



# ArcGIS Runtime SDK for .NET Getting Started

Jo Fraley

A decorative graphic consisting of a blue, 3D-rendered ribbon that weaves across the bottom half of the slide. The ribbon has several loops and points, some of which feature a white star. It is set against a background of a scenic view of Washington, DC, including the Washington Monument, the Jefferson Memorial, and cherry blossoms along the Tidal Basin.

Esri Developer Summit  
Washington, DC

# Agenda

- **What is the ArcGIS Runtime?**
- **What's new for ArcGIS developers?**
- **ArcGIS Runtime SDK 10.2 for WPF**
- **ArcGIS Runtime SDK for .NET**
- **Building Windows Store apps**
- **Building Windows Phone apps**

# Agenda

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# What is the ArcGIS Runtime?

- The GIS runtime for devices



## What is the ArcGIS Runtime?

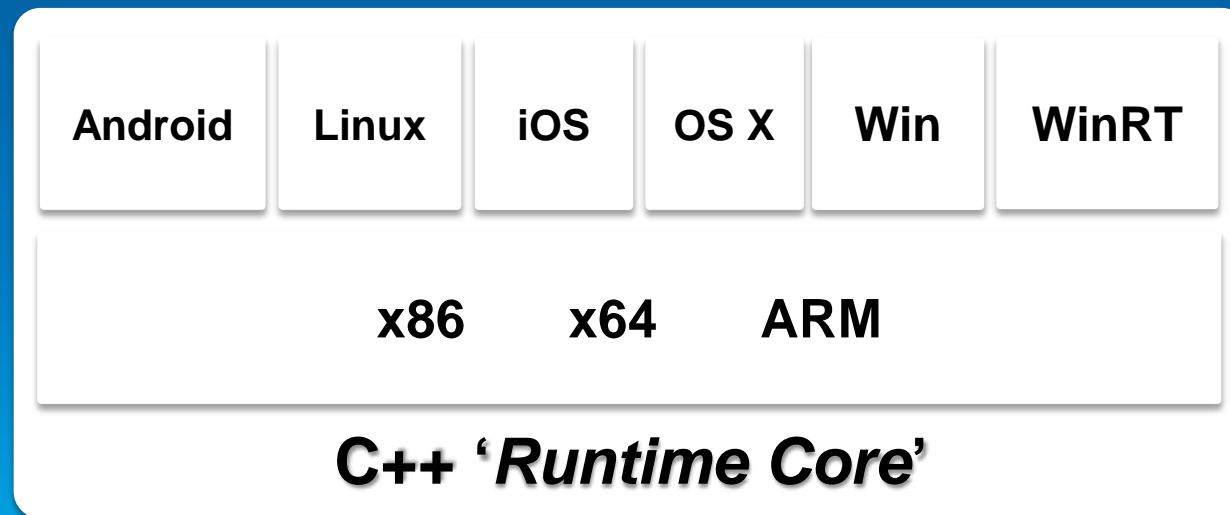
- Core functional capabilities
- Mapping, geometry, data access, geocoding, routing...
- Implemented in the C++ 'Runtime Core'



