

# SiteXam: getting started with Sitecore and Xamarin for mobile apps

Presented by:  
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**valtech\_**

sitecore®  
**SYMPOSIUM**  
LAS VEGAS

#SitecoreSYM

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CAMPAIGNS

PROFILE

UNIQUE VISITORS

MULTILINGUAL SITE

OPEN RATES

EXPERIENCE

# Me

Working with Sitecore since 2007

Four time technical MVP

Senior Technical Architect @ valtech\_

5 years in Toronto helping out with TSUG

Based in London, UK

Blog: [sitecorecreative.wordpress.com](http://sitecorecreative.wordpress.com)

Twitter: @sitecoretweet



# Agenda

What is Xamarin

What is the Sitecore Mobile SDK

Local Environment Setup (Getting Started)

Sample Application Demo

Mobile Analytics

Production Architecture

Questions

# Xamarin?

Founded in 2011 by the engineers who created Mono & Mono for Android

The main purpose of Mono is to be able to run .NET applications cross-platform (Android, Linux, macOS, Windows, PlayStation etc.)

The main purpose of Xamarin is to provide tools to write cross-platform mobile apps with native user interfaces

Used by 1.4 million developers in 120 countries

Acquired by Microsoft in 2016

C# + Mono .NET + Compiler (produces native app or integrated .NET runtime) + IDE tools

Free!



# Sitecore Mobile SDK?

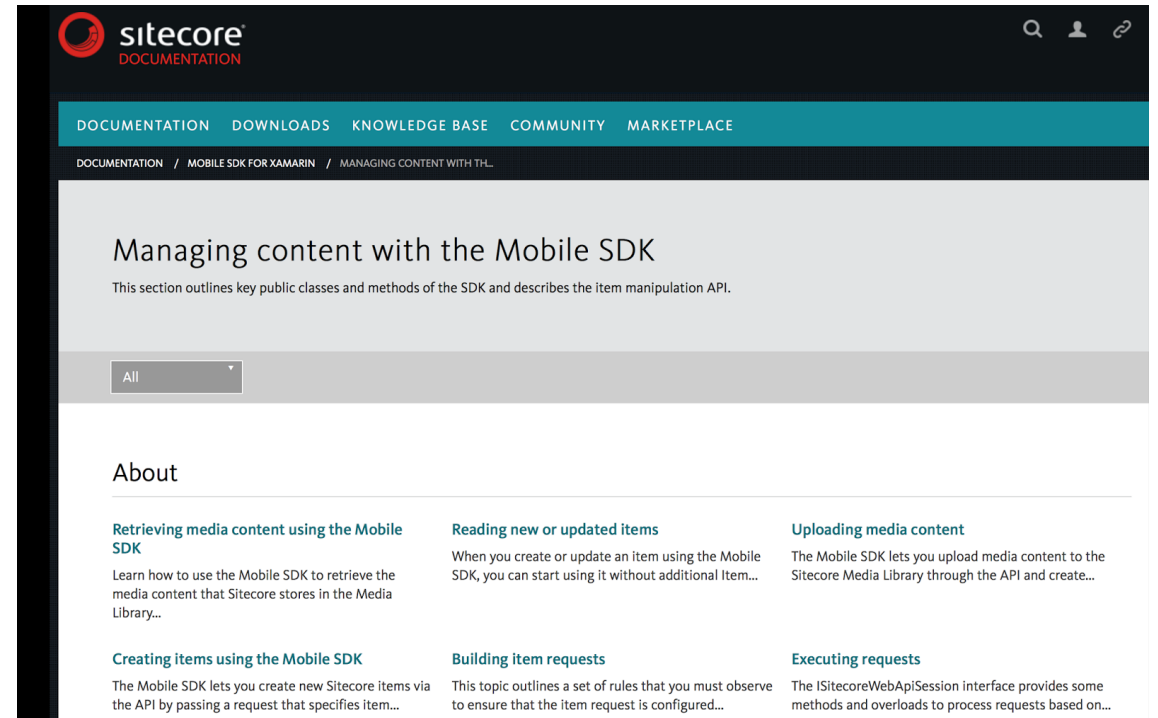
Portable class library (managed assembly that works on more than one .NET Framework platform)

High level abstraction for Sitecore items

Wraps around the Sitecore WebAPI and Sitecore Services Client (SSC) in order to perform CRUD operations on Sitecore items

Handles authentication

8.1+? SSC is probably the way to go, improved authentication model and better support for extensibility when using the EntityService



