ArcGIS Runtime session tracks at DevSummit 2018

- ArcGIS Runtime SDKs share a common core, architecture and design
- Functional sessions promote common capabilities and workflows
  - An Introduction to the API and Architecture
  - Working with Your Portal
  - Building Great User Experiences
  - Working with Maps Online and Offline
  - Editing Your Data Online and Offline
  - Integrating Imagery
  - Analysis
  - Building 3D Applications
- Product sessions promote specific development experiences
- Demo theaters highlight examples of specific technical capabilities

Shared workflows, any platform, any device
Agenda

• Xamarin Overview
  - What it is and why you would use it
  - Xamarin and ArcGIS Runtime
  - Getting started
• Develop apps with Xamarin
  - Forms
  - Native
• Recommended patterns
• Tips and tricks
Xamarin Overview
“Xamarin”? It sounds like a combination of Xanax and aspirin!
-- New Xamarin User

I’ve been working with Xamarin all day. Get me some Xanax and aspirin!
-- Experienced Xamarin User
What is it?

• Software suite for cross-platform .NET development
• Libraries for iOS and Android
  - Mono – open-source .NET implementation for non-Windows platforms
  - Platform bindings – surface iOS and Android APIs to C#
  - Xamarin Forms – cross-platform UI library
• Development tools for Windows and OS X
  - Visual Studio extension
  - Visual Studio for Mac
What can you do with it?

• Build .NET apps for iOS, Android, Windows
• Write code using C#
  - Share code across platforms
  - Leverage platform-specific capabilities as needed
• Write UI markup with Xamarin Forms XAML
  - Share markup across iOS, Android, and UWP
• Write platform-specific (native) UI
  - AXML for Android
  - Storyboards for iOS
  - XAML for UWP
Why would I use it?

Visual Studio and C#

- Rapid development
- Code re-use (cross-platform)

UI components render with native look and feel

All platform capabilities available

Rapid updates

Extensive developer community
Two primary reasons developers use Xamarin

1. To use familiar language and tools: C# and Visual Studio
2. To take advantage of code sharing for cross-platform development
Two approaches for Xamarin development …

1. **Xamarin Forms**: a lot of shared code, less control
   - UI is defined with a Xamarin flavor of XAML
     - Subset of UI elements
     - Rendered as native controls for each platform
     - Basic cross-platform functionality

2. **Xamarin Native**: less shared code, more control
   - Each UI is created using platform-specific controls
     - *.axml (Android), *.storyboard (iOS), *.xaml (UWP)
   - User experience is true to the platform
   - More platform-specific control

More about this later …

```xml
<TimePicker x:Name="StartTimePicker"/>
```
Xamarin and ArcGIS Runtime
Xamarin in the ArcGIS Runtime SDK for .NET

- APIs for …
  - iOS
  - Android
  - Forms (supports iOS, Android, UWP)

- One common .NET API surface
- High-performance 2D and 3D mapping
- Take data and functionality offline
- Utilize device sensors
ArcGIS Runtime for .NET – Architecture

MapView
SceneView

MapView
SceneView

ArcGIS Runtime .NET API
Non-UI Logic (C#)

.NET CLR
.NET Core
Mono

Direct X
OpenGL

ArcGIS Runtime Core Engine (C++)
Getting Started
<table>
<thead>
<tr>
<th>Xamarin development options</th>
<th>Windows or Mac</th>
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</thead>
<tbody>
<tr>
<td><strong>Mac OS X</strong></td>
<td><strong>Windows</strong></td>
</tr>
<tr>
<td>Xamarin Native</td>
<td>Visual Studio for Mac</td>
</tr>
<tr>
<td>iOS</td>
<td>Requires Mac build host</td>
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<tr>
<td>Android</td>
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<td>UWP</td>
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* Not available for ArcGIS Runtime for .NET apps
Installing ArcGIS Runtime SDK for .NET

- NuGet packages
  - Xamarin.Android, Xamarin.iOS, Xamarin.Forms (Android, iOS, UWP)

- Visual Studio installation (VSIX) – Windows only
  - Templates for each supported platform
  - Local NuGet package source
• **ArcGIS for Developers** - [developers.arcgis.com](http://developers.arcgis.com)
  - Downloads for all ArcGIS Runtime SDKs
  - Doc: Developers guide, API reference, Samples documentation

• **Samples** - [github.com/esri/arcgis-runtime-samples-dotnet](https://github.com/esri/arcgis-runtime-samples-dotnet)
  - Source code for all supported platforms
  - Xamarin projects: native and forms

• **Toolkit** - [github.com/esri/arcgis-toolkit-dotnet](https://github.com/esri/arcgis-toolkit-dotnet)
  - UI controls to provide additional functionality
  - Compass, Layer legend, Scale line, Symbol display

• **Example apps** - [developers.arcgis.com/example-apps](http://developers.arcgis.com/example-apps)
  - Indoor Routing
Demo: Create a cross-platform Xamarin app
Demo Summary

What did we see?

• IDE Productivity
  - Use Visual Studio for Mac for iOS
  - Slimmed down debug build coming for Android

• Android HTTP performance
  - AndroidClientHandler
  - Custom or 3rd party handler

• Toolkit components
  - Scaleline, Compass, Time Slider
  - NuGet packages available for every PR and merge

• Forms embedding
  - Use Forms page in both iOS and Android

• Multi-targeting
  - Easily build cross-platform NuGet package
Other sessions of interest …

**ArcGIS Runtime: Building Great User Experiences**
Thursday 1:00 pm – 2:00 pm (Smoketree A-E)

**ArcGIS Runtime: Road Ahead**
Thursday 2:30 pm – 3:30 pm (Primrose B)

**ArcGIS Runtime: Building Cross-Platform Apps**
Thursday 4:00 pm – 5:00 pm (Primrose C/D)

**ArcGIS Runtime: Everything (or Anything) You Wanted to Know About the ArcGIS Runtime SDKs but Were Afraid to Ask**
Friday 8:30 am – 9:30 am (Catalina / Madera)
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