



ArcGIS Runtime SDKs: Building .NET Apps

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An abstract 3D architectural graphic on the right side of the slide. It features various geometric shapes in shades of blue, orange, and green, some with topographic contour lines. The shapes are layered and angled, creating a sense of depth and perspective.

**GIS
INSPIRING
WHAT'S
NEXT**

Agenda

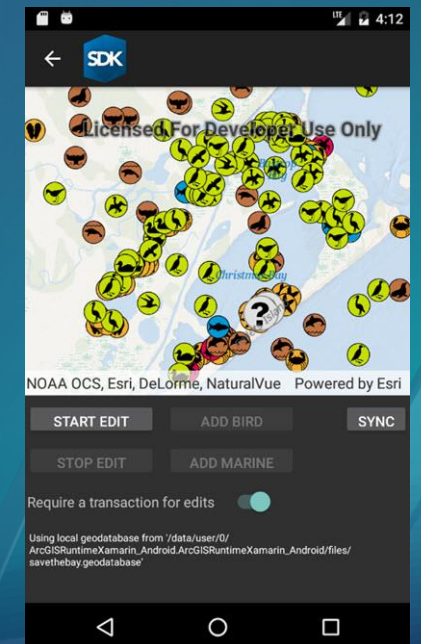
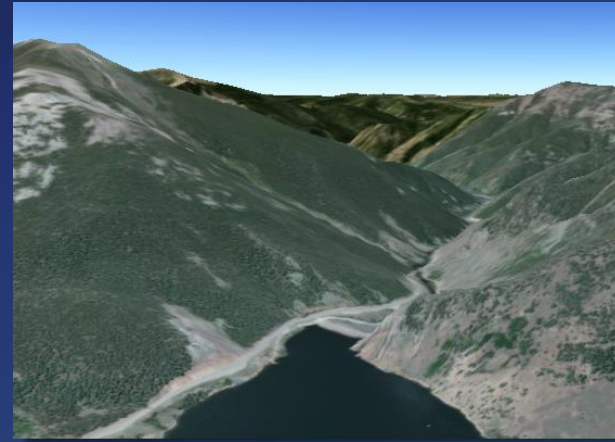
- **Overview of the ArcGIS Runtime SDK for .NET**
 - Architecture, platforms, development environment
- **Resources for developers**
 - Documentation, samples, tutorials (DevLabs), example apps, demos
- **Getting started**
 - Common developer workflows: App templates, NuGet packages, Class library, Workbooks
- **Working from a good design**
 - Model-View-ViewModel (MVVM), separating business logic from UI
- **Improve performance and interactivity**
 - Visual Studio for Mac, Workbooks, Toolkit controls

ArcGIS Runtime SDK overview

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SDK Highlights

- High-performance 2D and 3D mapping
- Integration with Portal and ArcGIS Online
Load, edit, and save web maps
- Work offline with local data
Read mobile map packages (.mmpk)
Take web maps offline
Feature service editing and sync
Geocode and Routing



