



SORT 2016

# Xamarin

Native Cross Platform Development with C#

Jon Worthington  
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# What is Xamarin?

Xamarin allows developers to build **native** apps for Android, iOS, and Windows using a shared C# codebase. Use the same IDE, language, and APIs everywhere.



# What does Xamarin cost?

- On March 18<sup>th</sup>, 2016 Microsoft Acquired Xamarin and made it free and open-source for everybody.

Xamarin Platform is included  
for free in Visual Studio

Including Community Edition

# Get Xamarin Today

- Visual Studio 2015 Installer on Windows
- <http://www.xamarin.com/download>

# Why Xamarin?

- Use a single team and single C# codebase for all your mobile apps
- You get 100% native API access to iOS, Android and Windows.
- Anything you can do in Object-C, Swift, or Java can be done in C# natively with Xamarin.
- Native performance
- Xamarin is fully open-source and free to use.



# Why Native?

- You want your app to look and feel correct on each platform.
- You don't just want it to feel “like” that platform – it needs to “be” that platform.
- You want access to every API, library and device specific asset on that platform.
- You want native performance and want to be able to get down to the bare metal of each platform.

# Silo Approach

- Requires a separate team of developers for each OS, each using different tools.
- Requires you to build the app once for each platform.
- There is no shared code.
- Can get really expensive really fast.
- All teams must work together.

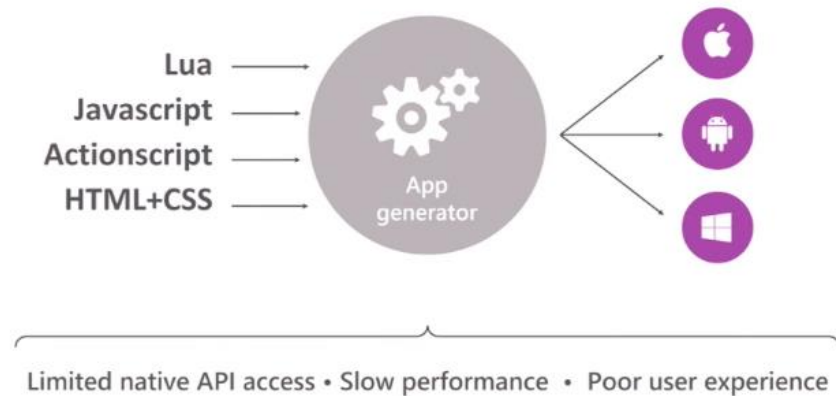
Silo approach



# Write once, run anywhere

- Not really native
- Often uses an embedded web browser to simulate a native experience.
- Not actually using the native api.
- Hard to get native performance

Write once, run anywhere

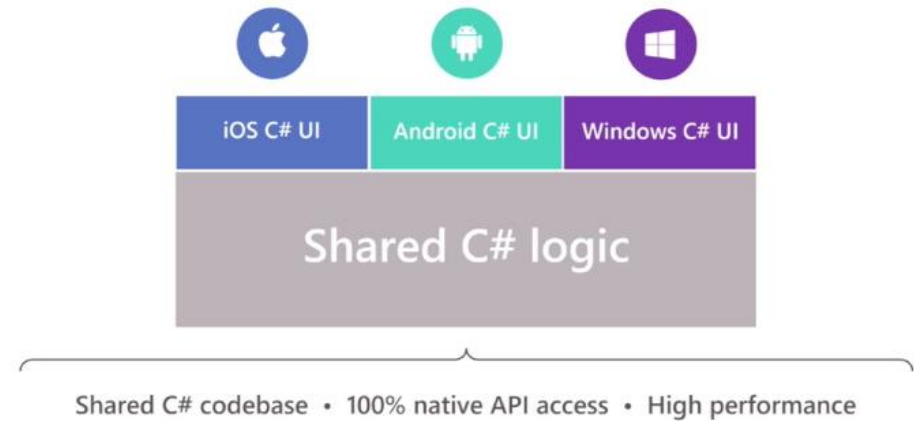




# Xamarin's Approach

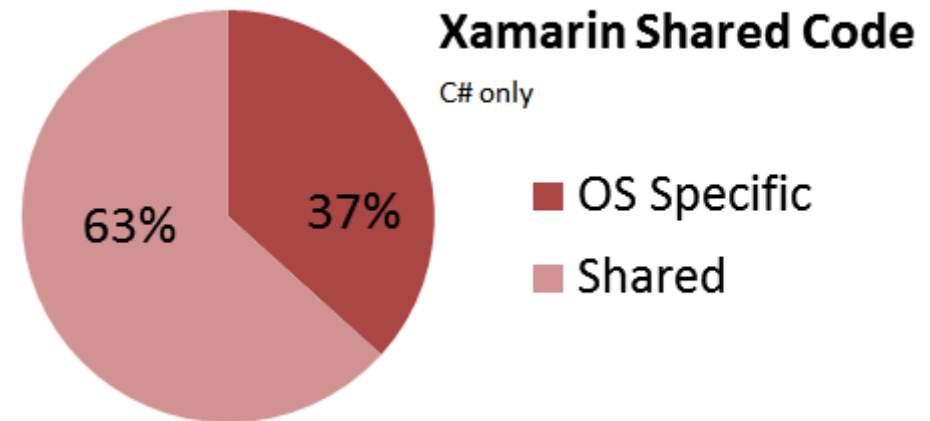
- Xamarin allows you to use C# for your entire codebase across iOS, Android and Windows.
- You have 100% Native API access
- Native Performance
- You can share C# logic
- But still have platform specific UI layers that “are” that platform.
- Xamarin gives you a purely native application.