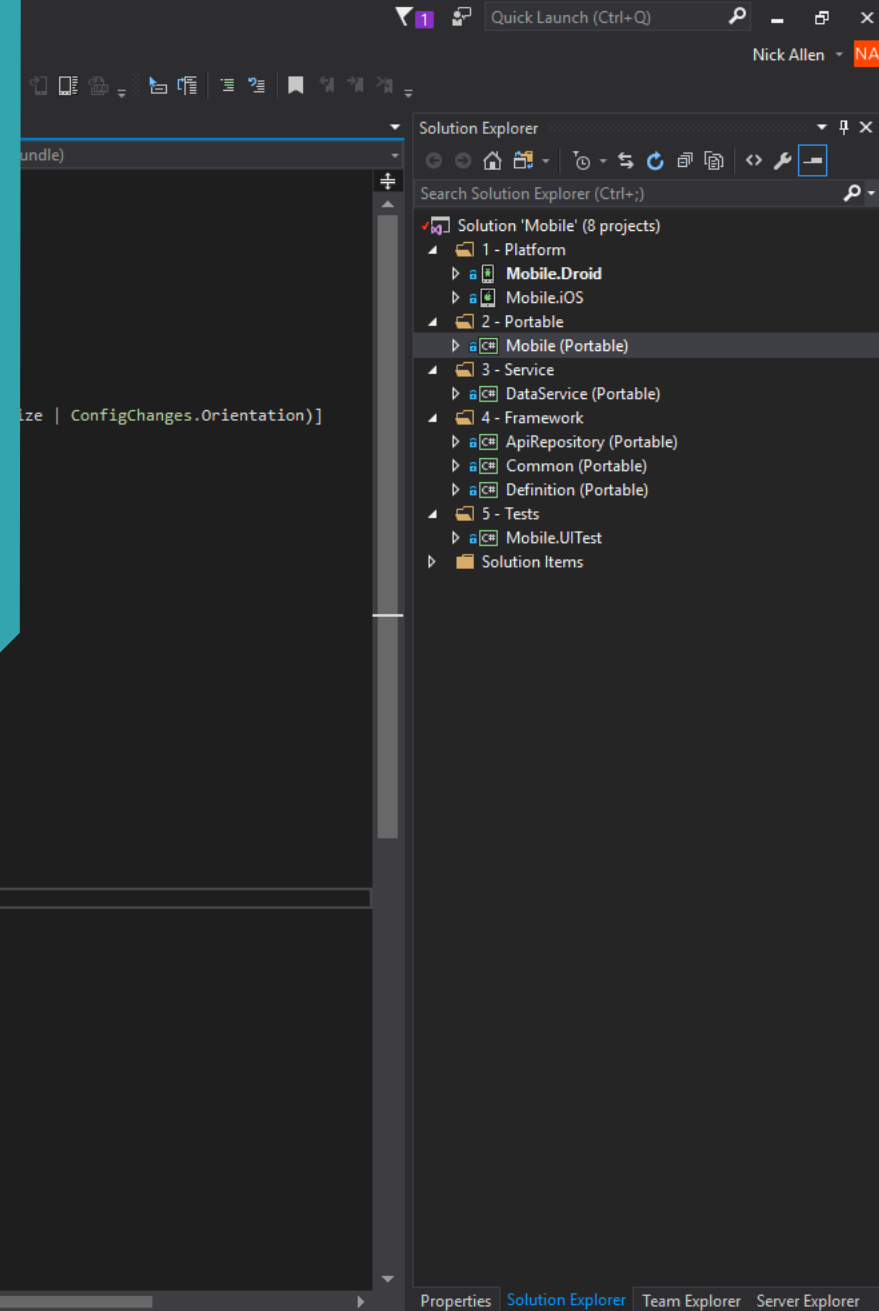
# Local Environment

Visual Studio 2017 with Xamarin components

Android app

Device emulation

Sitecore 8.2 Update 5





# Project Creation

Create Project > C# > Android > Blank App

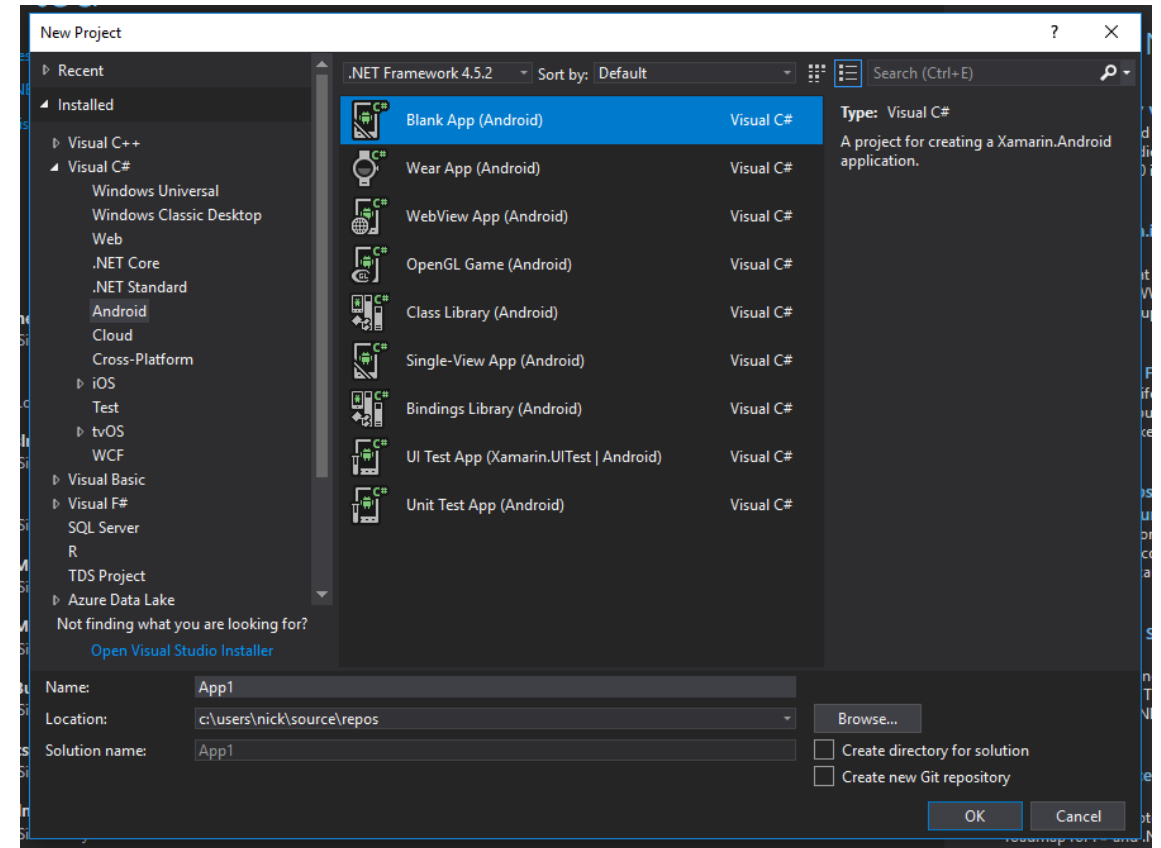
Add permission to access network resources to the android manifest (project properties)

Add Sitecore Mobile SDK via Nuget

Sitecore.MobileSDK.SSC for Sitecore Services Client

For debugging purposes you can also clone the SDK source code from GitHub

<https://github.com/Sitecore/sitecore-mobile-pcl-sdk>



# Device Emulation

Download the Visual Studio emulator for Android

Download additional devices with specific Android versions

Emulators run on HyperV (much faster than Visual Studio emulators)