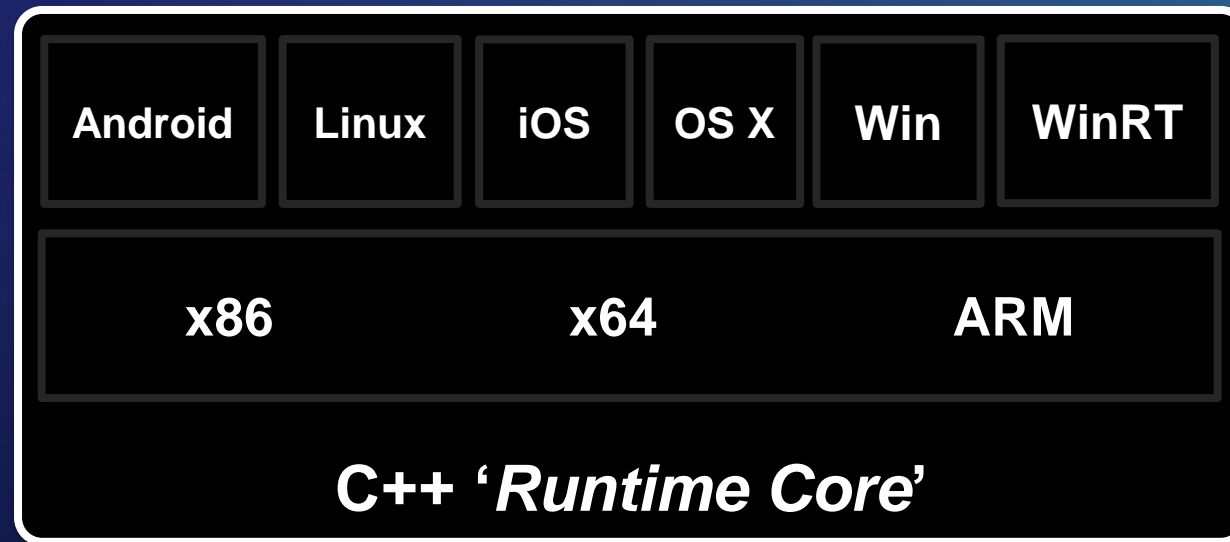
ArcGIS Runtime overview

- Runtime Core (C++)

Small footprint, high performance

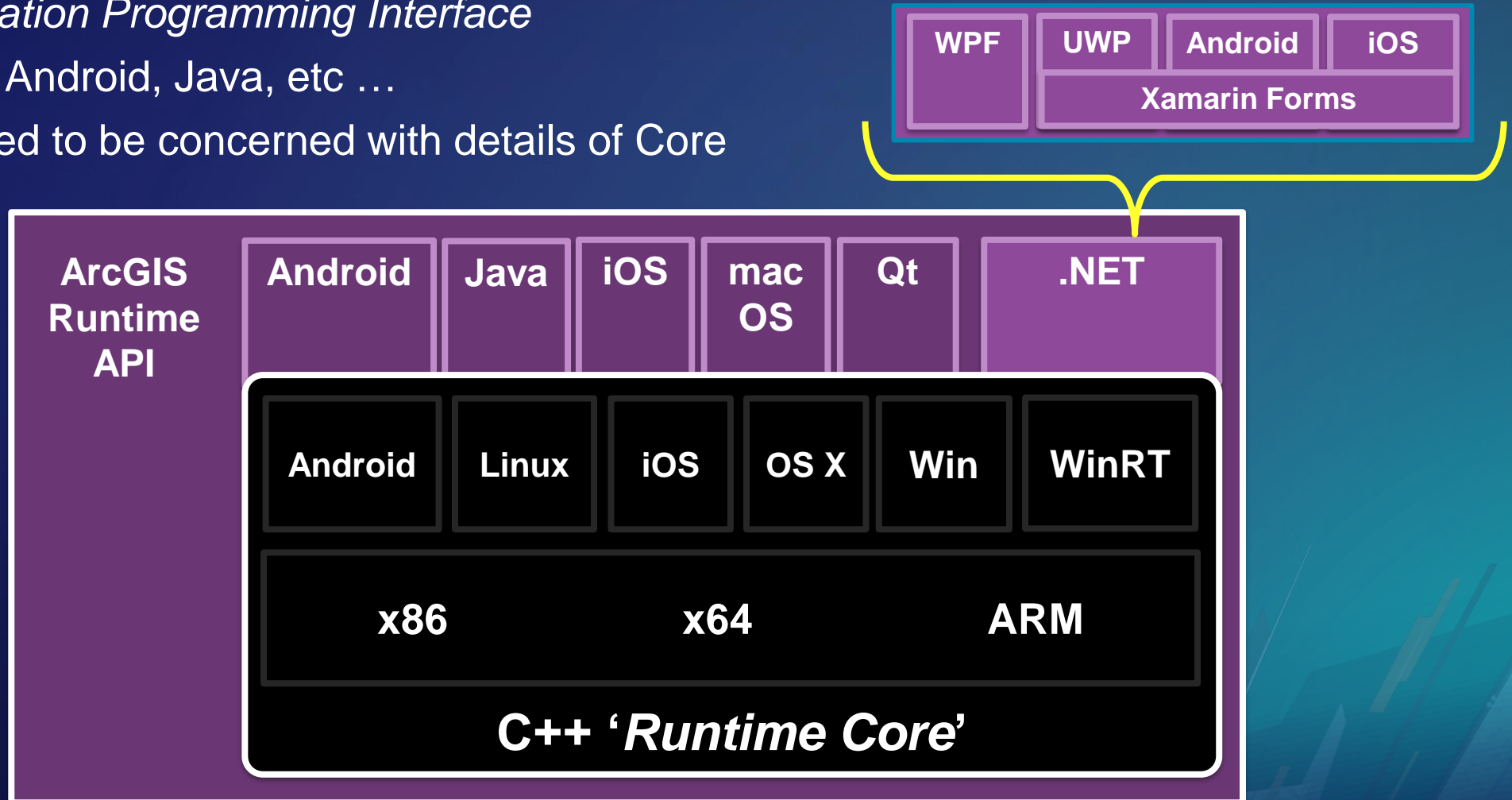
Core functionality: Display, geometry, data access, ...

