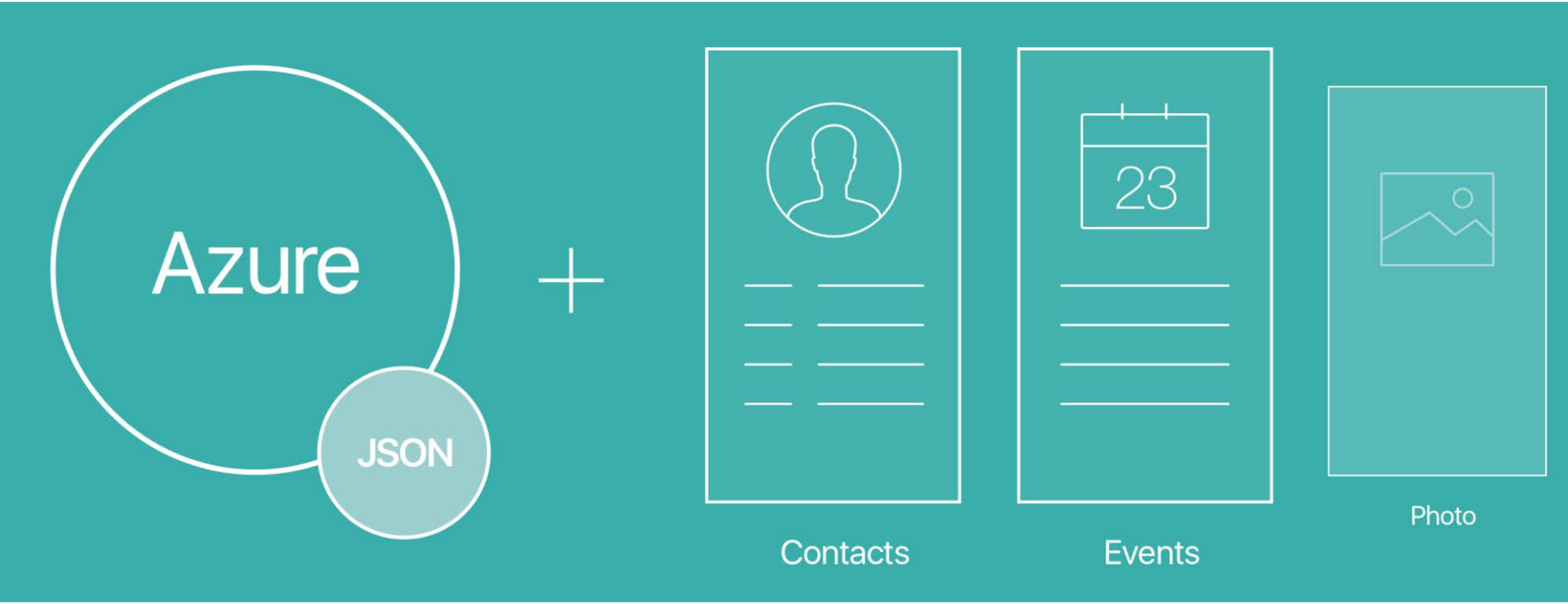
What's new?

XAML Previewer



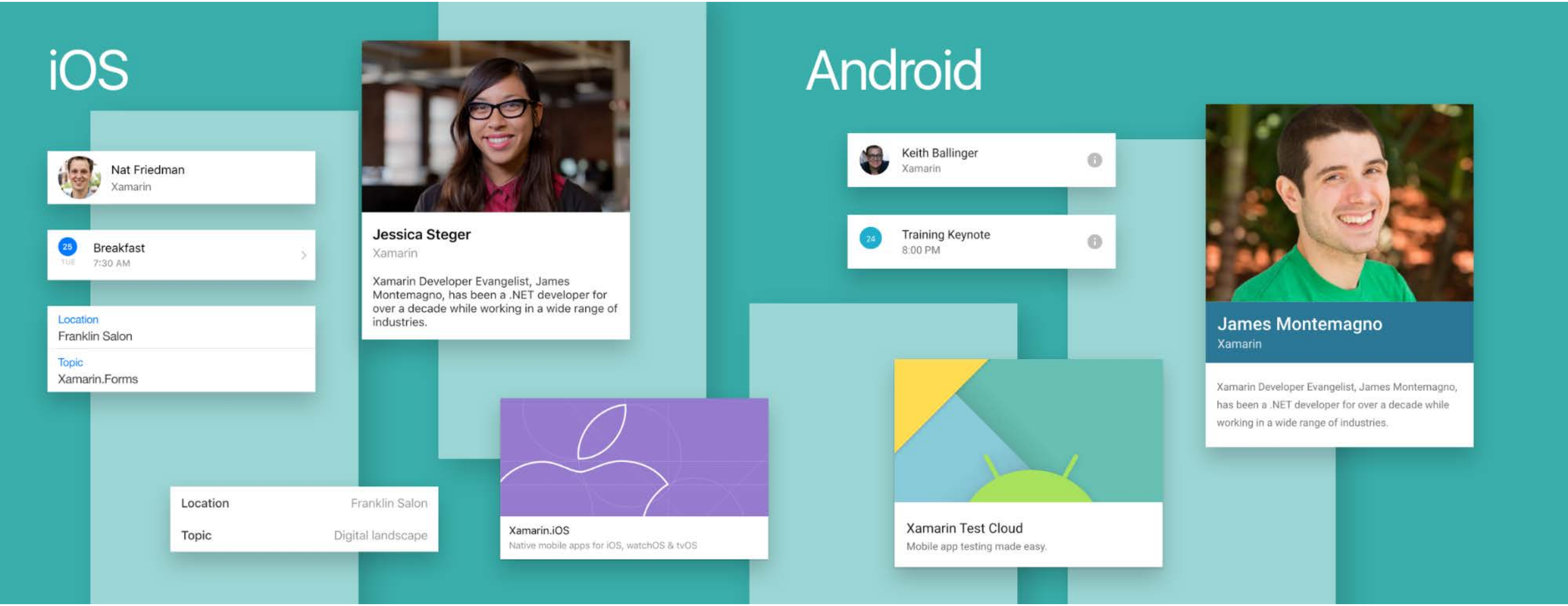
```xml
<?xml version="1.0" encoding="UTF-8"?>
<ContentPage
    xmlns="http://xamarin.com/schemas/2014/forms"
    xmlns:x="http://schemas.microsoft.com/winfx/2009/xaml"
    xmlns:local="clr-namespace:CoffeeCups;assembly=CoffeeCups"
    xmlns:controls="clr-namespace:ImageCircle.Forms.Plugin.Abstractions;assembl
    x:Class="CoffeeCups.CoffeesPage"
    Title="Cups Of Coffee">
     <AbsoluteLayout HorizontalOptions="FillAndExpand" VerticalOptions="FillAnd
        <Grid AbsoluteLayout.LayoutFlags="All"
              AbsoluteLayout.LayoutBounds="0,0,1,1"
              RowSpacing="0">
            <Grid.RowDefinitions>
                <RowDefinition Height="Auto"/>
                <RowDefinition Height="*"/>
                <RowDefinition Height="Auto"/>
            </Grid.RowDefinitions>
            <StackLayout Orientation="Horizontal" Padding="16" Spacing="16" Bac
                <Label Text="Made at Home?"
                        TextColor="White"
                        VerticalOptions="Center"
                        HorizontalOptions="Start"
                        FontSize="16">
```

DataPages



https://developer.xamarin.com/guides/xamarin-forms/datapages/

Themes



Nat Friedman
Xamarin

25 TUE Breakfast
7:30 AM

Location
Franklin Salon

Topic
Xamarin.Forms

Jessica Steger
Xamarin

Xamarin Developer Evangelist, James Montemagno, has been a .NET developer for over a decade while working in a wide range of industries.