**C++ 'Runtime Core'**

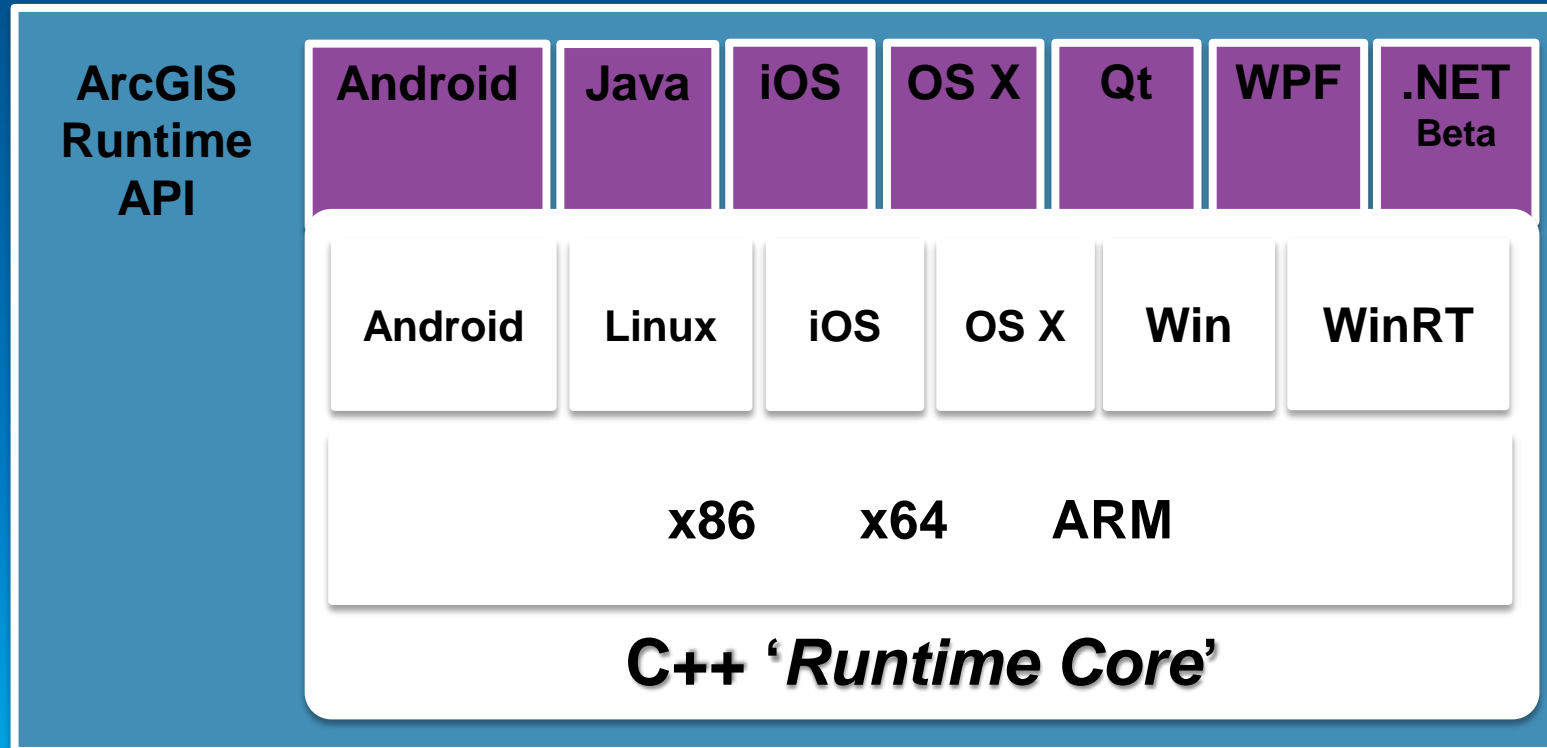
## What is the ArcGIS Runtime?

- **Compiled for multiple architectures:**
  - 32-bit, 64-bit & ARM
- **Compiled for multiple platforms:**
  - Android, Linux, iOS, OS X, Windows and WinRT



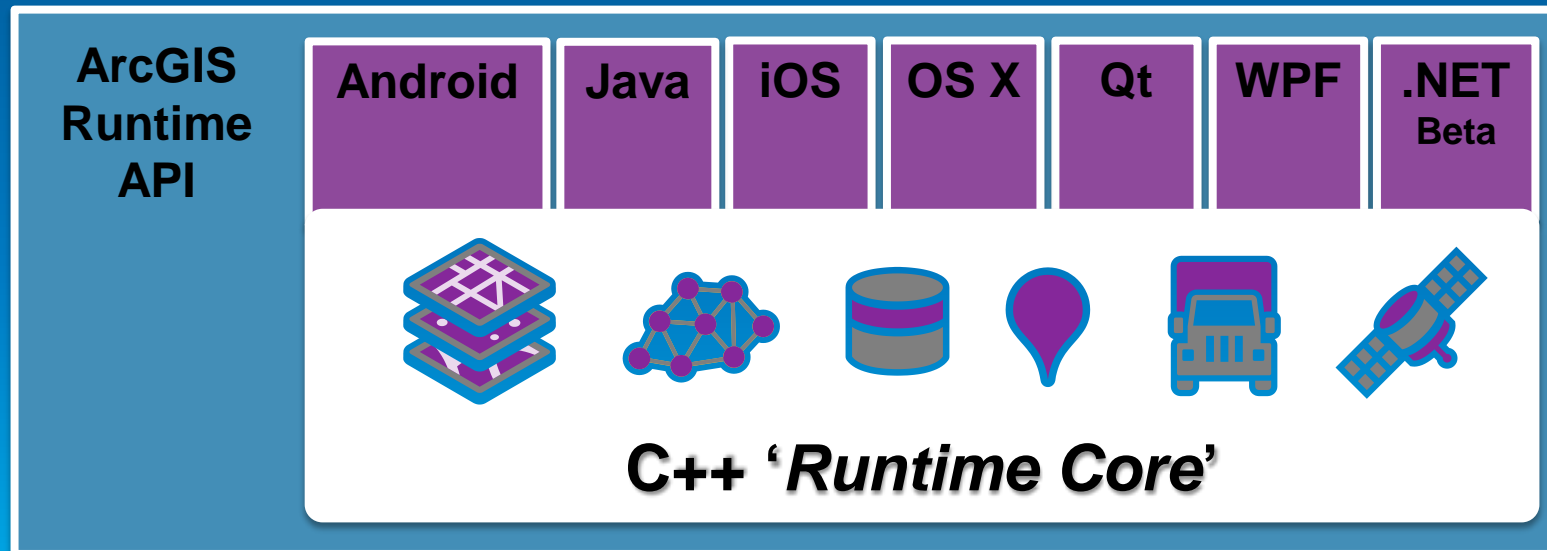
## What is the ArcGIS Runtime?