Compiled for multiple platforms and architectures



ArcGIS Runtime overview

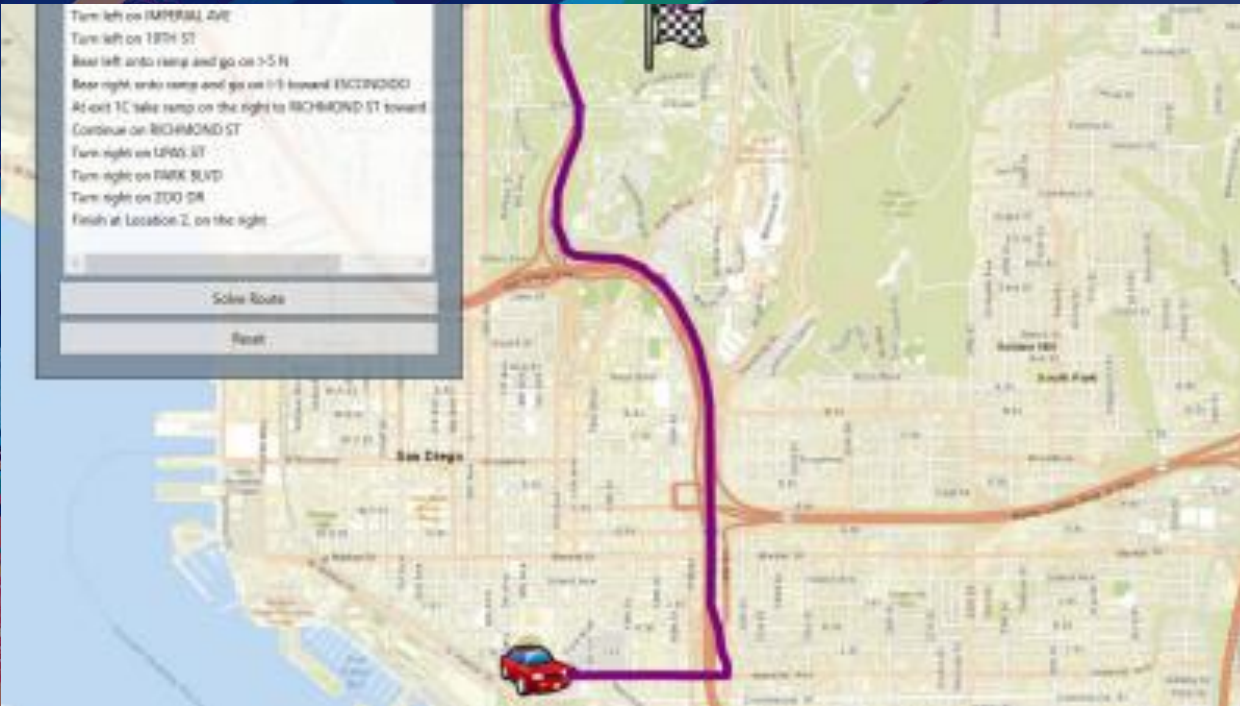
- Access core functionality via a native API for each platform:
 - *Application Programming Interface*
 - .NET, Android, Java, etc ...
 - No need to be concerned with details of Core



New with 100.3.0

- Support for .NET standard 2.0
- Web scenes
 - Open scenes saved in ArcGIS Online
 - Content, symbology, popups are honored
- Scene analysis
 - Interactive distance measurement
 - Enhanced viewshed analysis (360 degrees)
- Layer enhancements
 - Query support for map image layer
 - Identify scene layers
 - Styling and time support for WMS





Demo: ArcGIS Runtime examples

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Developer resources

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ArcGIS for Developers - developers.arcgis.com

- Your starting point for finding ArcGIS Runtime SDK resources
 - Sign up to receive credits for developing and testing your apps!
- Downloads
 - ArcGIS Runtime SDKs for all platforms
- Documentation
 - Developers guide, API reference, Samples documentation
- Samples
 - Focused samples to illustrate API functionality
 - Full example apps
- Tutorials
 - DevLabs: *Data, Design, and Develop*



