



ArcGIS Runtime SDK for .NET:

Building Xamarin Apps

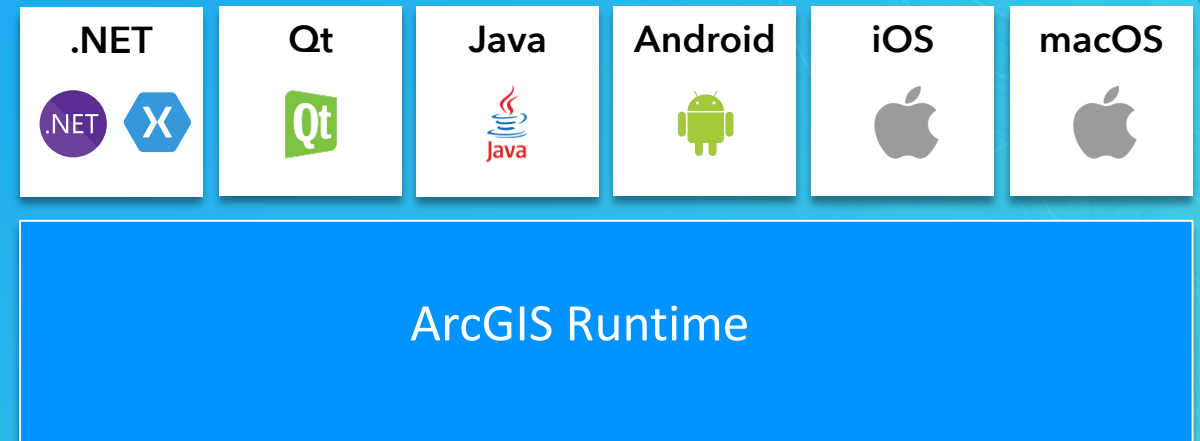
Rich Zwaap

Thad Tilton

2018 Esri Developer Summit | Palm Springs, CA

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



Visual Studio Tools for Xamarin

Visual Studio extension to enable Xamarin development.



Xamarin.Android SDK

Xamarin.Android SDK



Xamarin.Apple SDK

Xamarin.iOS and Xamarin.Mac SDK



Xamarin Templates

Templates for building iOS, Android, and Windows apps with Xamarin and Xamarin.Forms.



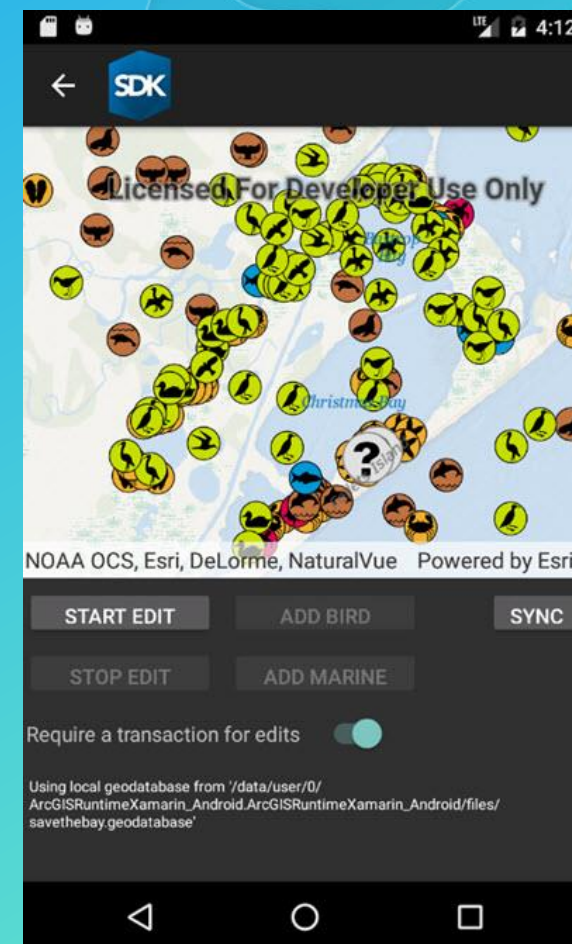
Xamarin iOS Designer for Visual Studio

Visual Studio extension to enable the Xamarin.iOS designer.