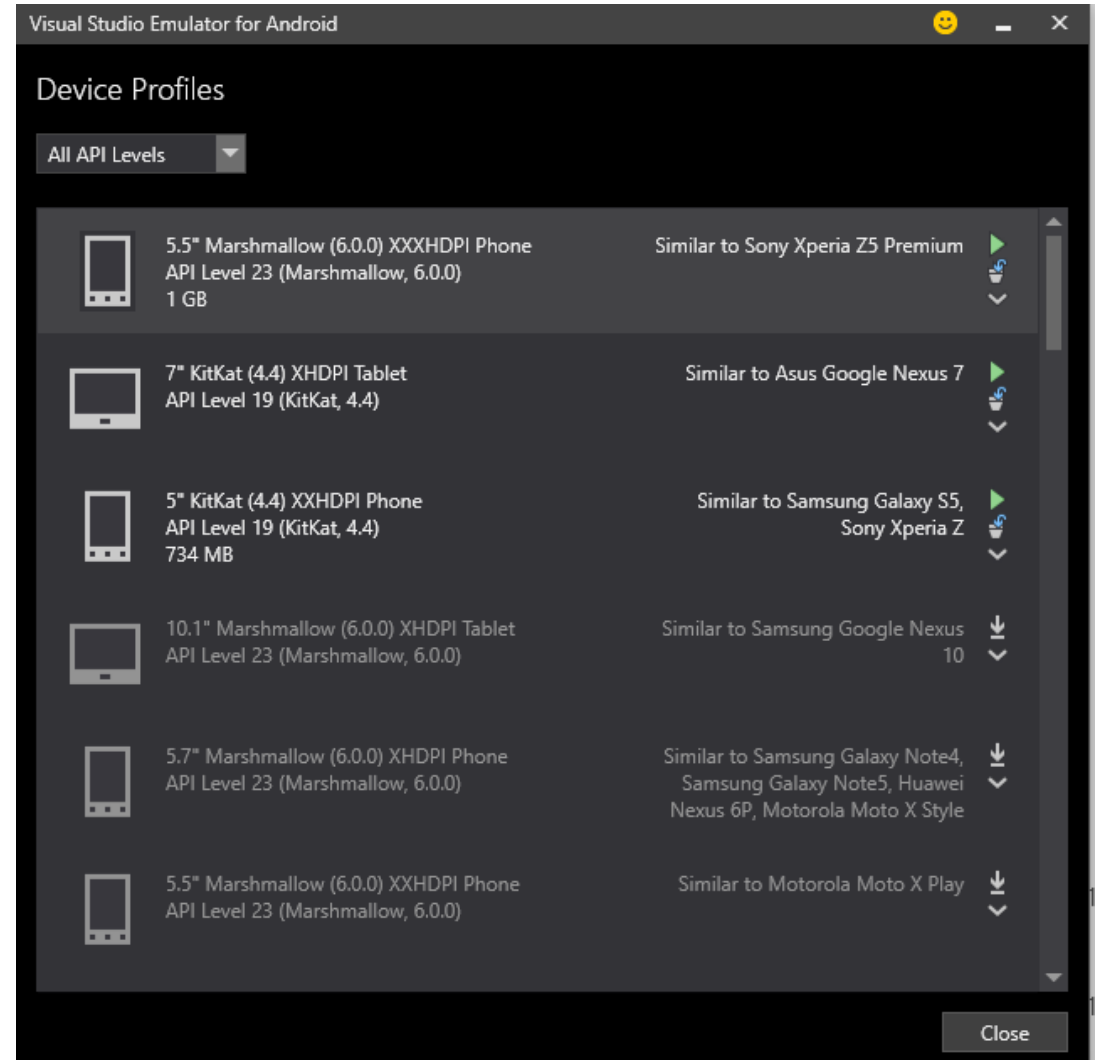
Launch device

Appears in the Visual Studio debug drop down

Start debugging to launch the app on the device

Pay attention to minimum Android version setting in the project properties

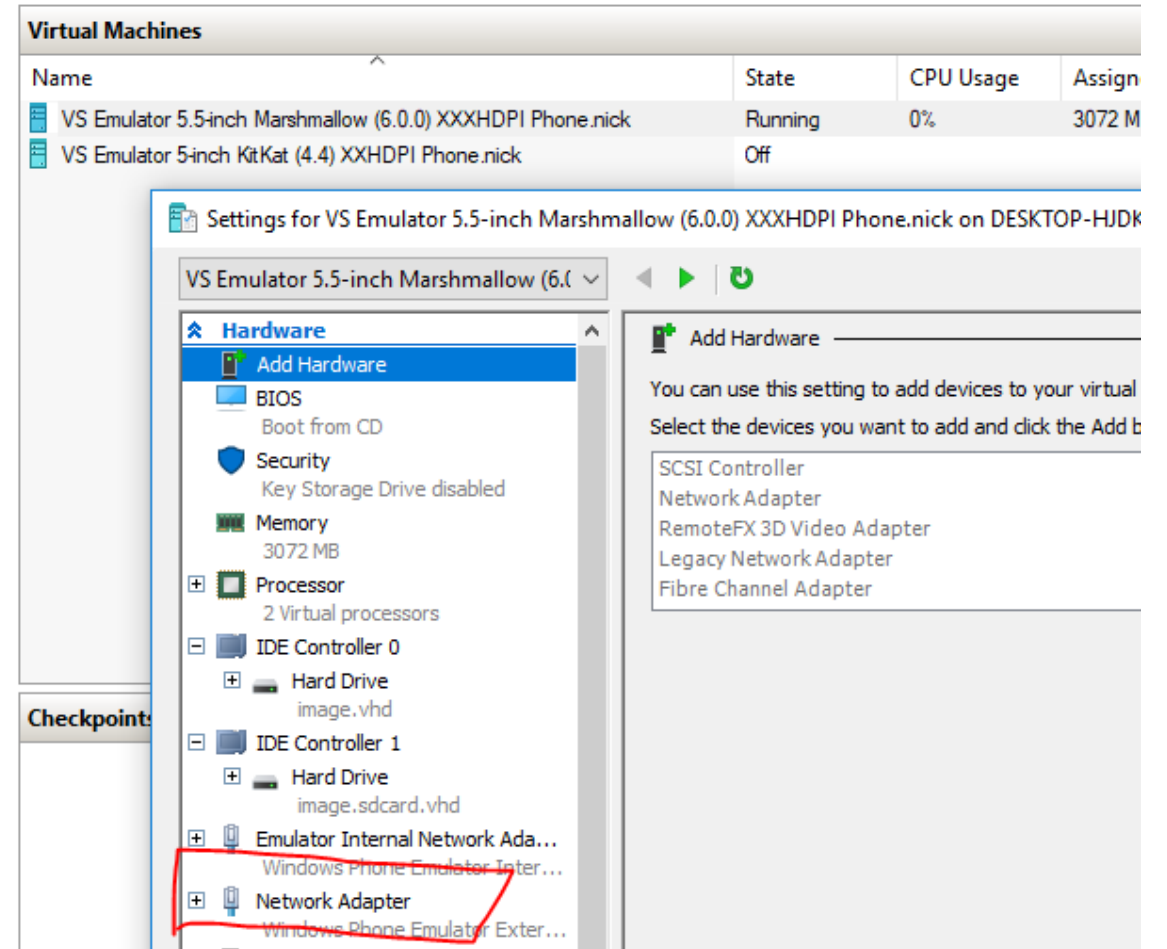
You can also connect a physical Android device to your machine via USB (developer mode)





# Emulation Common Issues

- No internet access?
  - HyperV
  - Virtual Switch Manager
  - Add external switch
  - Add hardware to device (select external switch)
  - Must appear after the internal adapter