Documentation

Home

Guide

API Reference

Sample Code

Support

- Developers guide – developers.arcgis.com/documentation/
 - Conceptual documentation with focused examples (snippets)
 - High-level documentation that applies to all ArcGIS Runtime SDKs
 - .NET-specific documentation
- API reference - developers.arcgis.com/net/latest/wpf/api-reference/
 - Documentation for each class and member in the API
- Sample documentation
developers.arcgis.com/net/latest/wpf/sample-code/
 - Brief description and screenshot of the sample
 - Relevant code (text)

Guide

Viewing: **WPF** | UWP | Android | iOS | Forms

[WPF API Reference](#) 

[UWP API Reference](#) 

[Android API Reference](#) 

[iOS API Reference](#) 

Sample Code

Viewing: **WPF** | UWP | Android | iOS | Forms

[Get the Code from GitHub](#)

Code

XAML

C#

```
<UserControl
```

```
  x:Class="ArcGISRuntime.WPF.Samples.DisplayScene.DisplayScene"
```


Sample code

- Sample viewer projects

github.com/esri/arcgis-runtime-samples-dotnet

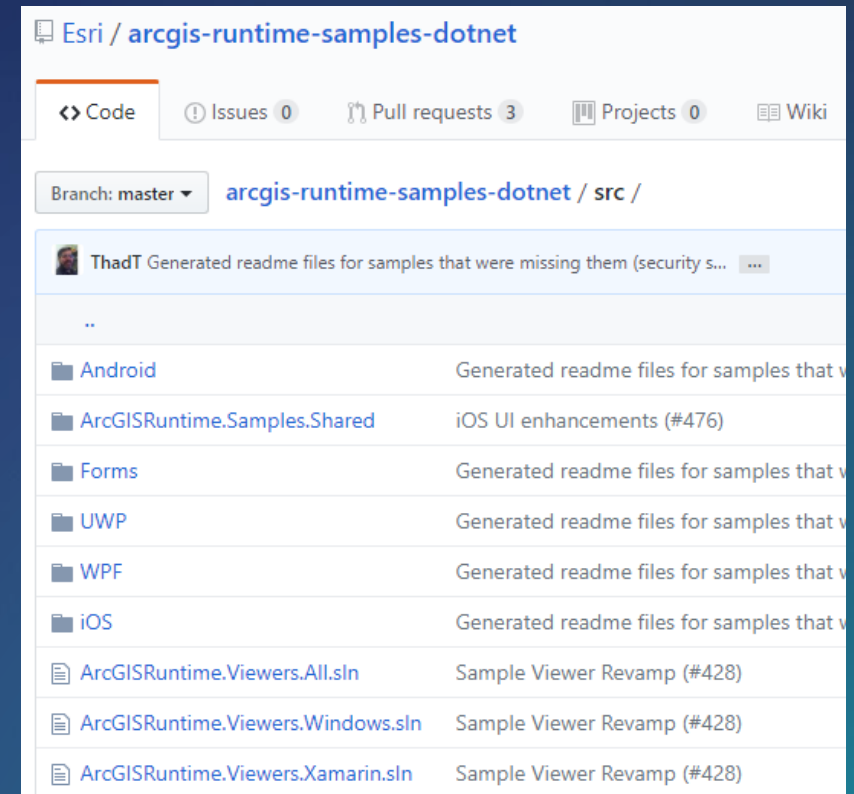
- Contains all source code for over 130 samples on all platforms
- Small examples of focused API functionality
- Add layers, create symbols, run a geoprocessing tool

- Demos - github.com/Esri/arcgis-runtime-demos-dotnet

- Larger samples that illustrate some common workflows
- Portal item browser, turn-by-turn routing, external GPS

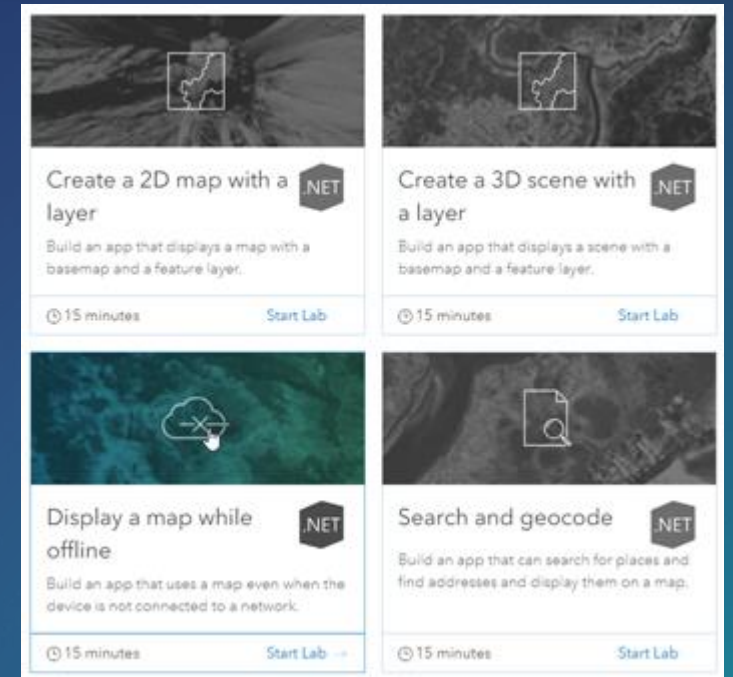
- Example apps - developers.arcgis.com/example-apps/