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#

Extensive developer community

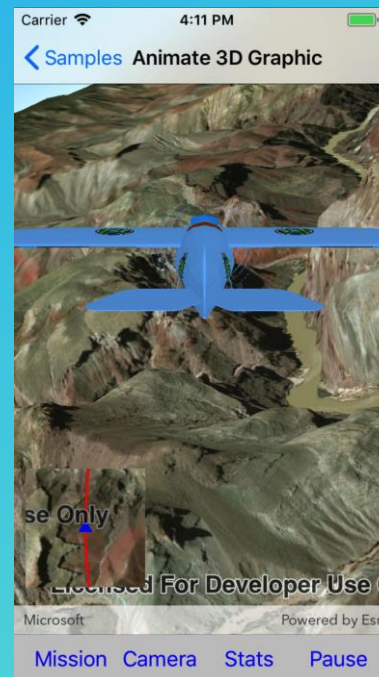
Rapid development

Code re-use (cross-platform)

UI components render with native look and feel

All platform capabilities available

Rapid updates



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



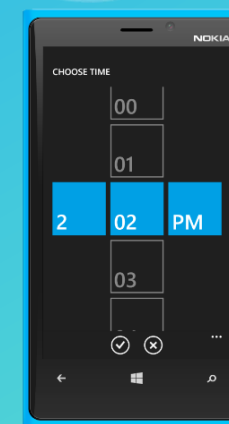
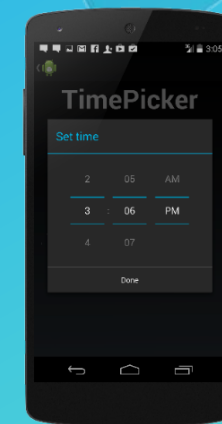
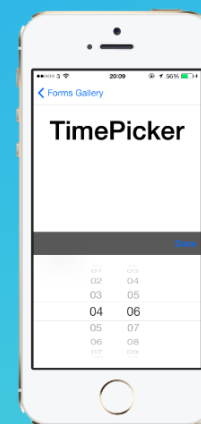


Two approaches for Xamarin development ...

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

```
<TimePicker x:Name="StartTimePicker"/>
```



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 ...