# Emulation Common Issues

- Device can't see your local Sitecore instance?
  - Modify device hosts file
  - Open command prompt (as administrator)
  - Go to C:\Program files (x86)\Android\android-sdk\platform-tools
  - **adb remount** (takes the device out of read only mode)
  - **adb pull /system/etc/hosts C:\temp\hosts**
  - Modify hosts file
    - 10.0.2.2 loops back to host machine localhost (127.0.0.1)
  - **adb push C:\temp\hosts /system/etc/**
  - Restart device

```
Administrator: Command Prompt
Microsoft Windows [Version 10.0.15063]
(c) 2017 Microsoft Corporation. All rights reserved.

C:\WINDOWS\system32>cd c:\Program files (x86)\Android\android-sdk\platform-tools

c:\Program Files (x86)\Android\android-sdk\platform-tools>adb remount
remount succeeded

c:\Program Files (x86)\Android\android-sdk\platform-tools>adb devices
List of devices attached
169.254.76.233:5555    device

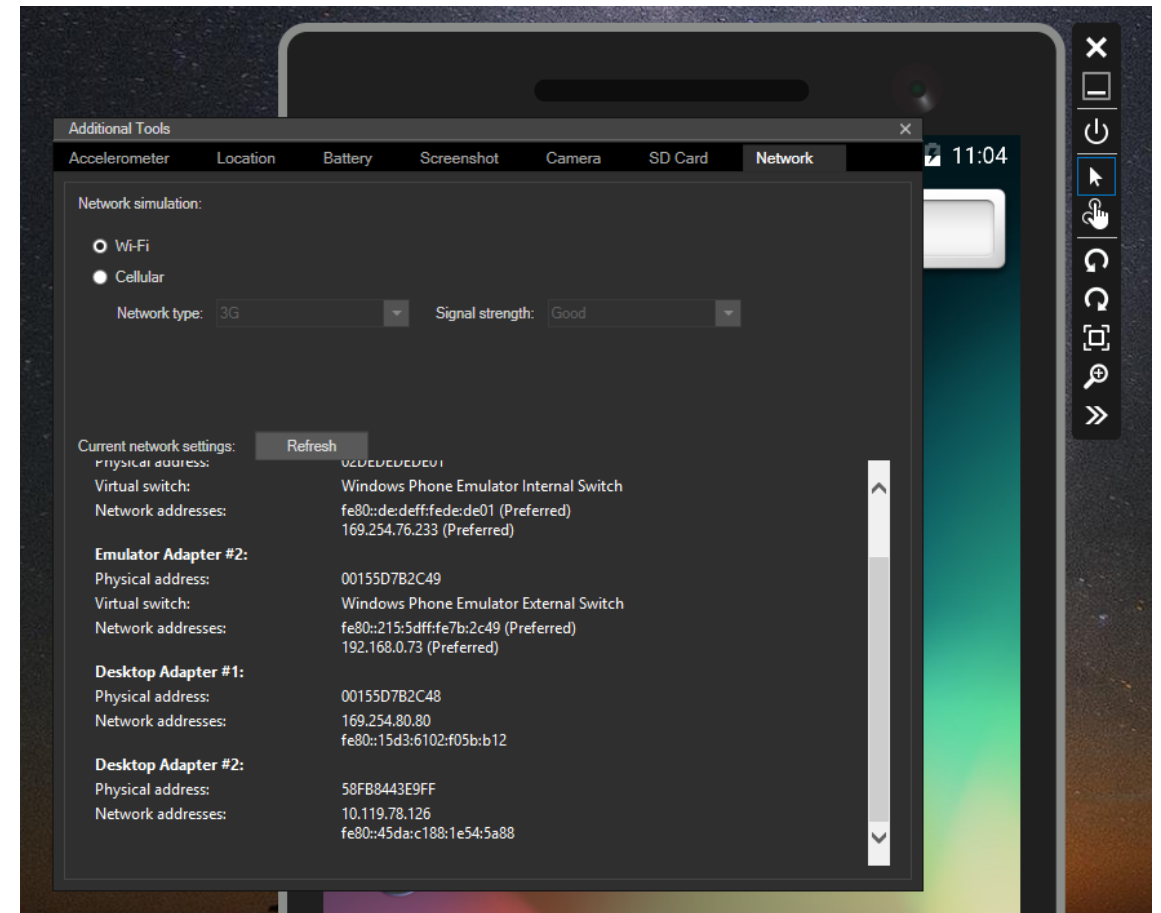
c:\Program Files (x86)\Android\android-sdk\platform-tools>adb pull /system/etc/hosts C:\temp\hosts
[100%] /system/etc/hosts

c:\Program Files (x86)\Android\android-sdk\platform-tools>adb push C:\temp\hosts /system/etc/
[100%] /system/etc/hosts

c:\Program Files (x86)\Android\android-sdk\platform-tools>
```

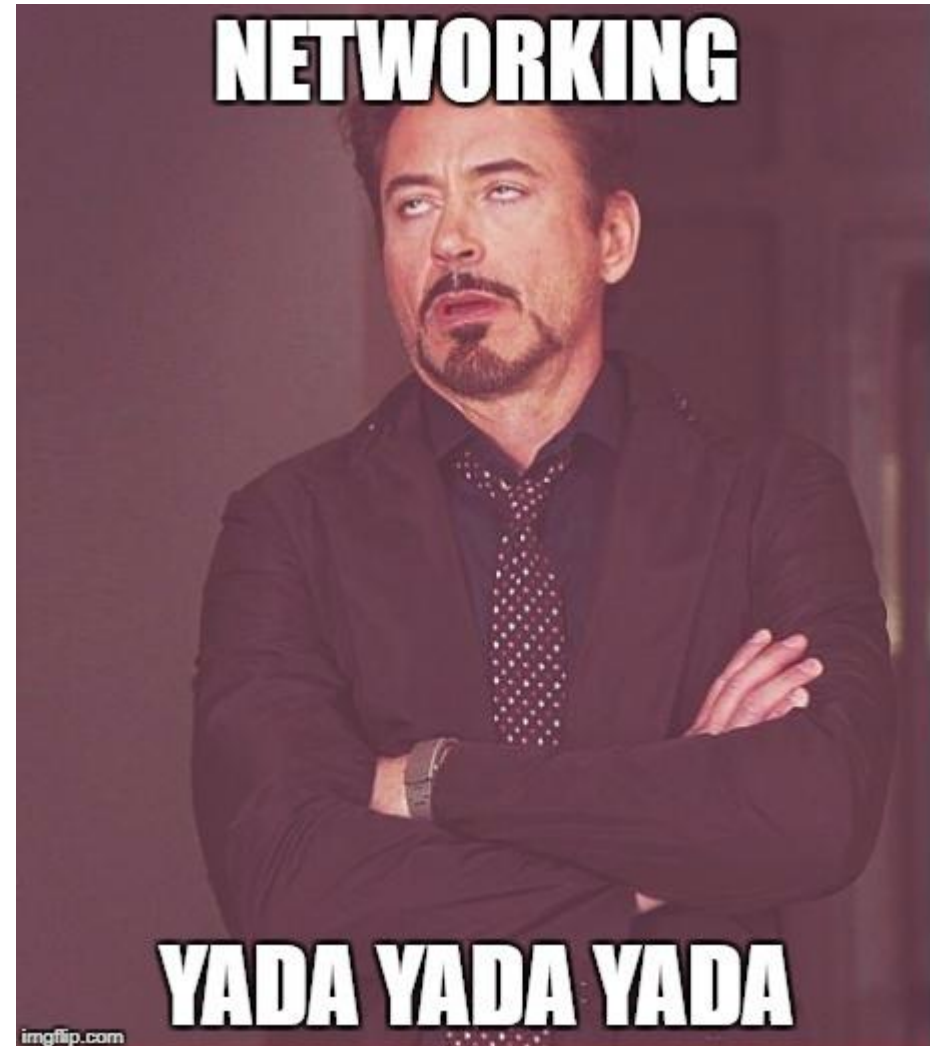
# Emulation Common Issues

- Device **STILL** can't see your local Sitecore instance?
  - Instead of 10.0.2.2
  - Open device settings > Network
  - Use the ip address of the first Desktop adapter in the list