- Focused functional apps: indoor routing, map viewer, data collection
- All source code (github.com/esri/)
- Well documented and configurable



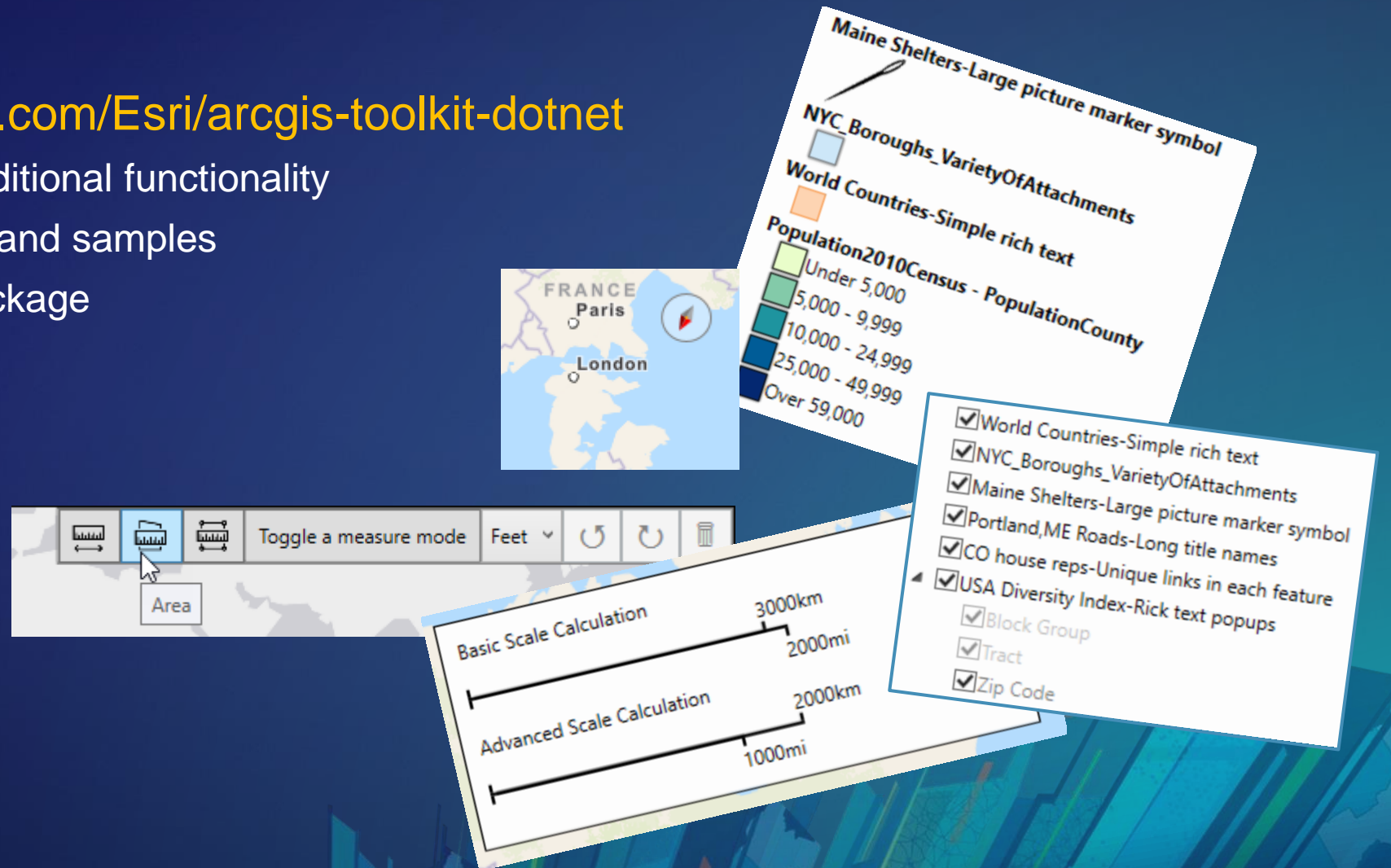
Tutorials and support

- DevLabs – developers.arcgis.com/labs/
 - Short focused tutorials
 - Most will take 15 minutes or less to complete
 - Guides you through all aspects of creating a custom map app
 - **Data** – Import data, create a new dataset, share your content
 - **Design** – Style a web map, configure pop-ups
 - **Develop** – Search and geocode, display a map, access private layers
 - Includes solution code (or data)
- GeoNet – ArcGIS Runtime SDK for .NET
community.esri.com/community/developers/native-app-developers/arcgis-runtime-sdk-for-net/
 - Public forum for questions, discussion, blogs, etc.



Additional controls and utilities (toolkit)