Location Franklin Salon
Topic Digital landscape

Xamarin.iOS
Native mobile apps for iOS, watchOS & tvOS

Keith Ballinger
Xamarin

24 Training Keynote
8:00 PM

James Montemagno
Xamarin

Xamarin Developer Evangelist, James Montemagno, has been a .NET developer for over a decade while working in a wide range of industries.

Xamarin Test Cloud
Mobile app testing made easy.

https://developer.xamarin.com/guides/xamarin-forms/themes/

Test

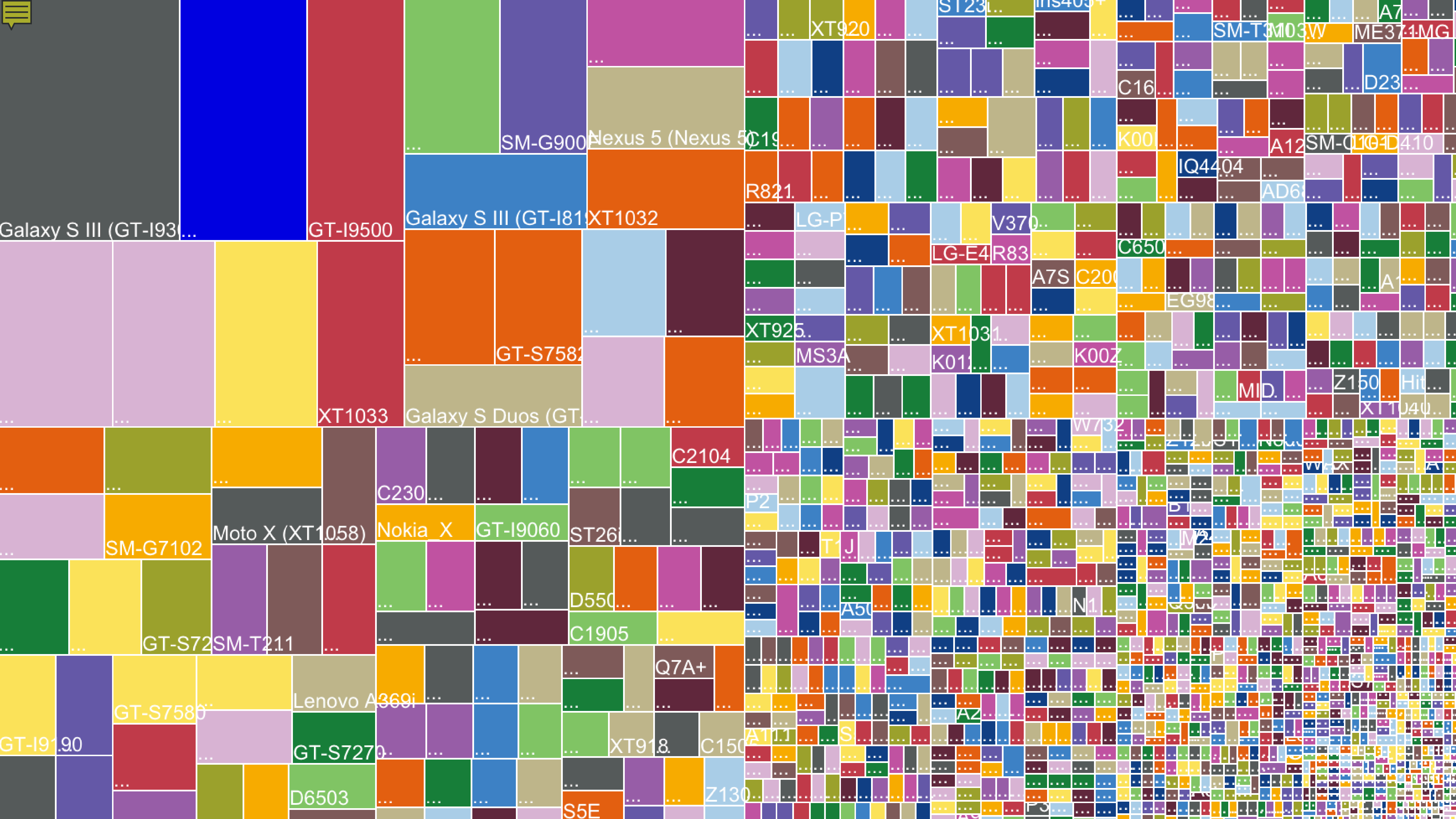
Challenges

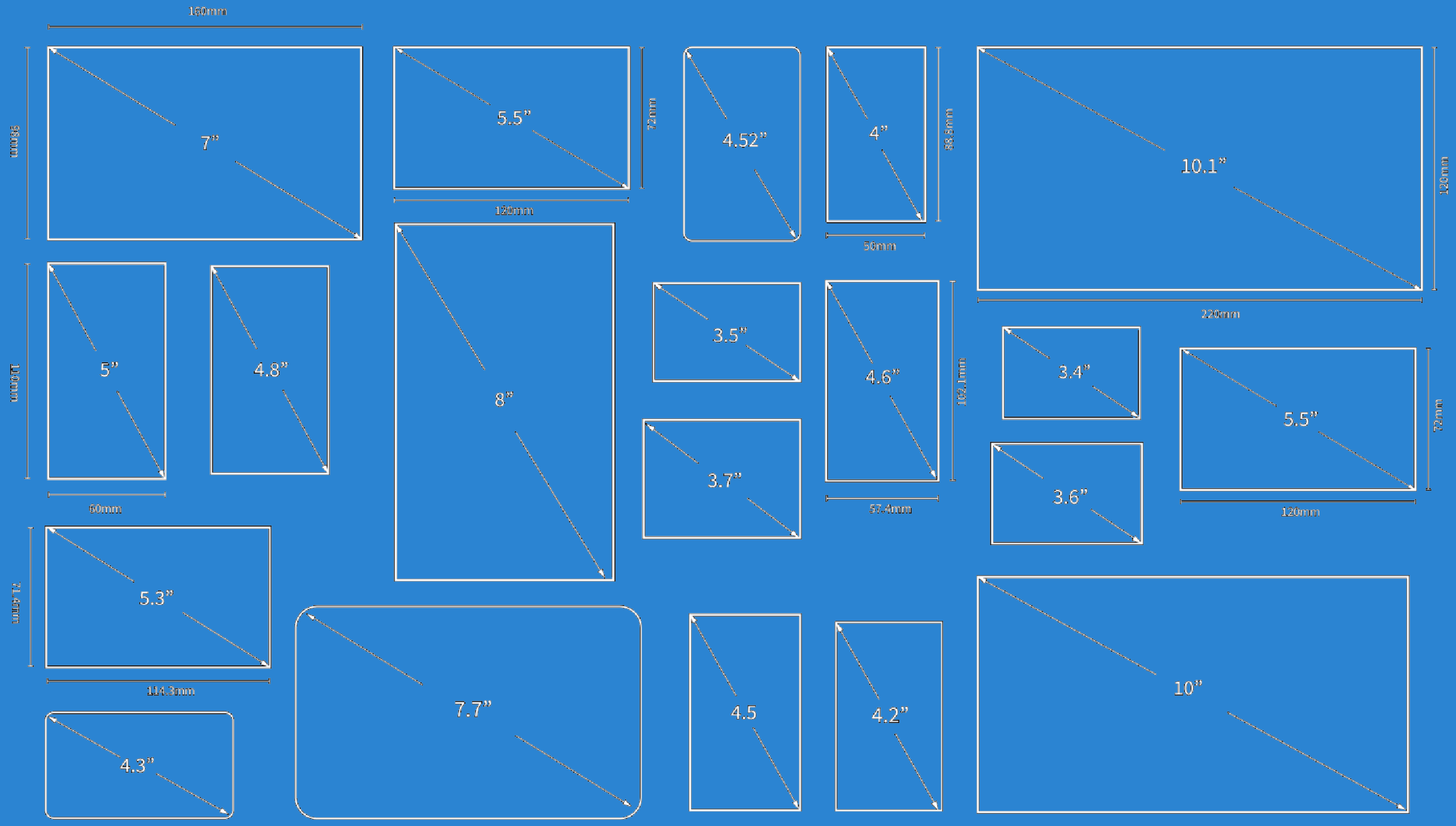
- Device Fragmentation
- App Complexity
- Fast Release Cycles
- Short Sessions
- High Mobile User Expectations

