Austin Mobile .NET Develops Group
Thank Sponsors

• Microsoft - Ryan Joy
• Xamarin - James Montemagno
• Netrix - Rabi Satter
Enabling Developers to Create Native iOS, Android, Mac, & Windows apps in C#

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What is Xamarin?

- Xamarin enables developers to reach all major mobile platforms!
  - Native User Interface
  - Native Performance
  - Shared Code Across Platforms
  - C# & .NET Framework
Mobile Development Approaches
Silo’d Approach

Build Apps Multiple Times

- Multiple Teams
- Multiple Code Bases
- Different toolsets
Write Once, Run Anywhere Approach

- Lowest common denominator
- Browser fragmentation
- Developing & designing for 1 platform, happen to get other platforms
Xamarin’s Unique Approach

- Native User Interface
- Native Performance
- Shared code across platforms
- C# & .NET Framework
- Full API Coverage
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.
Code Sharing: Accelerate Development

- Up to 90% Code Reuse
- Leverage existing libraries

Code-sharing stats from iCircuit, built with Xamarin and featured on the App Store.
Source: http://praeclarum.org/post/42378027611/icircuit-code-reuse-part-cinq
Why C#?
C# Is Awesome

- LINQ Support

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

- Work With XML Easily
  XDocument

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

- Event Handling & Delegates

```csharp
button.TouchUpInside += (s, o) => {
    message.Text = "Hello!";
};
```
C# Is Awesome – JSON Made Easy

Json.NET offers simple conversions to and from JSON strings and .NET objects, with SerializeObject and DeserializeObject methods.

```csharp
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 Difference – Attributed Strings

Objective-C

C# with Xamarin
Probing for properties on an AudioFile

Objective-C

C# with Xamarin
See the Different – Android

ItemClick

Java

C# & Async with Xamarin

C# with Xamarin
Async/Await

```csharp
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);
        }
    }