- Toolkit project – github.com/Esri/arcgis-toolkit-dotnet
 - UI controls to provide additional functionality
 - Includes all source code and samples
 - Available as a NuGet package
 - Compass
 - Layer legend
 - Scale line
 - Symbol display
 - Time slider
 - and more ...



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



A complete mapping and analytics platform for developers

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ArcGIS Runtime SDK for .NET

- JS
- Android
- iOS
- Java
- macOS
- .NET**
- Qt
- Python
- REST

Demo: Developer resources

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Getting started

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Xamarin development options

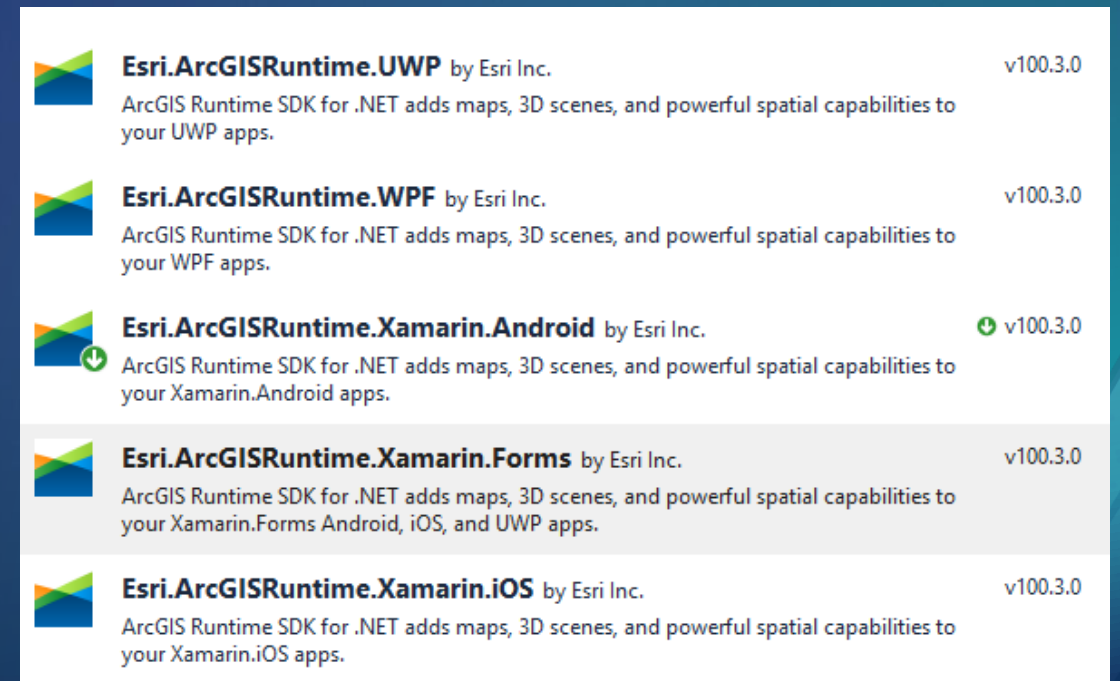
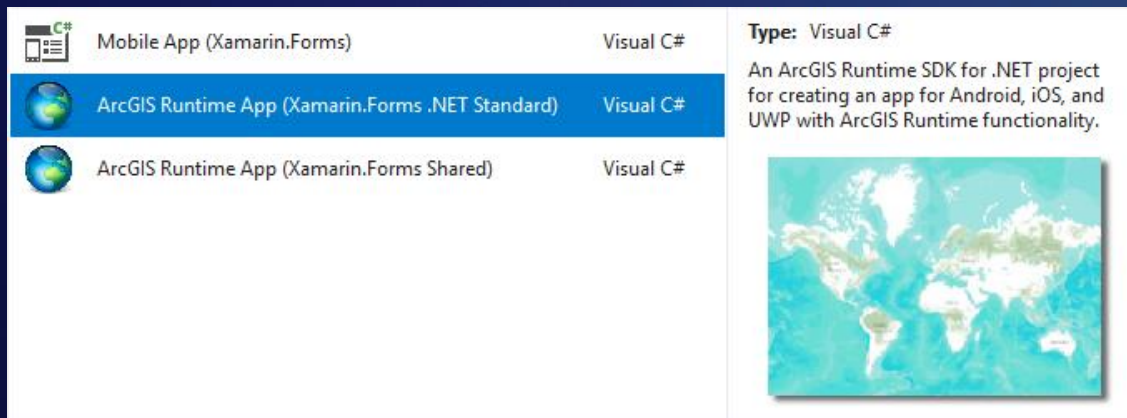
Windows or Mac