On Mobile, Quality is Hard

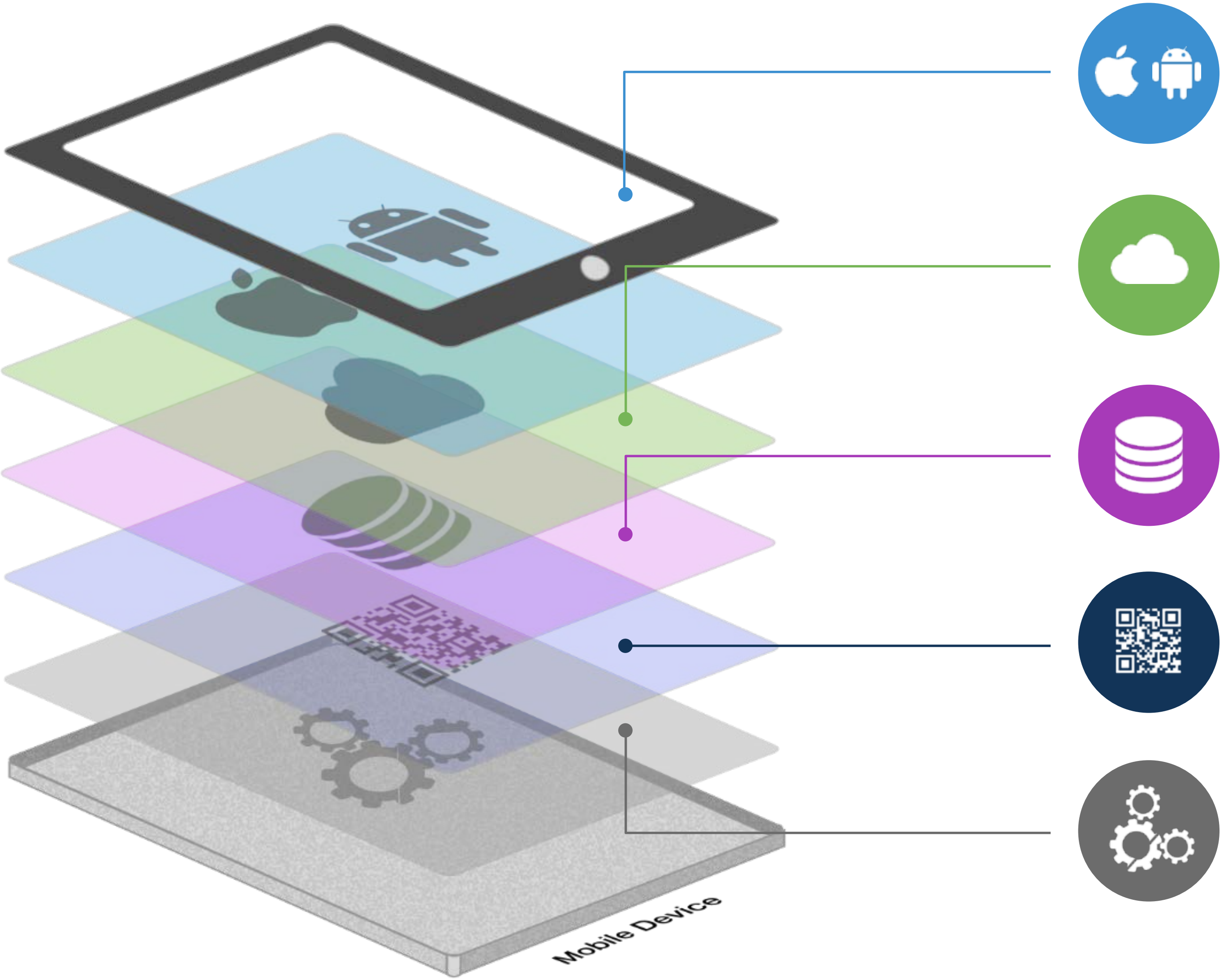
5	OS versions
20	Devices
20	Languages
35	Locales
6	Screen sizes

9	OS versions
19K+	Distinct devices
39	Languages
57	Locales
27	Screen sizes
15	Manufacturers
6	Screen configurations


Galaxy S III (GT-I93(...
GT-I9500
SM-G900F
Nexus 5 (Nexus 5)
Galaxy S III (GT-I81
XT1032
GT-S7582
Galaxy S Duos (GT-
XT1033
SM-G7102
Moto X (XT1058)
C230
Nokia_X
GT-I9060
ST26i
C2104
D550
C1905
GT-S72
SM-T211
Q7A+
Lenovo A369i
GT-S7580
GT-I9190
GT-S7270
D6503
XT918
C150
Z130
S5E
XT920
ST23i
C19
R821
LG-P
V370
LG-E4
R83
A7S
C20
XT925
MS3A
XT1031
K01
K00Z
SM-T310
ME371MG
A7
C16
D23
K00
A12
SM-G
LG-D410
IQ4404
AD68
C650
EG98
MID
Z150
Hit
XT1040
W732
P2
J
A50
N1
AZ
P3


160mm
96mm
7”
5.5”
72mm
120mm
4.52”
4”
88.8mm
50mm
10.1”
120mm
220mm
110mm
5”
4.8”
60mm
8”
3.5”
3.7”
4.6”
102.1mm
57.4mm
3.4”
3.6”
5.5”
72mm
120mm
71.4mm
5.3”
114.3mm
4.3”
7.7”
4.5
4.2”
10”