Xamarin and ArcGIS Runtime

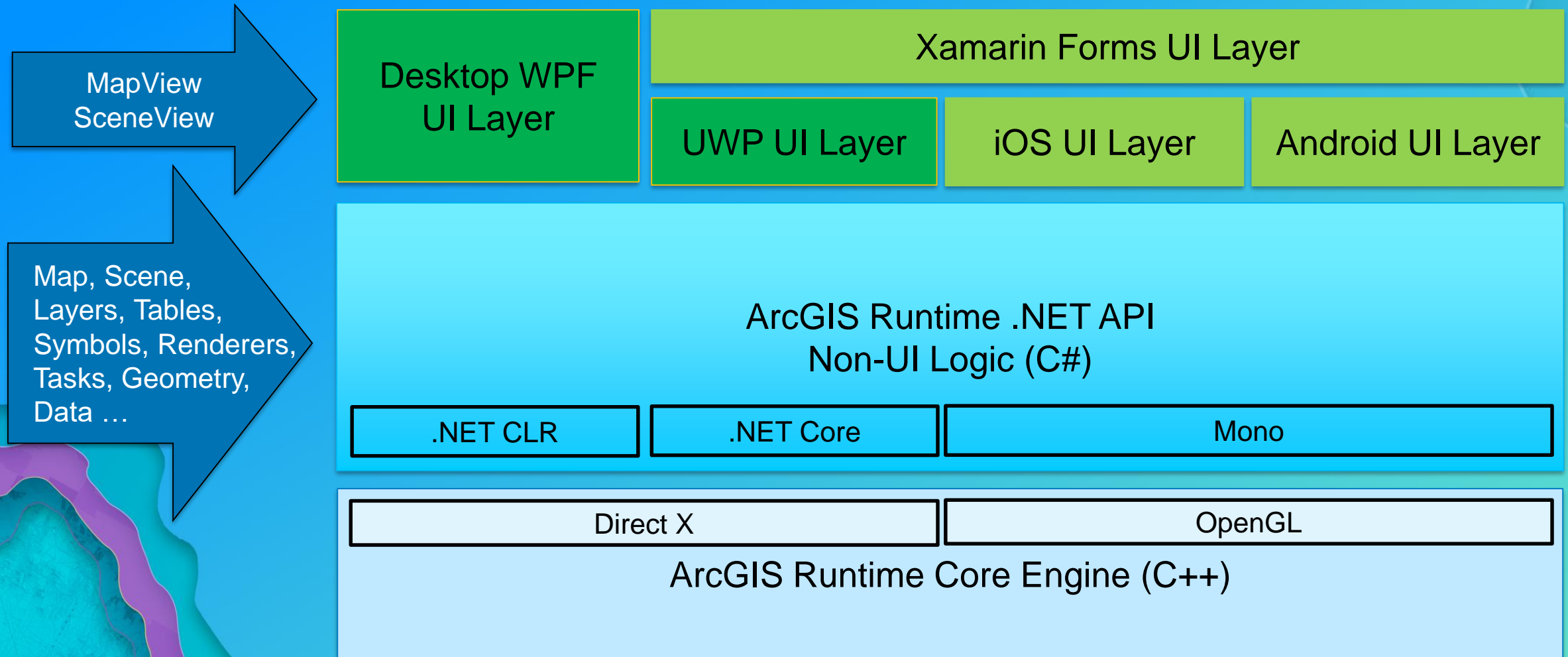


Xamarin in the ArcGIS Runtime SDK for .NET

- 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



Getting Started



Xamarin development options

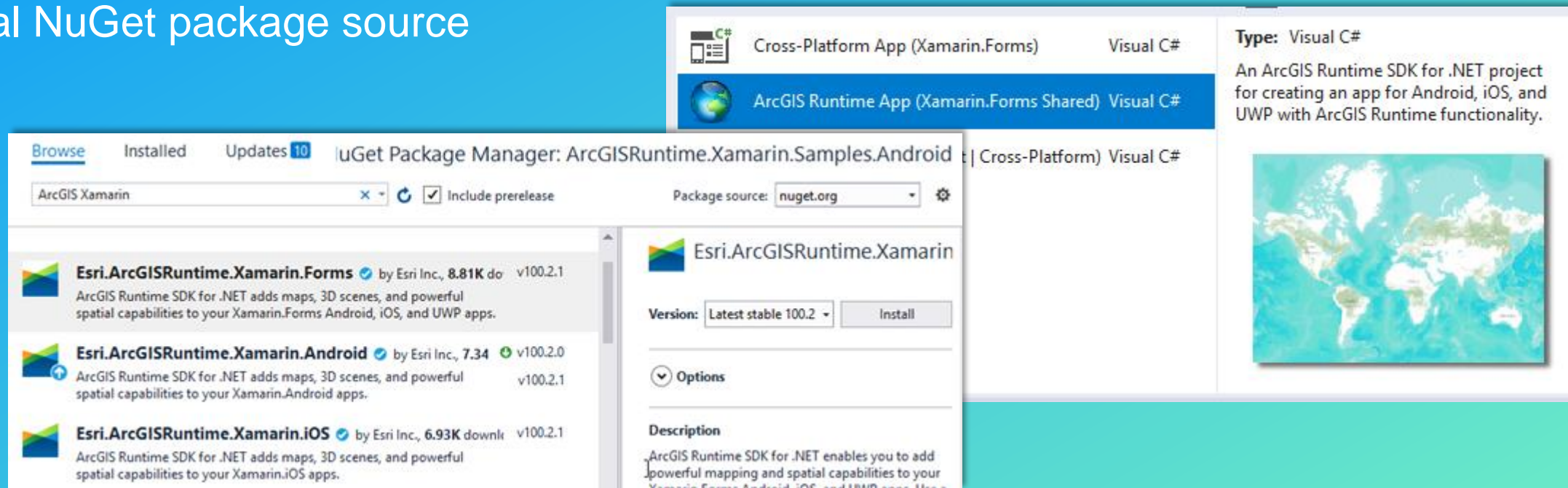
Windows or Mac

	Mac OS X	Windows
	Visual Studio for Mac	Visual Studio
Xamarin Native		
iOS		Requires Mac build host
Android		
macOS *		
Xamarin Forms		
iOS		Requires Mac build host
Android		
UWP		