	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
Create apps for Mac with ArcGIS Runtime for macOS

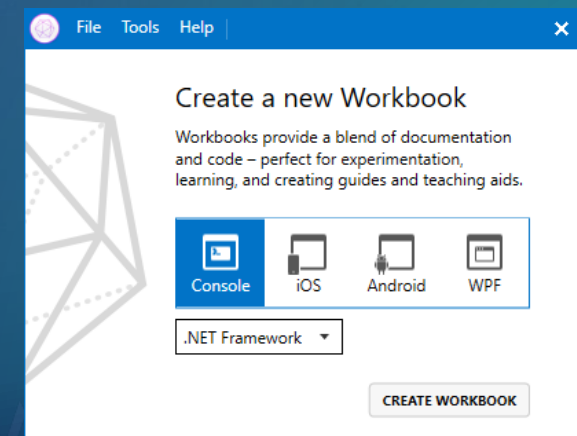
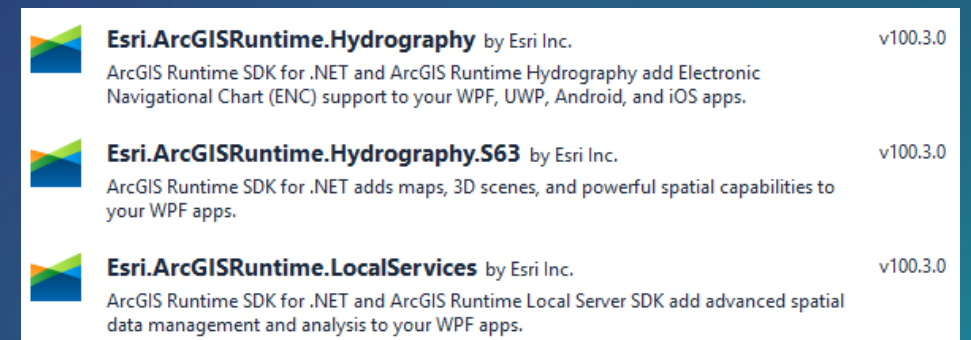
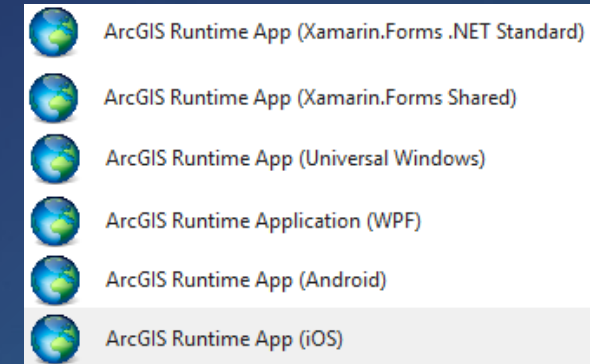
Installing ArcGIS Runtime SDK for .NET

- NuGet packages
 - WPF, UWP, Xamarin.Android, Xamarin.iOS, Xamarin.Forms (Android, iOS, UWP)
- Visual Studio installation (VSIX) – Windows only
 - developers.arcgis.com/downloads
 - Project templates for each supported platform
 - Local NuGet package source



What kind of things can you create?