App Complexity



Thousands of iOS and Android APIs

Public web APIs

Backend integrations

Third party libraries

Memory, CPU and network constraints

Tap

Scroll

Swipe

Pinch

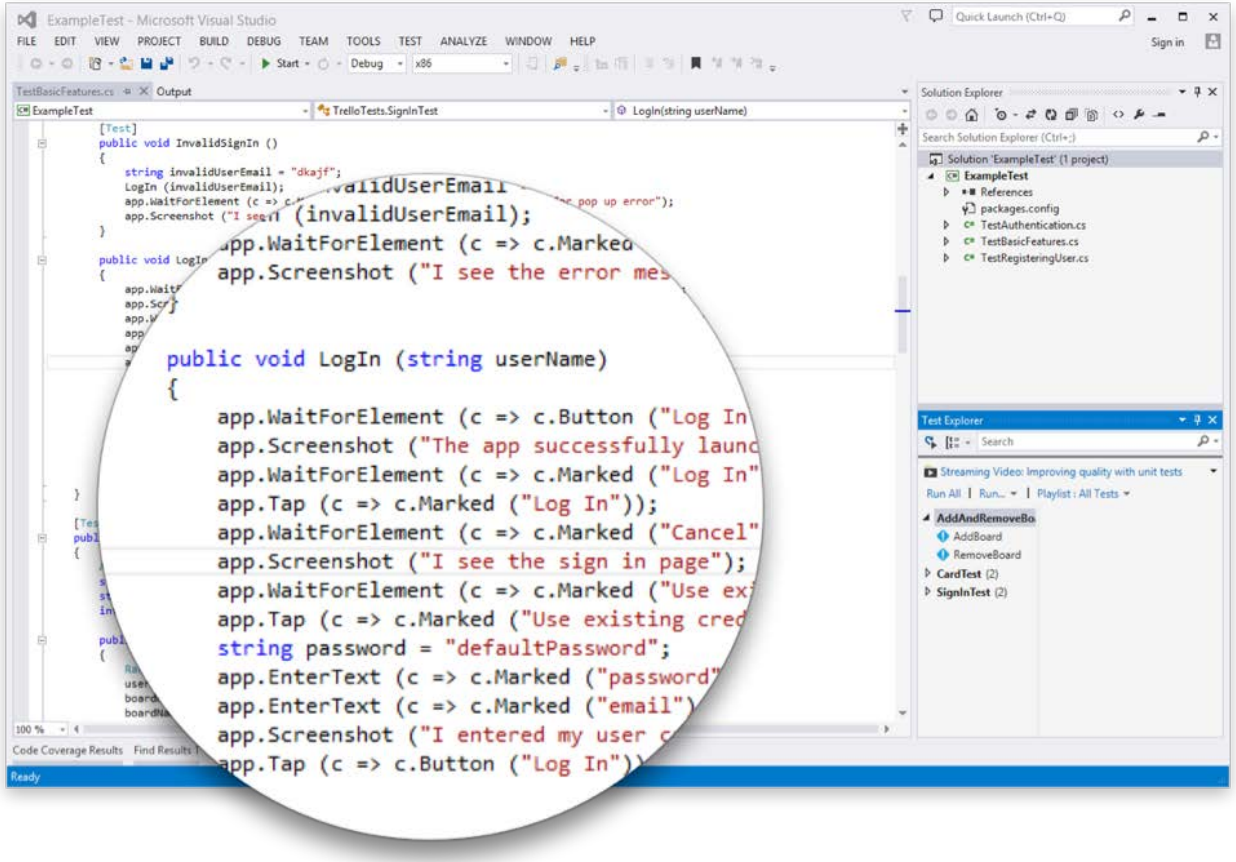
Multi Finger

Text Entry

Rotation

GPS

Introducing Xamarin.UITest



```
[Test]
public void InvalidSignIn ()
{
    string invalidUserEmail = "dkajf";
    LogIn (invalidUserEmail);
    app.WaitForElement (c => c.
    app.Screenshot ("I see
}
```

```
   validUserEmail
  (invalidUserEmail);
app.WaitForElement (c => c.Marked
app.Screenshot ("I see the error mes
}

public void LogIn (string userName)
{
    app.WaitForElement (c => c.Button ("Log In
    app.Screenshot ("The app successfully launc
    app.WaitForElement (c => c.Marked ("Log In"
    app.Tap (c => c.Marked ("Log In"));
    app.WaitForElement (c => c.Marked ("Cancel"
    app.Screenshot ("I see the sign in page");
    app.WaitForElement (c => c.Marked ("Use ex
    app.Tap (c => c.Marked ("Use existing cred
    string password = "defaultPassword";
    app.EnterText (c => c.Marked ("password"
    app.EnterText (c => c.Marked ("email")
    app.Screenshot ("I entered my user c
    app.Tap (c => c.Button ("Log In")
```

Create Automated User Interface tests all in C#

Upload to the Test Cloud or run against a Device or Simulator

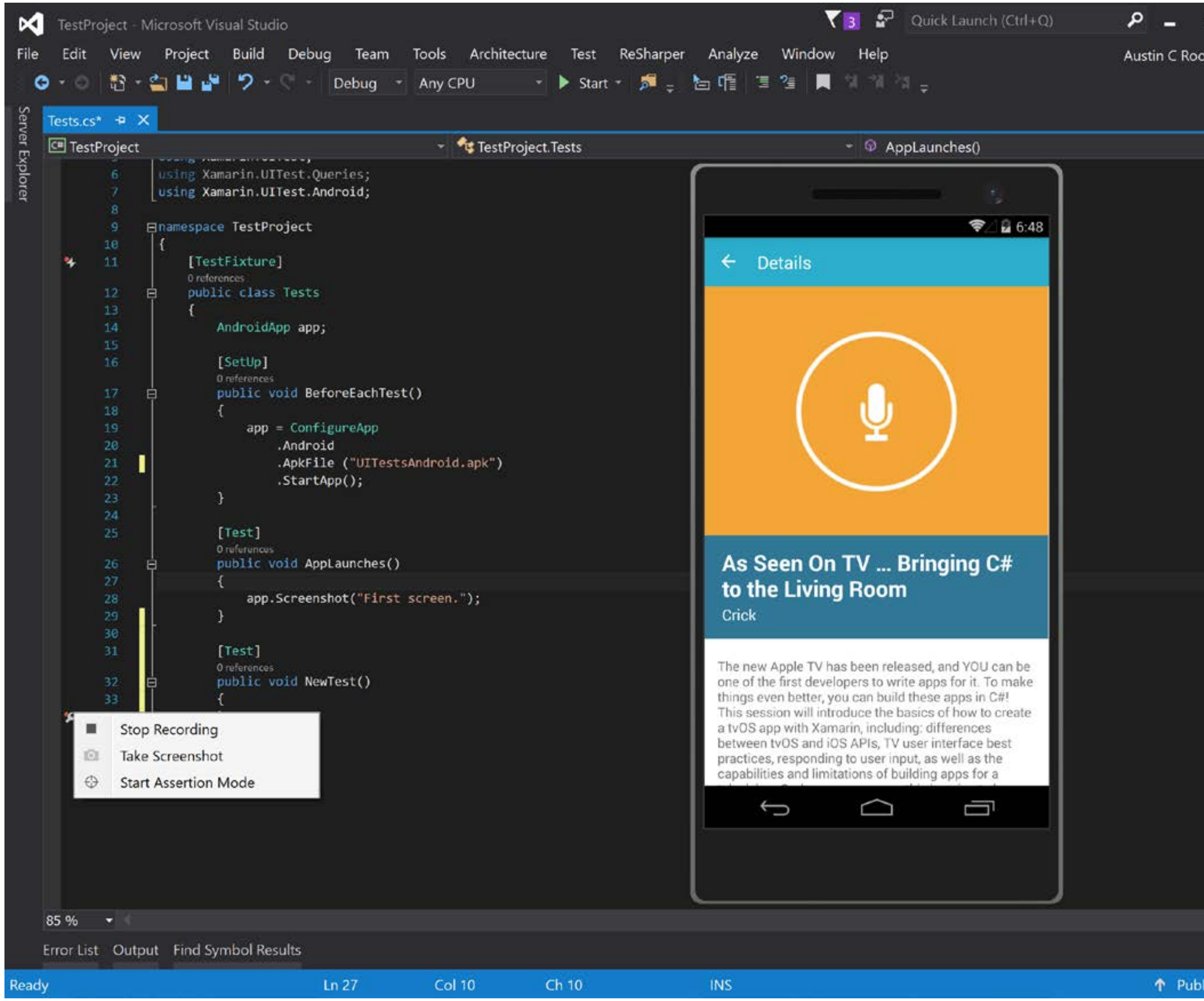
Run directly from Visual Studio or Xamarin Studio