Xamarin's unique approach



# Code Sharing Stats

- Share up to 70% of your code in most cases
- Allows you to leverage platform specific code
- Or do everything in Xamarin Forms and have 100% shared code.



# How does Xamarin work?

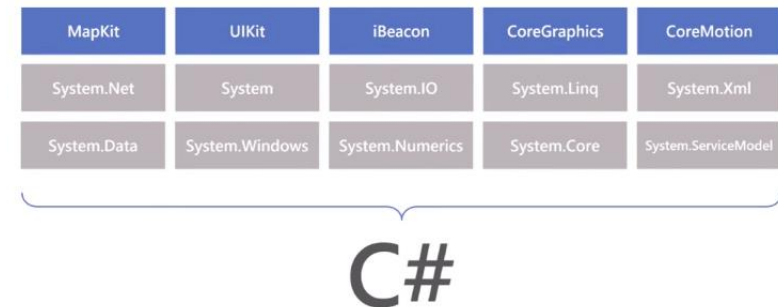
- Xamarin.iOS and Xamarin.Android are both built on top of Mono – an open source version of the .Net Framework.
- C# Bindings for every single API on iOS and Android have been created.



# How does Xamarin work?

- In iOS, Xamarin's Ahead of Time (AOT) Compiler compiles Xamarin applications directly to native ARM assembly code.
- When Xamarin applications are compiled, the result is an Application package:
  - iOS - .app file
- These files are indistinguishable from application packages built with the platform's default IDEs and are deployed in the exact same way

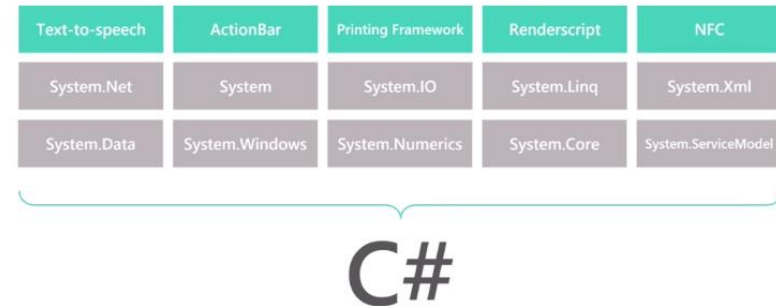
iOS – 100% API coverage



# How does Xamarin work?

- On Android, Xamarin's Compiler compiles down to Intermediate Language (IL), which is then Just-in-Time (JIT) compiled to native assembly when the application launches.
- When Xamarin applications are compiled, the result is an Application package:
  - Android - .apk file
- These files are indistinguishable from application packages built with the platform's default IDEs and are deployed in the exact same way

Android – 100% API coverage



# Xamarin – Always up-to-day

- Same day support for new versions of iOS
- Near same day support for new versions of Android.

✓ Always up-to-date

## Same-day support:

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

## Full support for:

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

# Xamarin is Open Source

Open Source – [open.xamarin.com](https://open.xamarin.com)



# IDE: Visual Studio vs. Xamarin Studio

	MAC OS X	WINDOWS	
Development Environment	XAMARIN STUDIO	VISUAL STUDIO	XAMARIN STUDIO
Xamarin.iOS	Yes	Yes (with Mac computer)	No
Xamarin.Android	Yes	Yes	Yes
Xamarin.Forms	iOS & Android only	Android, Windows Phone, Windows (iOS with Mac computer)	Android only
Xamarin.Mac	Yes	No	No



# Demo Time

# Thanks for Coming!

- <https://www.visualstudio.com/vs/community/>
- <http://www.xamarin.com/download>
- <https://developer.xamarin.com/guides/>
- <https://university.xamarin.com/self-guided>
- <https://github.com/xamarin/ios-samples>
- <https://github.com/xamarin/XamarinComponents>
- <https://github.com/xamarin/xamarin-android>
- <https://github.com/xamarin/recipes>
- <https://channel9.msdn.com/Events/Visual-Studio/Visual-Studio-Live-Redmond-2016/T03>
- <https://github.com/worthingtonjg/inspirational>



Jon Worthington  
[worthingtonjg@ldschurch.org](mailto:worthingtonjg@ldschurch.org)  
Ext: 25275