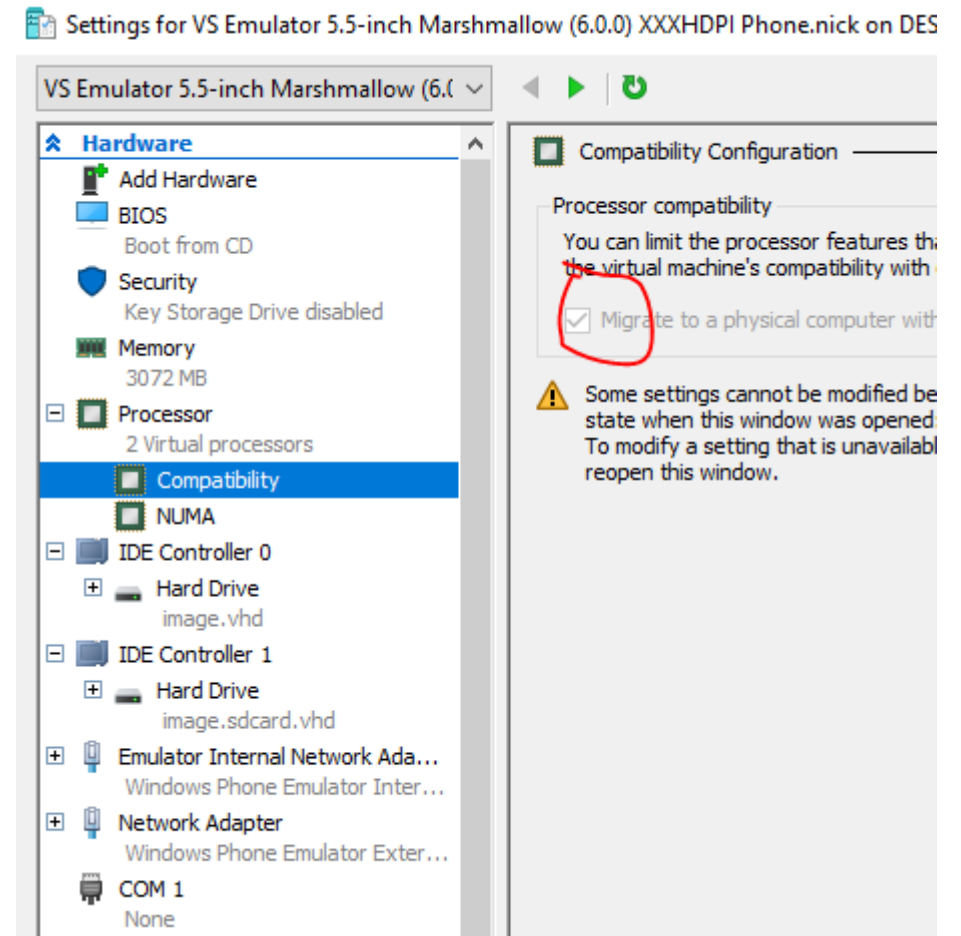
# Emulation Common Issues

- Device **STILL** can't see your local Sitecore instance?
  - Check local firewall rules



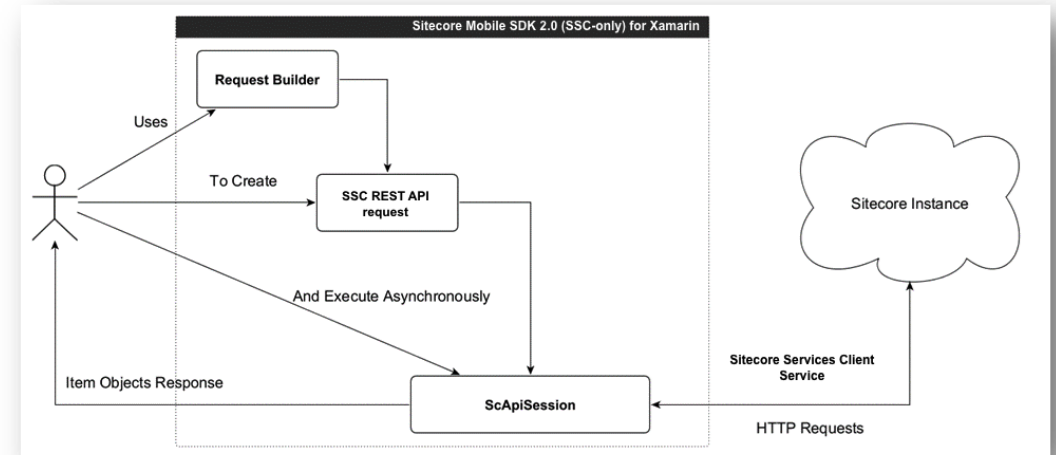
# Emulation Common Issues

- Emulator is running
- App is deployed
- App starts on the emulator
- It immediately stops
  - HyperV > Device Settings > Processor > Compatibility
- Check Migrate to a physical computer with a different processor version



# SSC Configuration

- Sitecore.Services.Client.config
- ServicesOnPolicy (emulated device is not local, local only is the default)
- Authentication over https (add self-signed cert in IIS)
- Add https binding to Sitecore site (select cert)
- Optionally create a Sitecore user that you will use to authenticate with SSC



# Local Environment

- Visual Studio with Xamarin components – Check
- Device emulation – Check
- Android project – Check
- Sitecore Mobile SDK - Check
- SSC configured - Check





# Sample Application

- Fictitious event tickets site
- Audience equally uses desktop and mobile, it just depends where they happen to be
- Event popularity determines event ordering, popularity needs to be understood cross-channel
- Popularity = views
- Supports
  - Event browsing
  - Submission of new events
- Single team responsible for the moderation of submitted events regardless of the channel used



# Demo...

# Mobile Analytics xConnect OMG! OMG! OMG!



SOCIAL

MULTI-SITE

INTERACTION

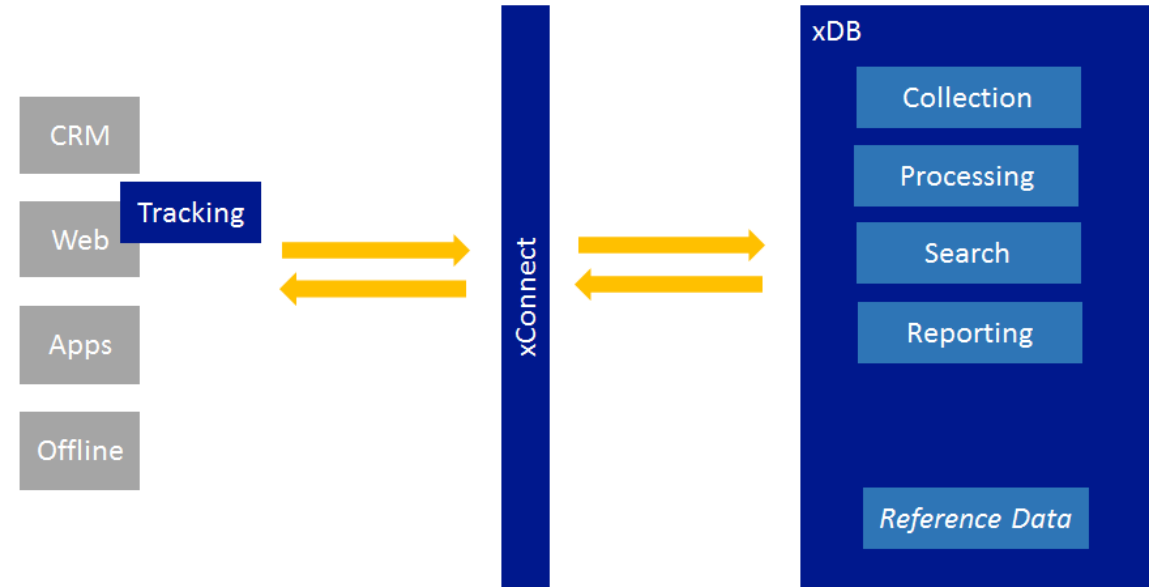
SEARCH

# xConnect In Brief

xConnect is the service layer that sits in between the xDB and any client, device, or interface that wants to read, write, or search xDB data.