* 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



Resources

- ArcGIS for Developers - developers.arcgis.com
 - Downloads for all ArcGIS Runtime SDKs
 - Doc: Developers guide, API reference, Samples documentation
- Samples - 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
 - UI controls to provide additional functionality
 - Compass, Layer legend, Scale line, Symbol display
- Example apps - developers.arcgis.com/example-apps
 - Indoor Routing



ArcGIS for Developers | Get Started | Documentation | Features | Pricing | Support

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Start Developing Your App

ArcGIS Runtime SDK for .NET



Demo: Resources

developers.arcgis.com



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)

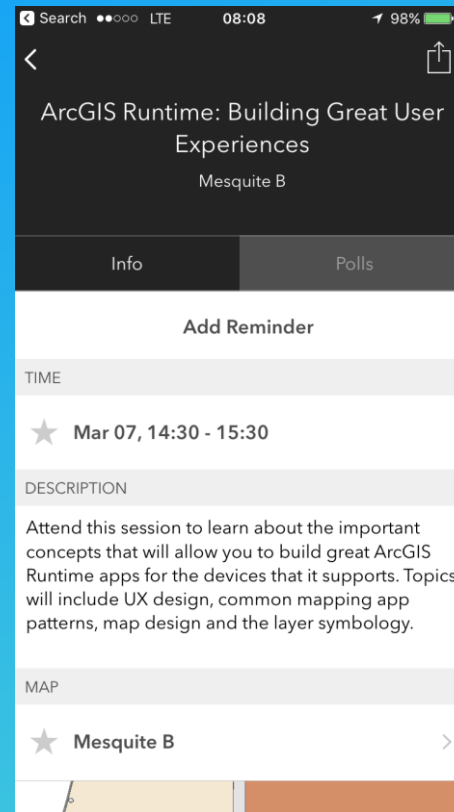


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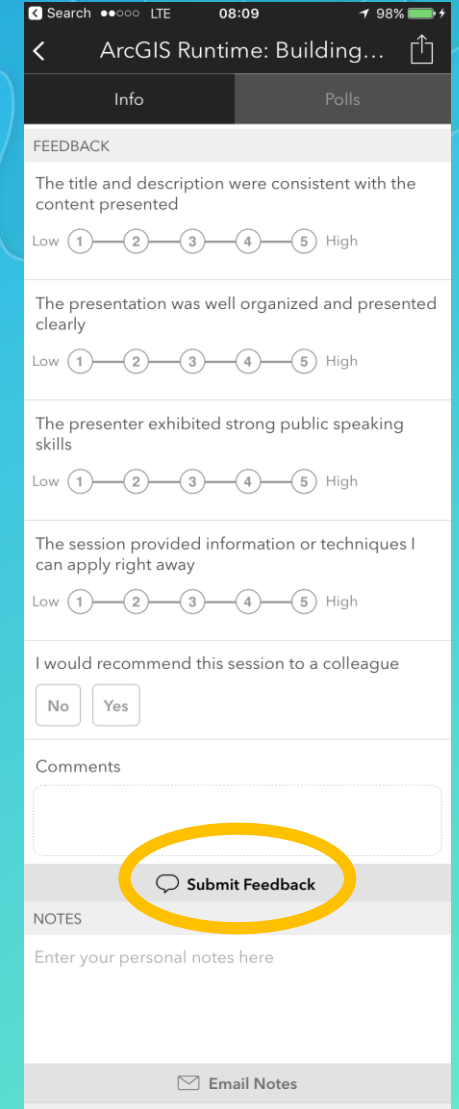
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