Freely available for testing on a Simulator*

Works on **ANY** app: Native, Hybrid, or Xamarin

Test Recorder for Visual Studio

- Record UITests from Visual Studio
- Replay or ship to Test Cloud
- Use Touch Screen on Android Emulator



```
using Xamarin.UITest.Queries;
using Xamarin.UITest.Android;

namespace TestProject
{
    [TestFixture]
    0 references
    public class Tests
    {
        AndroidApp app;

        [SetUp]
        0 references
        public void BeforeEachTest()
        {
            app = ConfigureApp
                .Android
                .ApkFile ("UITestsAndroid.apk")
                .StartApp();
        }

        [Test]
        0 references
        public void AppLaunches()
        {
            app.Screenshot("First screen.");
        }

        [Test]
        0 references
        public void NewTest()
        {
```

Details

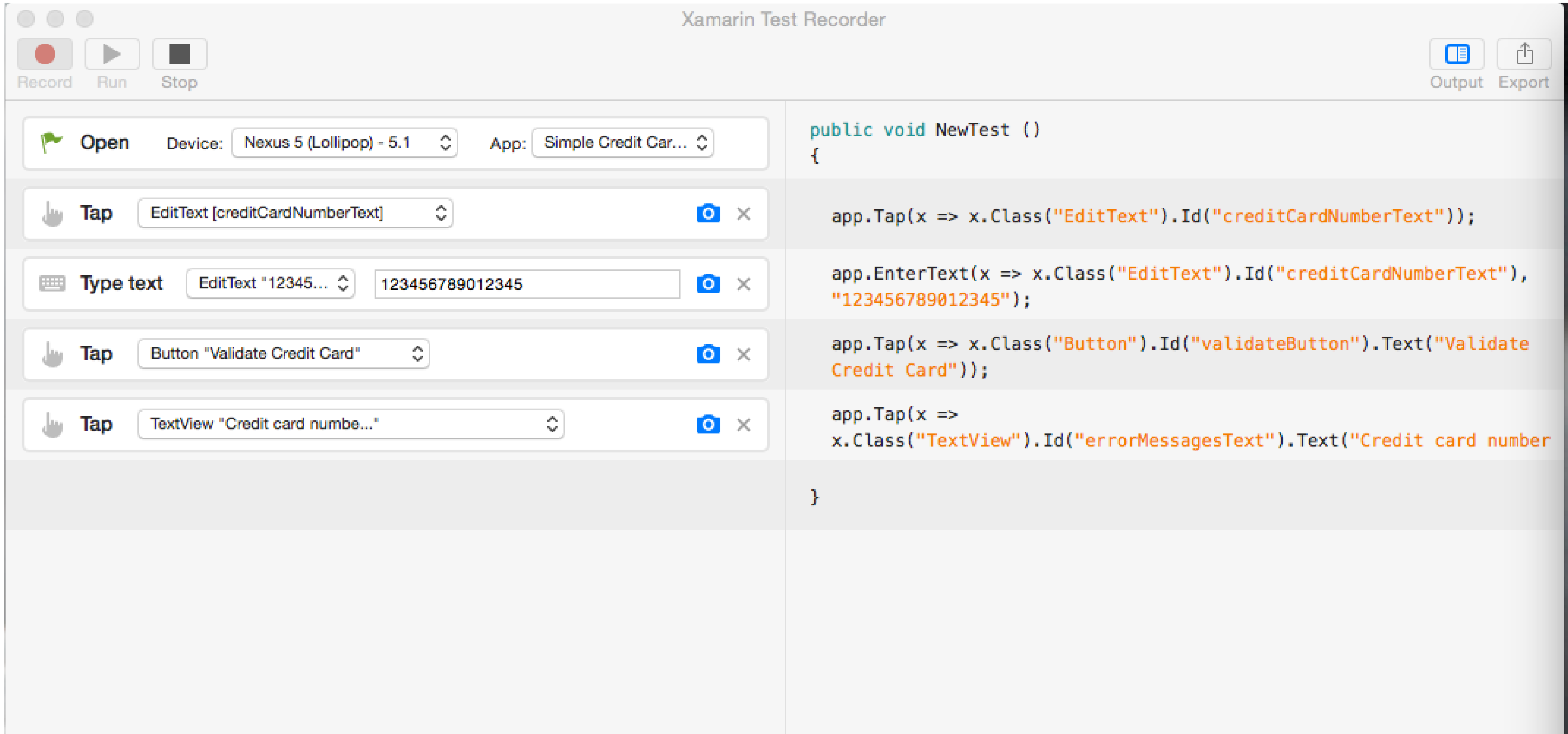
As Seen On TV ... Bringing C# to the Living Room

Crick

The new Apple TV has been released, and YOU can be one of the first developers to write apps for it. To make things even better, you can build these apps in C#! This session will introduce the basics of how to create a tvOS app with Xamarin, including: differences between tvOS and iOS APIs, TV user interface best practices, responding to user input, as well as the capabilities and limitations of building apps for a

Test Recorder for Mac

- Record UITests for iOS and Android apps
- Replay or ship to Test Cloud



Open Device: Nexus 5 (Lollipop) - 5.1 App: Simple Credit Car...

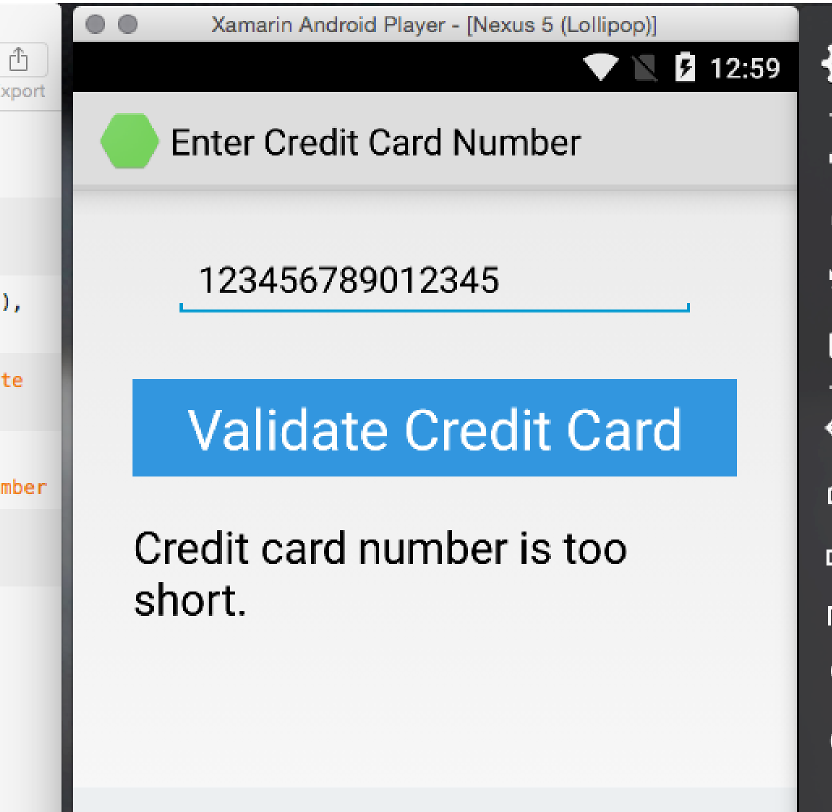
Tap EditText [creditCardNumberText]

Type text EditText "12345... 123456789012345

Tap Button "Validate Credit Card"