- Apps from a template
 - Map-centric
 - Single platform
 - Cross-platform: Shared project or .NET Standard
- Add ArcGIS Runtime from a NuGet package
 - Existing projects
 - Non map-centric
- Class libraries - encapsulate functionality for reuse
- Workbooks
 - Quickly explore the API
 - Troubleshoot



Build an app

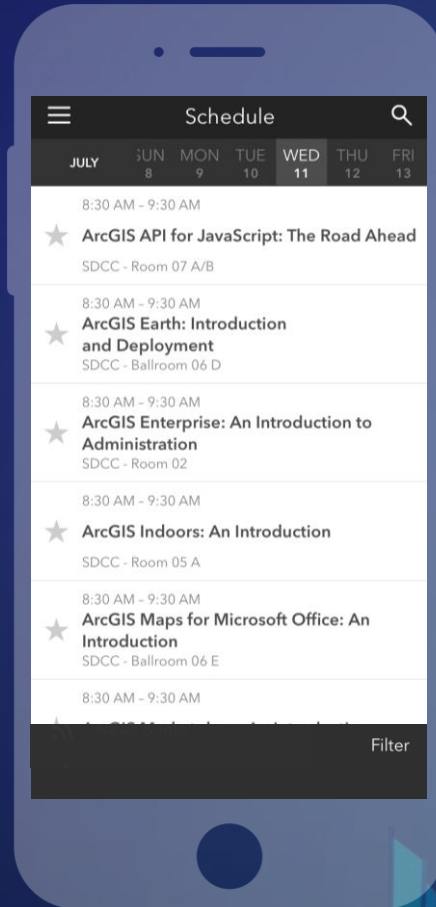
Rich

Please Take Our Survey on the App

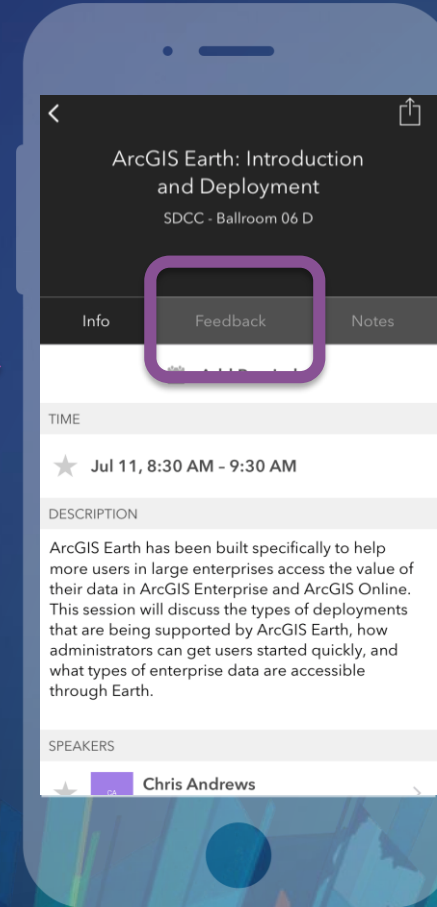
Download the Esri Events app and find your event



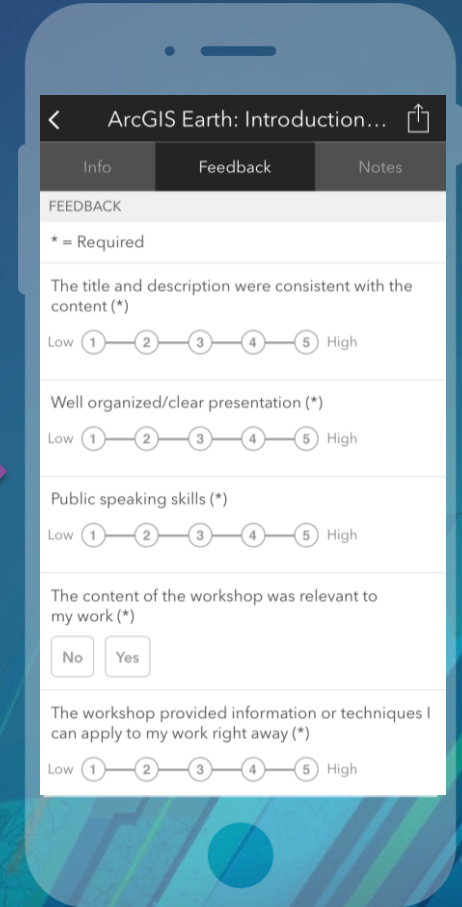
Select the session you attended



Scroll down to find the feedback section



Complete answers and select "Submit"



Other sessions of interest

WORKSHOP	LOCATION	TIME FRAME
<ul style="list-style-type: none">• Developing Dynamic Situational Awareness Apps Using ArcGIS Runtime	<ul style="list-style-type: none">• SDCC - Room 30 C	<ul style="list-style-type: none">• 4:00 pm - 5:00 pm



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