    }
}
```
Why Xamarin?
Write Everything in C#

iOS, Android, Windows, Windows Phone, Mac
2.5+ Billion Devices!
Xamarin History
Over a Decade of Enterprise Production Use

- 2000: Ximian Founded
- 2001: Mono Started
- 2003: Ximian Acquired by Novell
- 2009: First iOS product (now Xamarin.iOS) launches
- 2011: Xamarin Founded!
- 2011: First Release of Xamarin.Android
- 2011: First release of Xamarin.Mac
- 2012: Xamarin 2.0 Component Store Launch
- 2012: Partner Program Evolve 2013
- 2013: Xamarin Test Cloud
- 2013: Microsoft Partnership
Anything you can do in Objective-C or Java can be done in C# and Visual Studio with Xamarin!
Always Up to Date

Always up-to-date with the latest APIs.
Great track record.
Shipped same-day support for iOS 5, iOS 6, iOS 6.1, **iOS 7**
Portable Class Libraries

• 1 Assembly
• Multiple Platforms
• Including:
  • Xamarin.Android
  • Xamarin.iOS
Portable Class Libraries Features

• Centralized Code Sharing
  • How you expect it to work
  • Debug seamlessly into and out of PCL

• Project/Assembly Sharing
  • NuGet
System.Collections.Generic Namespace

The System.Collections.Generic namespace contains interfaces and classes that define generic collections, which allow users to create strongly typed collections that provide better type safety and performance than non-generic strongly typed collections.

Classes

<table>
<thead>
<tr>
<th>Class</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comparer&lt;T&gt;</td>
<td>Provides a base class for implementations of the IComparer&lt;T&gt; generic interface.</td>
</tr>
<tr>
<td>Dictionary&lt;TKey, TValue&gt;</td>
<td>Represents a collection of keys and values.</td>
</tr>
<tr>
<td>Dictionary&lt;TKey, TValue&gt;.KeyCollection</td>
<td>Represents the collection of keys in a Dictionary&lt;TKey, TValue&gt;. This class cannot be inherited.</td>
</tr>
<tr>
<td>Dictionary&lt;TKey, TValue&gt;.ValueCollection</td>
<td>Represents the collection of values in a Dictionary&lt;TKey, TValue&gt;. This class cannot be inherited.</td>
</tr>
<tr>
<td>EqualityComparer&lt;T&gt;</td>
<td>Provides a base class for implementations of the IEqualityComparer&lt;T&gt; generic interface.</td>
</tr>
<tr>
<td>HashSet&lt;T&gt;</td>
<td>Represents a set of values.</td>
</tr>
<tr>
<td>KeyedByTypeCollection&lt;TItem&gt;</td>
<td>Provides a collection whose items are types that serve as keys.</td>
</tr>
<tr>
<td>KeyNotFoundException</td>
<td>The exception that is thrown when the key specified for accessing an element in a collection does not match any key in the collection.</td>
</tr>
<tr>
<td>LinkedList&lt;T&gt;</td>
<td>Represents a doubly linked list.</td>
</tr>
<tr>
<td>LinkedListNode&lt;T&gt;</td>
<td>Represents a node in a LinkedList&lt;T&gt;. This class cannot be inherited.</td>
</tr>
<tr>
<td>List&lt;T&gt;</td>
<td>Represents a strongly typed list of objects that can be accessed by index. Provides methods to search, sort, and manipulate lists.</td>
</tr>
</tbody>
</table>
Microsoft and Xamarin Partner Globally

With Xamarin, developers combine all of the productivity benefits of C#, Visual Studio 2013 and Windows Azure with the flexibility to quickly build for multiple device targets.”

S. Somasegar, Corporate Vice President, Microsoft
Distribute Everywhere

A Xamarin app is an app, distribute it everywhere.
Products
Development Environment

Xamarin Studio
PC or Mac

Visual Studio Plugin
VS
2010/2012/2013
Visual Studio Integration

A single solution:
- iOS
- Android
- Windows Phone
- Windows Store

Leverage the entire Microsoft ecosystem:
- ReSharper
- Team Foundation Server
- Your favorite code coverage and profiling tools
Visual Studio Integration

Debug to:
- Emulators
- Devices

Integrated into toolbar
- Status
- Logs
- List of devices

Just Click Start
Debugging!
Xamarin Studio

- Optimized for cross-platform mobile development
- Explore native APIs with code completion
- World class Android and iOS designers
- Powerful debugging on simulator or device
Android Designer

- Worlds best 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
iOS Designer

- World’s first iOS Designer available in Xamarin Studio (and soon 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

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
.NET Mobility Scanner

How mobile is your .NET?

• Scan .exe or .dll to determine compatibility
• Generates full report:

<table>
<thead>
<tr>
<th>Calls</th>
<th>Platform-specific method name</th>
<th>Namespace</th>
<th>Suggestions</th>
<th>Compatibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>string Type.Name (get)</td>
<td>System</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Assembly TypeInfo.Assembly (get)</td>
<td>System.Reflection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>HttpClient.ctor (HttpResponseHandler)</td>
<td>System.Net.Http</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Prebuilt Field Service App

**App Features:**
- Location-based assignments / routing
- Time recording
- Camera capture of work
- Signature capture

**Cross-Platform Techniques**
- MVVM pattern
- Xamarin.Mobile
- Signature control from Component Store
- SQLite for storage on all 3 platforms
GET YOUR C# SHIRT TODAY!

http://xamarin.com/shirt
Xamarin Evolve 2013

#1 Trending on Twitter during keynote

Sold Out!!

650 Conference Attendees

8,400 Live stream hours viewed

Watch Sessions & Highlights: http://xamarin.com/evolve/2013
Rdio Case Study
About Rdio

• Rdio is the leading music streaming and sharing service started by the founders of Skype

• Rdio is already in 30 countries with over 20 million songs.

• Available in 31 countries

“Rdio’s mobile app is also the best looking and best implemented of the three [music streaming apps reviewed].”

Wired Magazine
Challenge

• Unable to deliver features on all platforms simultaneously because of multiple, platform-specific code bases

• High costs to development and maintain apps

Results

• Using Xamarin, Rdio now shares over 50,000 lines of C# across iOS, Android, and Windows, enabling them to focus on feature-parity and user experience.
“Xamarin offers the best of all worlds. We deliver high performance, native apps that, until Xamarin, were only possible with Objective-C and Java. Sharing over 50,000 lines of code across platforms gives us more time to spend on great user experiences.”

Matt Crocker
Director of Client Engineering
• Go Mobile Program
  ○ Live online training from Xamarin experts
  ○ Lectures and labs
  ○ One-on-one with expert Xamarin mobile developers

• What You’ll Learn

  • iOS and Android Fundamentals
  • Mobile App Lifecycle
  • Native UI and Controls
  • Cross-platform Architecture
  • Mobile Best Practices
  • Secure Backend Integration
Xamarin Developer Certifications

Xamarin skills are increasingly in demand – certifications let the market know you represent top talent.