Tap TextView "Credit card numbe..."

```
public void NewTest ()
{

  app.Tap(x => x.Class("EditText").Id("creditCardNumberText"));

  app.EnterText(x => x.Class("EditText").Id("creditCardNumberText"),
  "123456789012345");

  app.Tap(x => x.Class("Button").Id("validateButton").Text("Validate
  Credit Card"));

  app.Tap(x =>
  x.Class("TextView").Id("errorMessagesText").Text("Credit card number

}
```

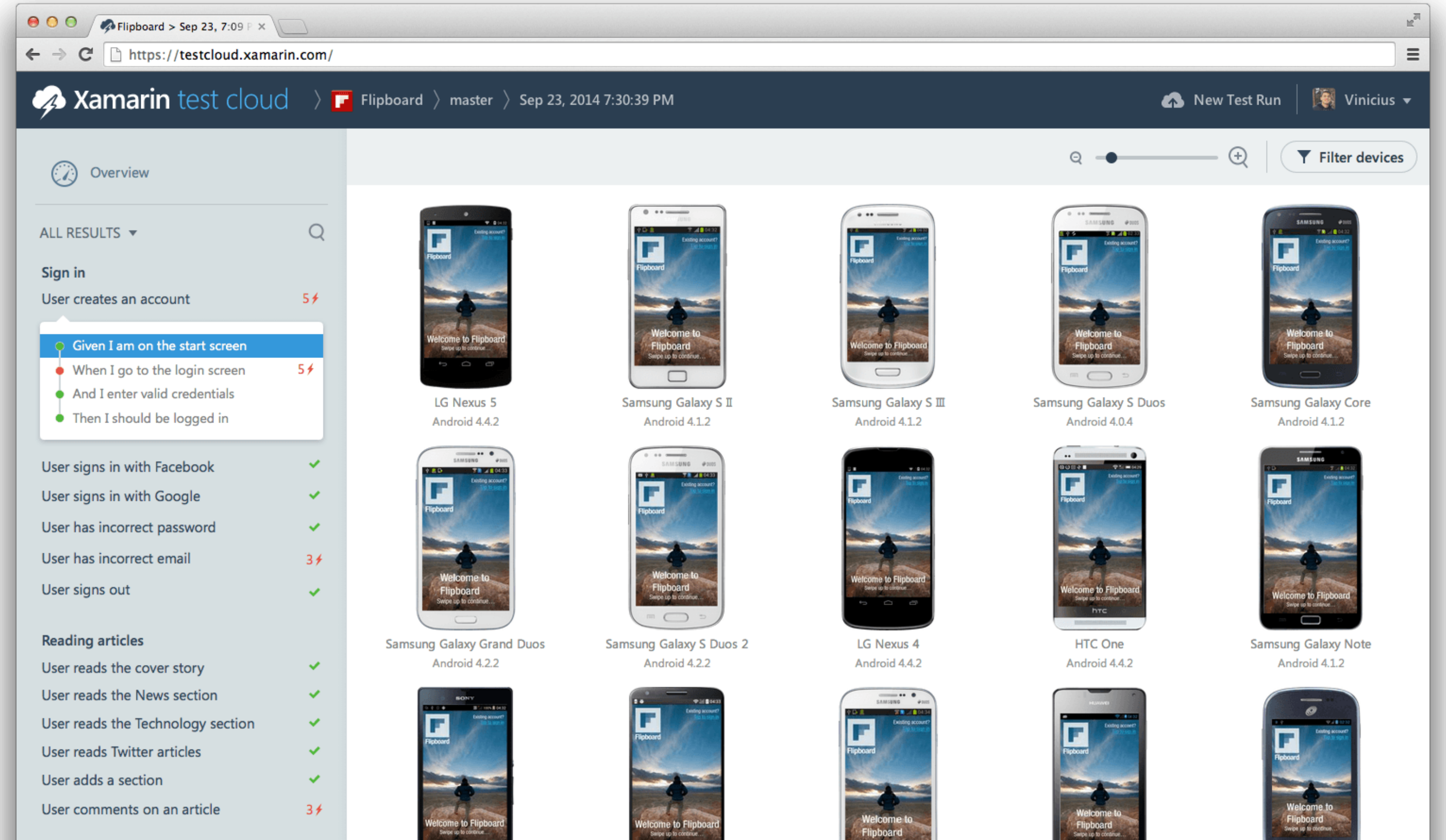


123456789012345

Credit card number is too short.

Xamarin Test Cloud

xamarin.com/testcloud



Sign in

- User creates an account 5
  - Given I am on the start screen
  - When I go to the login screen 5
  - And I enter valid credentials
  - Then I should be logged in
- User signs in with Facebook ✓
- User signs in with Google ✓
- User has incorrect password ✓
- User has incorrect email 3
- User signs out ✓

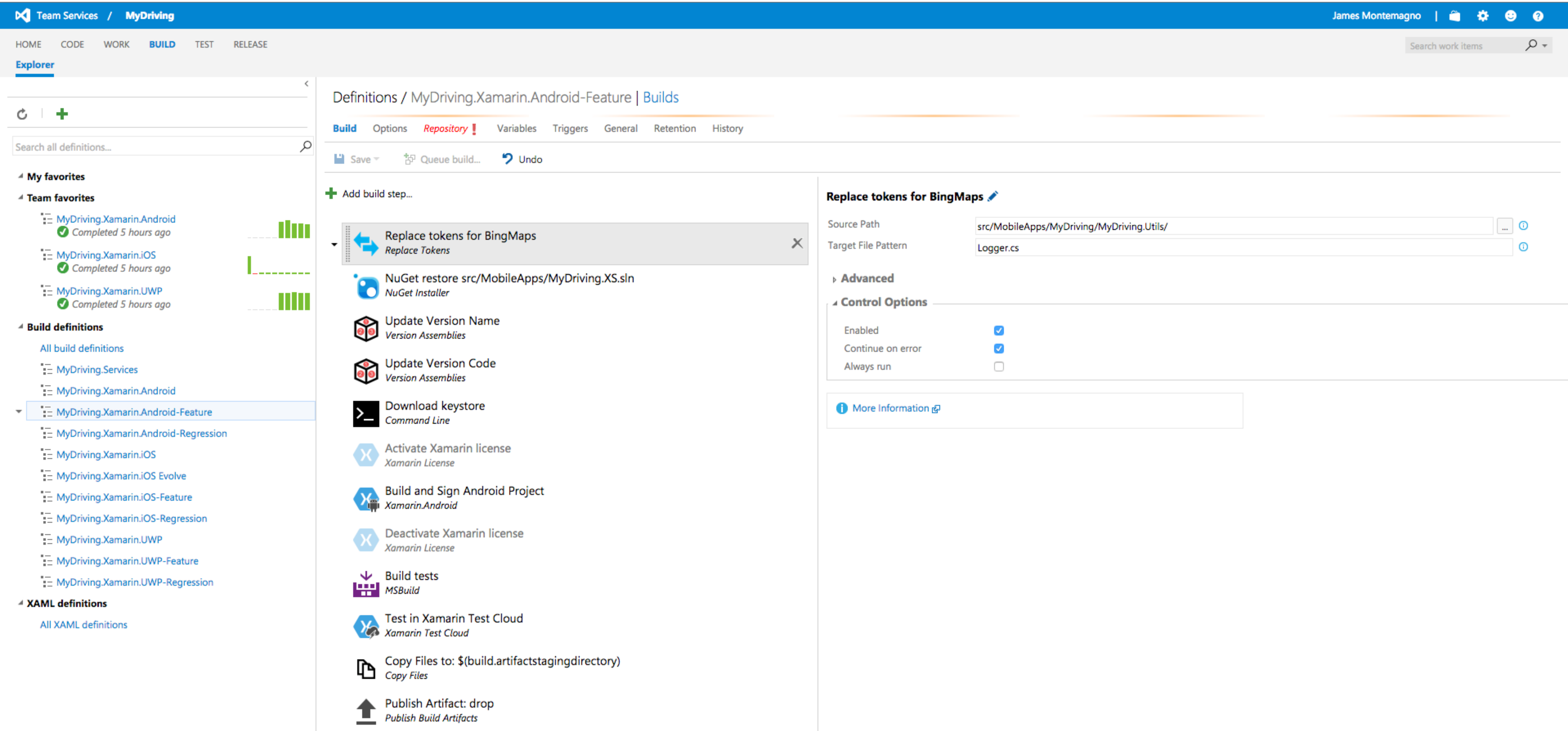
Reading articles

- User reads the cover story ✓
- User reads the News section ✓
- User reads the Technology section ✓
- User reads Twitter articles ✓
- User adds a section ✓
- User comments on an article 3