No system has direct access to the collection database or search indexes. Even systems internal to the xDB (such as processing) use xConnect to access data in the xDB.

In practical terms, xConnect exposes a web API end point. The diagram adjacent shows xConnect in a vertically scaled architecture, where xConnect has been extracted to a Collection and Search server.

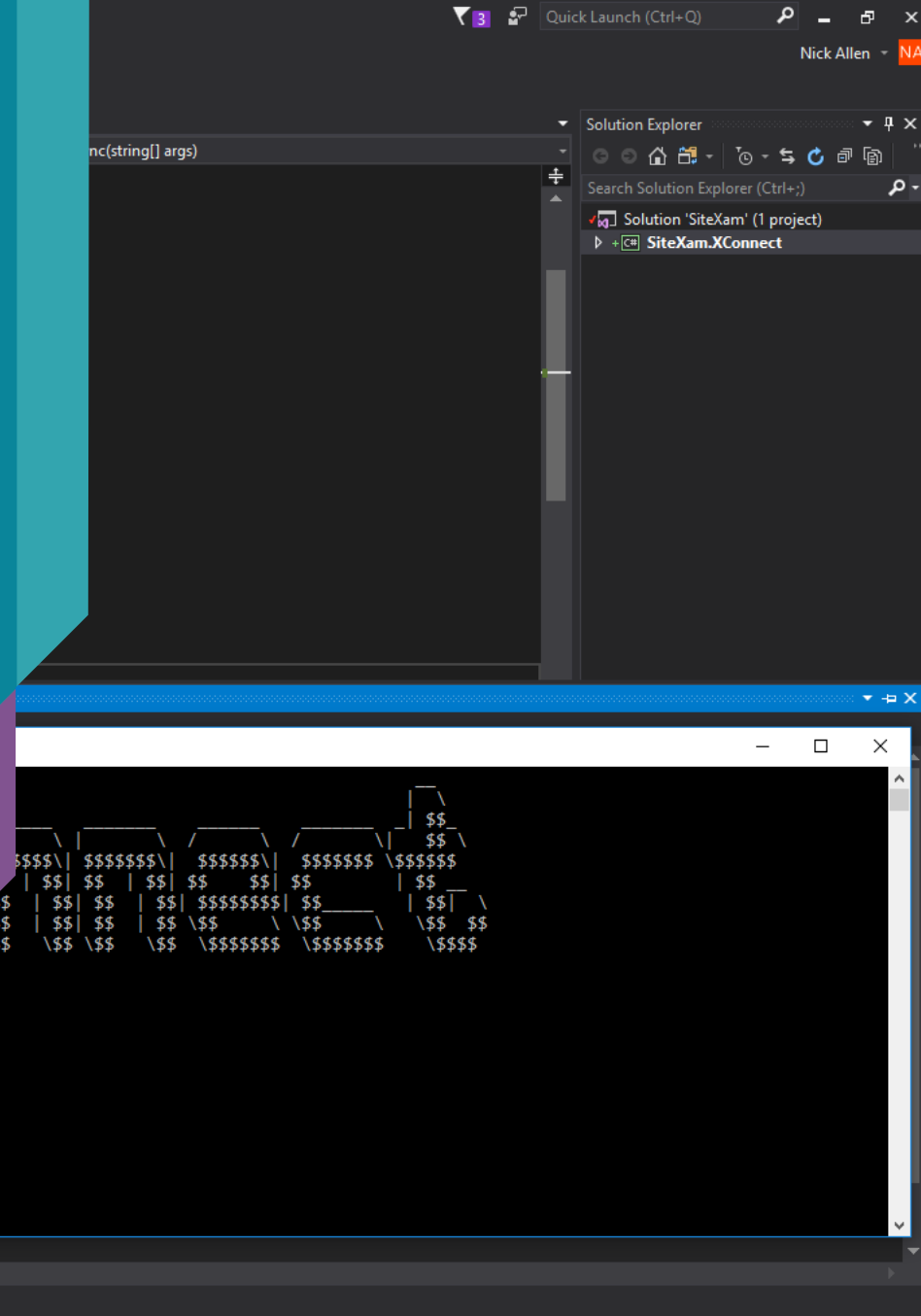


# Demo...

Console App

Web

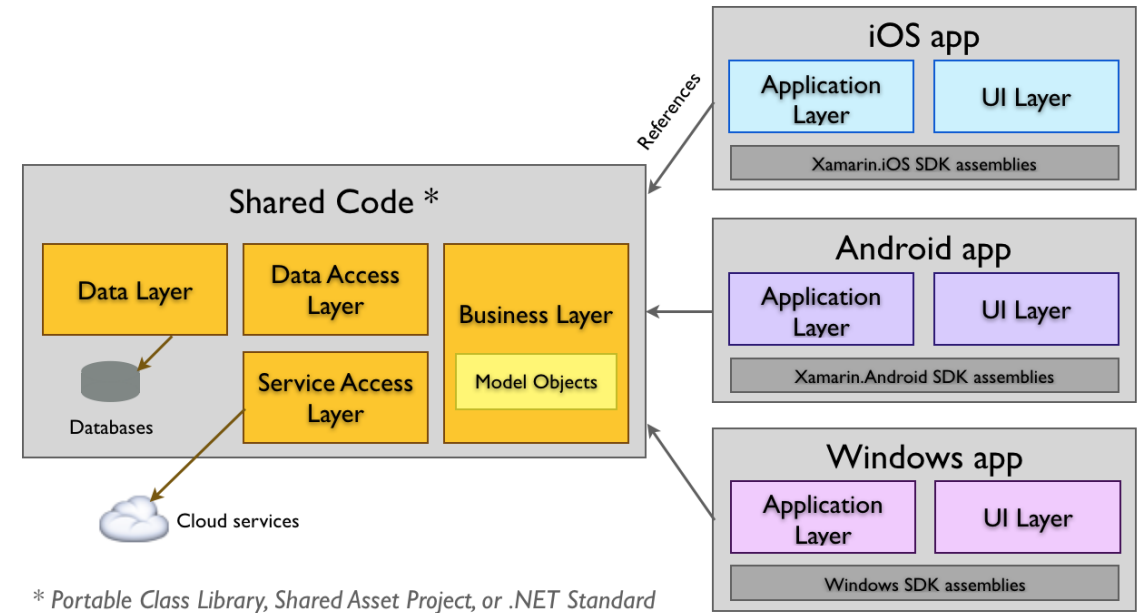
Mobile



# Production Architecture – Cross Platform Code Sharing

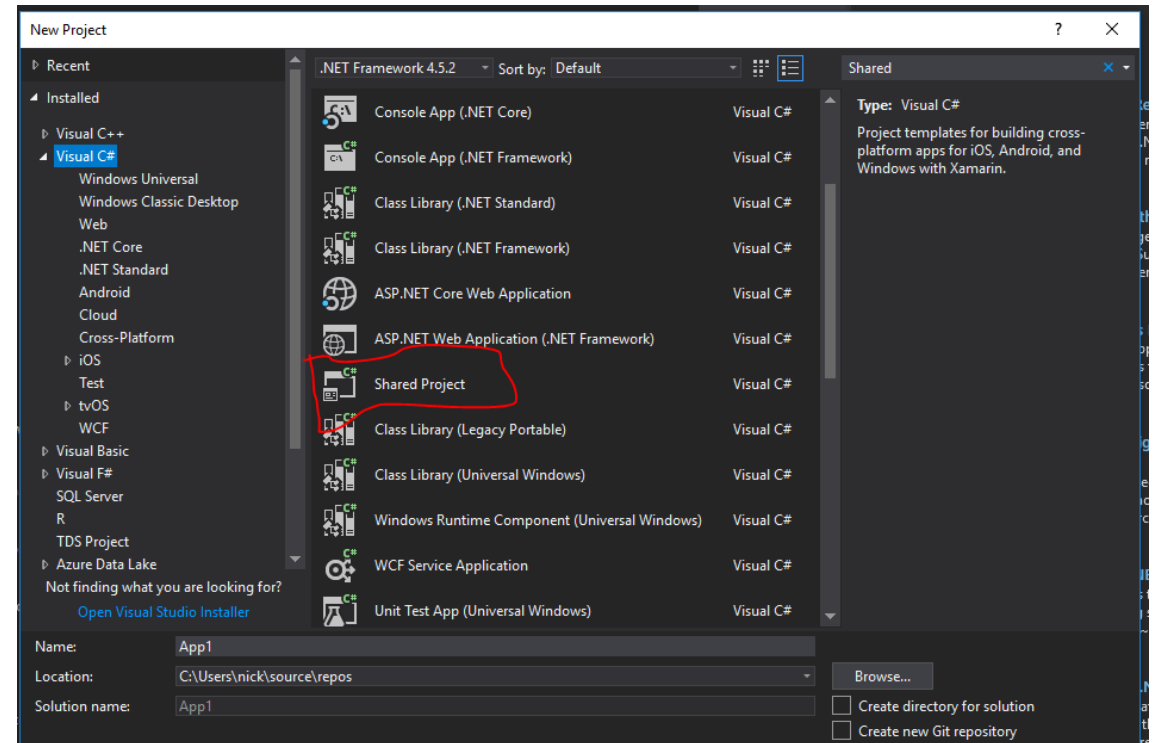
“The main purpose of Xamarin is to provide tools to write cross-platform mobile apps with native user interfaces” – Slide 4

- Shared Projects
- Portable Class Library
- .NET Standard



# Production Architecture – Cross Platform Code Sharing

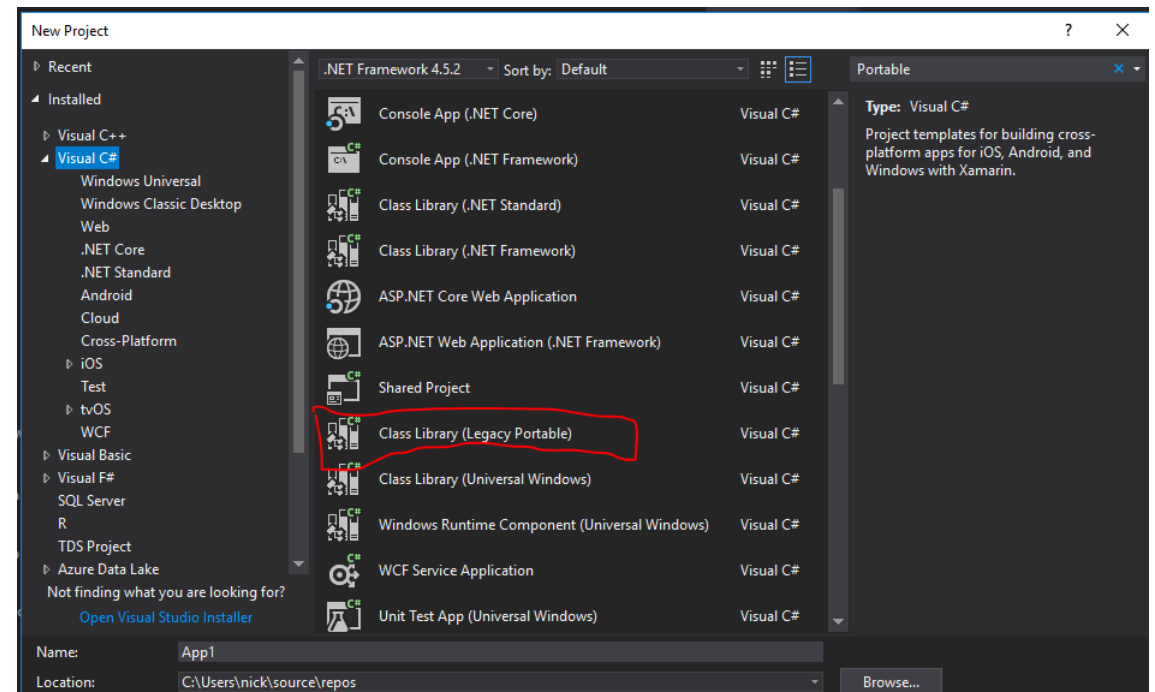
- Shared Projects
  - Introduced VS2013 R2
  - Reference entire project instead of an assembly
  - Code incorporated into assemblies of projects that reference them at compile time
  - I.e. bucket of placeholder code
  - Conditional compilation attributes can change behaviour based on target platform at compile time (can make them difficult to test)





# Production Architecture – Cross Platform Code Sharing

- Portable Class Libraries (PCL)
  - Referencing as you know it Jim (i.e. you reference MyPCL.dll)
  - .NET framework functionality is limited based on the subset of platforms targeted
    - .NET Framework 4.5
    - ASP.NET Core 1.0
    - Xamarin.Android
    - Xamarin.iOS
  - Interfaces and IOC for platform-specific requirements
  - If you all you need is the assembly (i.e. no css, JavaScript etc.) and you know what versions of the framework you are targeting, PCL is probably fine