LG Nexus 5 Android 4.4.2	Samsung Galaxy S II Android 4.1.2	Samsung Galaxy S III Android 4.1.2	Samsung Galaxy S Duos Android 4.0.4	Samsung Galaxy Core Android 4.1.2
Samsung Galaxy Grand Duos Android 4.2.2	Samsung Galaxy S Duos 2 Android 4.2.2	LG Nexus 4 Android 4.4.2	HTC One Android 4.4.2	Samsung Galaxy Note Android 4.1.2

Build

Visual Studio Team Services - Build



Definitions / MyDriving.Xamarin.Android-Feature | Builds

- My favorites
- Team favorites
  - MyDriving.Xamarin.Android – *Completed 5 hours ago*
  - MyDriving.Xamarin.iOS – *Completed 5 hours ago*
  - MyDriving.Xamarin.UWP – *Completed 5 hours ago*
- Build definitions
  - All build definitions
  - MyDriving.Services
  - MyDriving.Xamarin.Android
  - MyDriving.Xamarin.Android-Feature
  - MyDriving.Xamarin.Android-Regression
  - MyDriving.Xamarin.iOS
  - MyDriving.Xamarin.iOS Evolve
  - MyDriving.Xamarin.iOS-Feature
  - MyDriving.Xamarin.iOS-Regression
  - MyDriving.Xamarin.UWP
  - MyDriving.Xamarin.UWP-Feature
  - MyDriving.Xamarin.UWP-Regression
- XAML definitions
  - All XAML definitions

Build steps:

- Replace tokens for BingMaps – *Replace Tokens*
- NuGet restore src/MobileApps/MyDriving.XS.sln – *NuGet Installer*
- Update Version Name – *Version Assemblies*
- Update Version Code – *Version Assemblies*
- Download keystore – *Command Line*
- Activate Xamarin license – *Xamarin License*
- Build and Sign Android Project – *Xamarin.Android*
- Deactivate Xamarin license – *Xamarin License*
- Build tests – *MSBuild*
- Test in Xamarin Test Cloud – *Xamarin Test Cloud*
- Copy Files to: $(build.artifactstagingdirectory) – *Copy Files*
- Publish Artifact: drop – *Publish Build Artifacts*

Replace tokens for BingMaps

Source Path	src/MobileApps/MyDriving/MyDriving.Utils/
Target File Pattern	Logger.cs

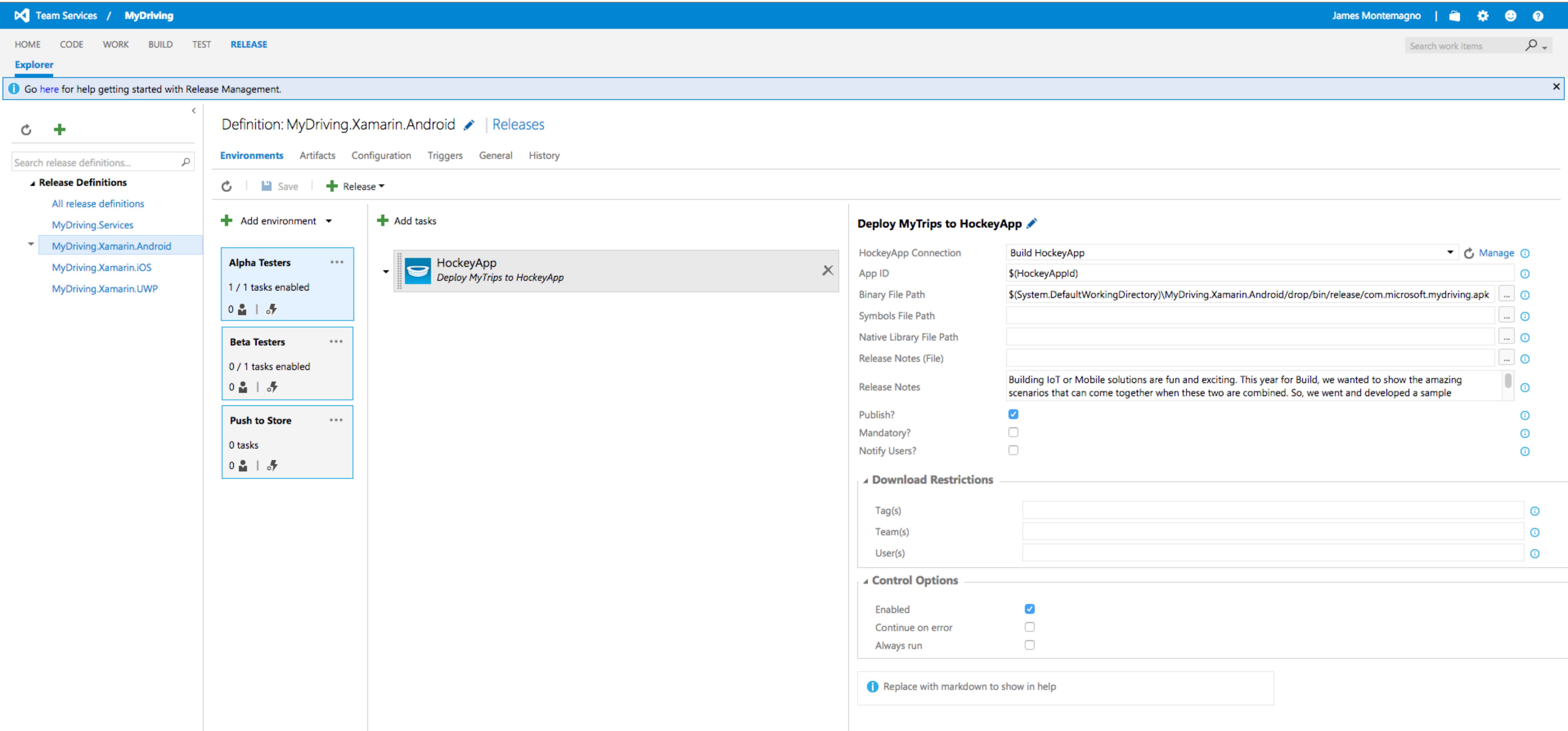
▸ Advanced

▾ Control Options

- Enabled ☑
- Continue on error ☑
- Always run ☐

More Information

Visual Studio Team Services - Release



Go here for help getting started with Release Management.

Release Definitions
- All release definitions
- MyDriving.Services
- MyDriving.Xamarin.Android
- MyDriving.Xamarin.iOS
- MyDriving.Xamarin.UWP

Definition: MyDriving.Xamarin.Android | Releases

Alpha Testers
1 / 1 tasks enabled
0

Beta Testers
0 / 1 tasks enabled
0

Push to Store
0 tasks
0

HockeyApp
Deploy MyTrips to HockeyApp

Deploy MyTrips to HockeyApp

HockeyApp Connection: Build HockeyApp

App ID: $(HockeyAppId)

Binary File Path: $(System.DefaultWorkingDirectory)\MyDriving.Xamarin.Android/drop/bin/release/com.microsoft.mydriving.apk

Symbols File Path:

Native Library File Path:

Release Notes (File):

Release Notes: Building IoT or Mobile solutions are fun and exciting. This year for Build, we wanted to show the amazing scenarios that can come together when these two are combined. So, we went and developed a sample

Publish? ☑

Mandatory? □

Notify Users? □

Download Restrictions

Tag(s):

Team(s):

User(s):

Control Options

Enabled ☑

Continue on error □

Always run □

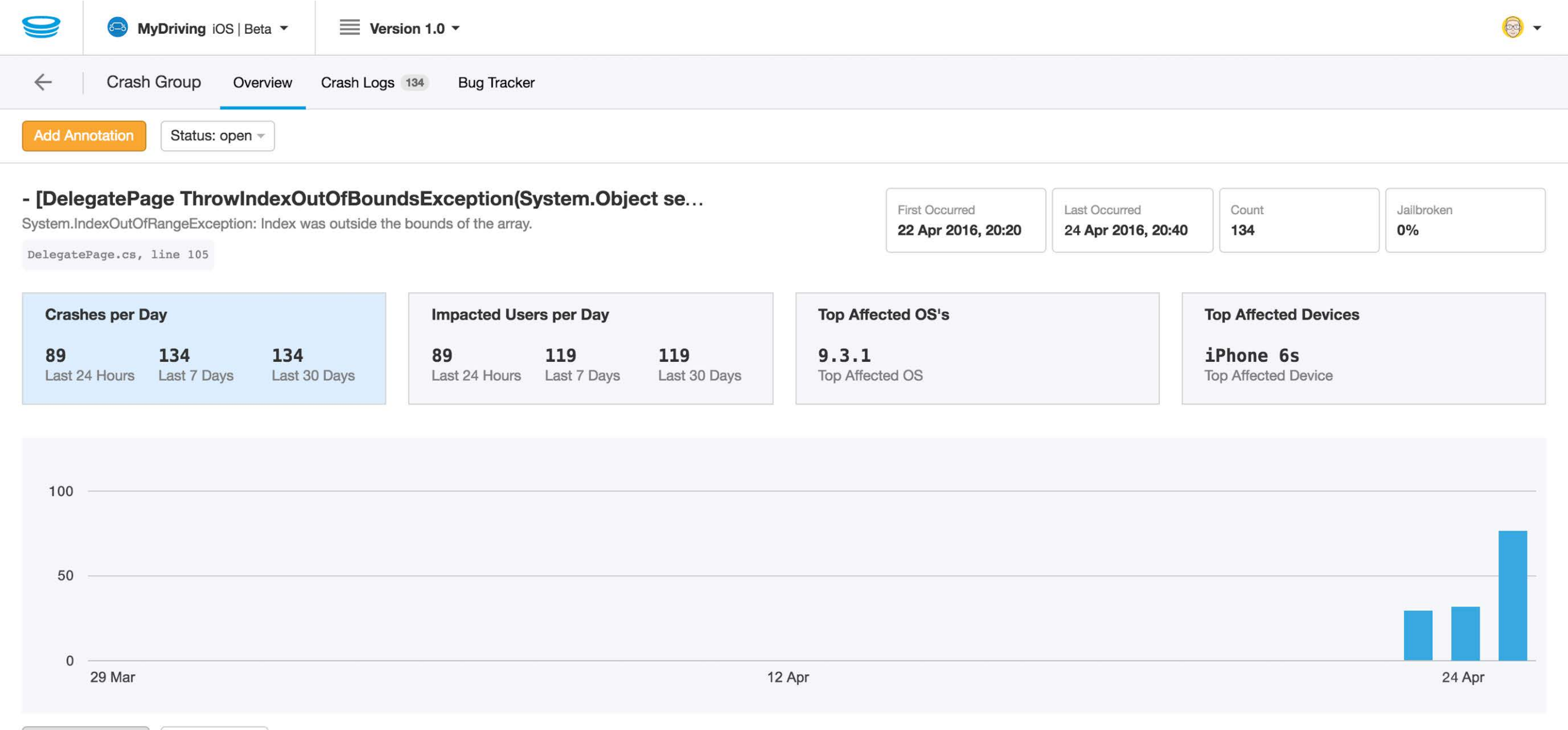
Replace with markdown to show in help

Distribute & Monitor

Distribute

Monitor

HockeyApp



Status: open

- [DelegatePage ThrowIndexOutOfBoundsException(System.Object se…

System.IndexOutOfRangeException: Index was outside the bounds of the array.

`DelegatePage.cs, line 105`

First Occurred	Last Occurred	Count	Jailbroken
22 Apr 2016, 20:20	24 Apr 2016, 20:40	134	0%

Crashes per Day

89	134	134
Last 24 Hours	Last 7 Days	Last 30 Days

Impacted Users per Day

89	119	119
Last 24 Hours	Last 7 Days	Last 30 Days

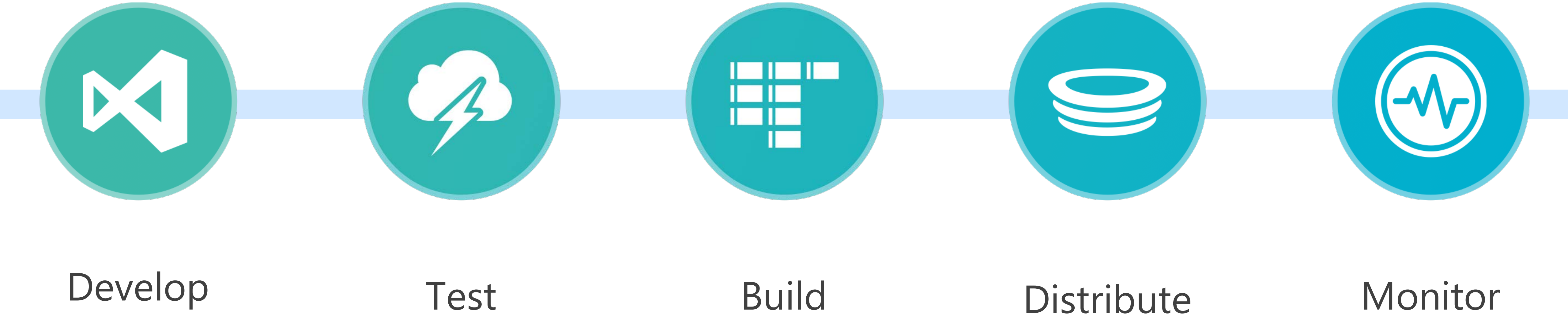
Top Affected OS's

9.3.1
Top Affected OS

Top Affected Devices

iPhone 6s
Top Affected Device

Xamarin – Your Complete Mobile Solution



Develop

Test

Build

Distribute

Monitor

Get Started Today

xamarin.com

Xamarin University

Unrivaled Mobile Development Training

Live unlimited mobile development training from mobile experts, in your time-zone, on your schedule, and as often as you'd like.

Free 30 Day Trial - xamarin.com/university

Thank You! Questions?

Abhishek Narain
Technical Evangelist,
Microsoft

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@narainabhishek