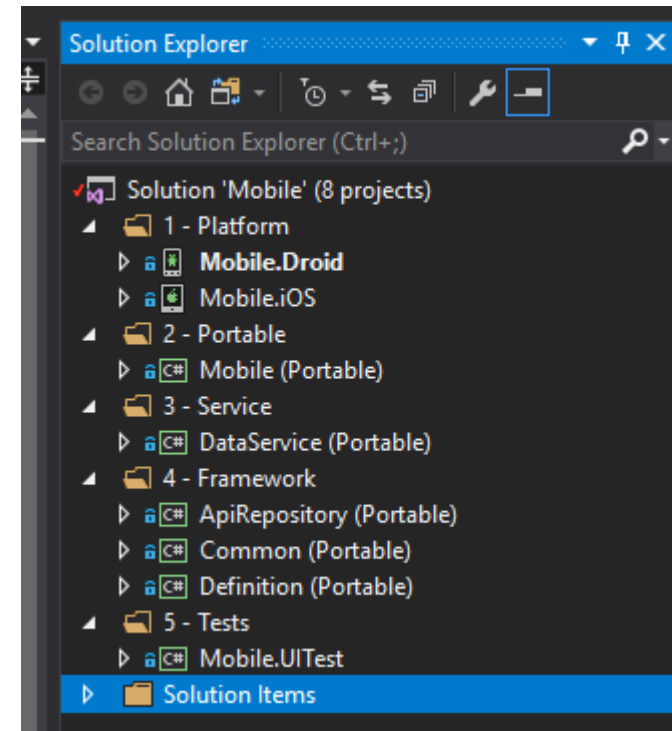
# Production Architecture – Cross Platform Code Sharing

- .NET Standard
  - You may have noticed PCL is marked as Legacy in the New Project dialog
  - Very similar to PCL
  - Larger surface area of the .NET base class library is available
  - Simplified next generation of PCL
  - It is a single library with a uniform API for all .NET Platforms including .NET Core
  - Less about platforms, more about .NET standard API version support
    - The higher the version the more APIs are available
    - The lower the version the more platforms implement it

.NET Standard	1.0	1.1	1.2	1.3	1.4	1.5	1.6	2.0
.NET Core	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.0
.NET Framework (with .NET Core 1.x SDK)	4.5	4.5	4.5.1	4.6	4.6.1	4.6.2		
.NET Framework (with .NET Core 2.0 SDK)	4.5	4.5	4.5.1	4.6	4.6.1	4.6.1	4.6.1	4.6.1
Mono	4.6	4.6	4.6	4.6	4.6	4.6	4.6	5.4
Xamarin.iOS	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.14
Xamarin.Mac	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.8
Xamarin.Android	7.0	7.0	7.0	7.0	7.0	7.0	7.0	8.0
Universal Windows Platform	10.0	10.0	10.0	10.0	10.0	10.0.16299	10.0.16299	10.0.16299
Windows	8.0	8.0	8.1					
Windows Phone	8.1	8.1	8.1					
Windows Phone Silverlight	8.0							

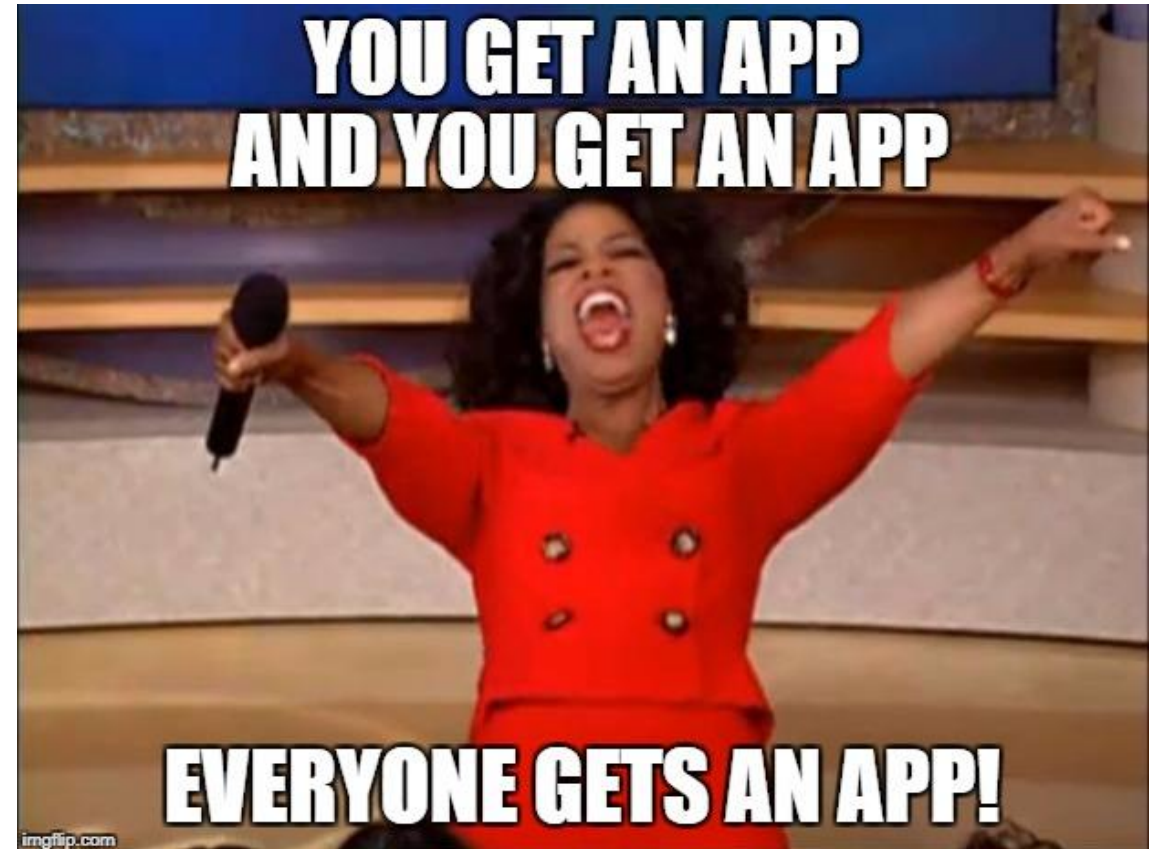
# Production Architecture

- Typical Layers
  - Data (SQLite)
  - Data Access
  - Business
  - Service Access
  - Application (platform specific)
  - UI (platform specific)
- Typical Patterns
  - MVVM
  - MVC
  - IoC
  - Business Façade (Manager Pattern)
  - Singleton (data access)
- Lot's of frameworks out there! Many are opinionated, find one that sits right



# Summary

- The demand for multi-platform mobile experiences is going to increase
- Xamarin and the Sitecore mobile SDK are an excellent pathway / entry point to delivering on the promise of mobile and cross-channel content governance
- Sitecore should be your content and behavioural system of record
- In conjunction with xConnect there is an awesome opportunity to do some interesting things with mobile analytics
- The barrier to entry for traditional web developers or web architects is actually not that high and with Xamarin, not that foreign
- Pay attention to the native capabilities of each platform in the application and UI layers so your apps "feel right", navigation for example





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**Questions?**

**Thanks!**

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## Resources

[https://doc.sitecore.net/mobile\\_sdk\\_for\\_xamarin/ssc\\_11](https://doc.sitecore.net/mobile_sdk_for_xamarin/ssc_11)

<https://github.com/Sitecore/sitecore-xamarin-pcl-sdk>

[https://developer.xamarin.com/guides/android/getting\\_started](https://developer.xamarin.com/guides/android/getting_started)

<https://www.visualstudio.com/vs/msft-android-emulator/>