- Developers access functionality via native API built specifically for each platform:
  - Android, Java, Cocoa, Qt, .NET



# What is the ArcGIS Runtime?

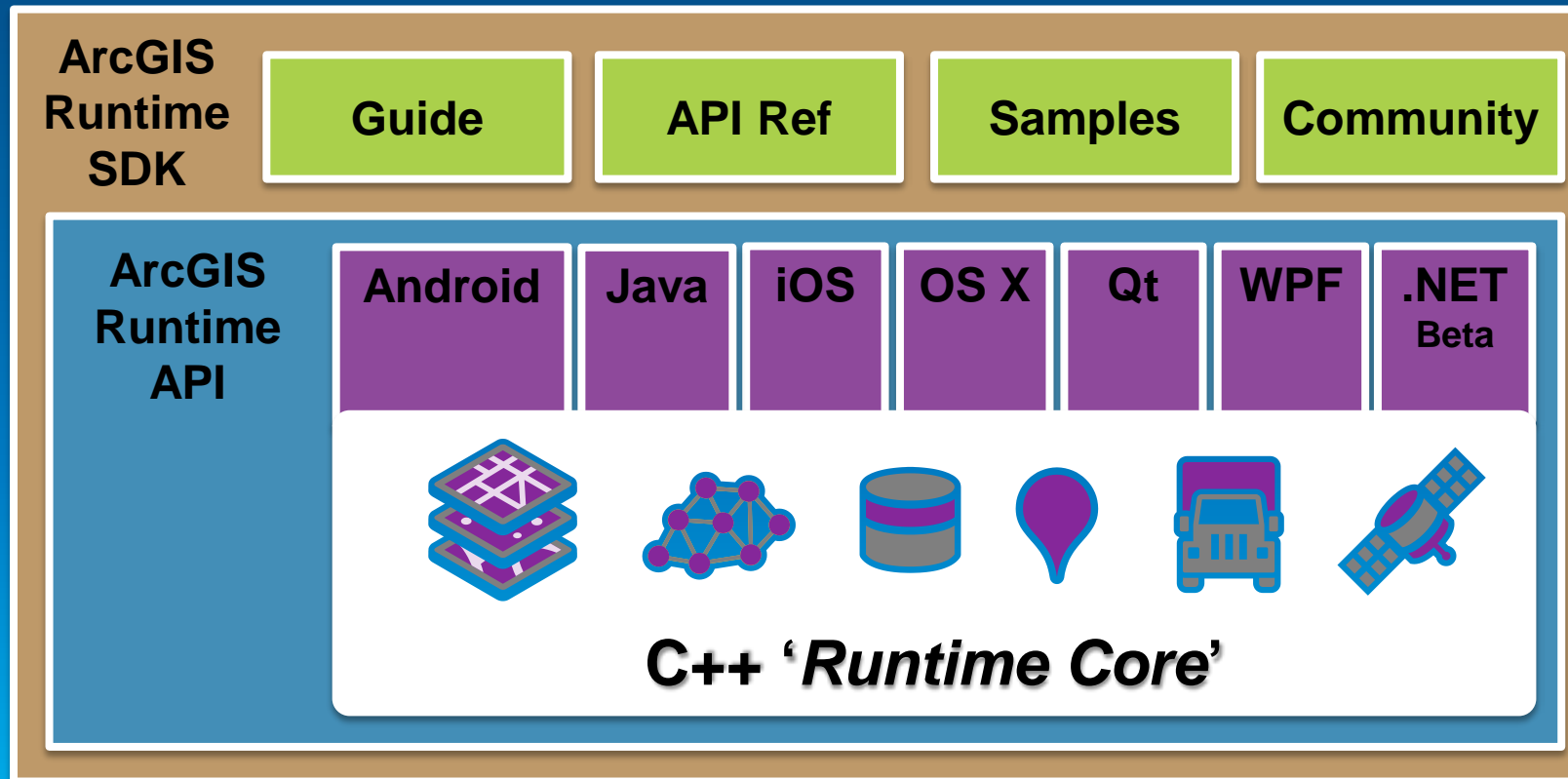
- **Developers focus on functionality and API**
  - Choose an API
  - Identify functionality
  - Treat the 'Runtime Core' like a black box





# What is the ArcGIS Runtime?

- API provided with SDK to make development productive
  - Conceptual doc, API reference, samples, and the developer community



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# What's new for ArcGIS Developers

- Free ArcGIS Developer subscriptions for Dev/Test
  - Signup at [developers.arcgis.com](https://developers.arcgis.com)

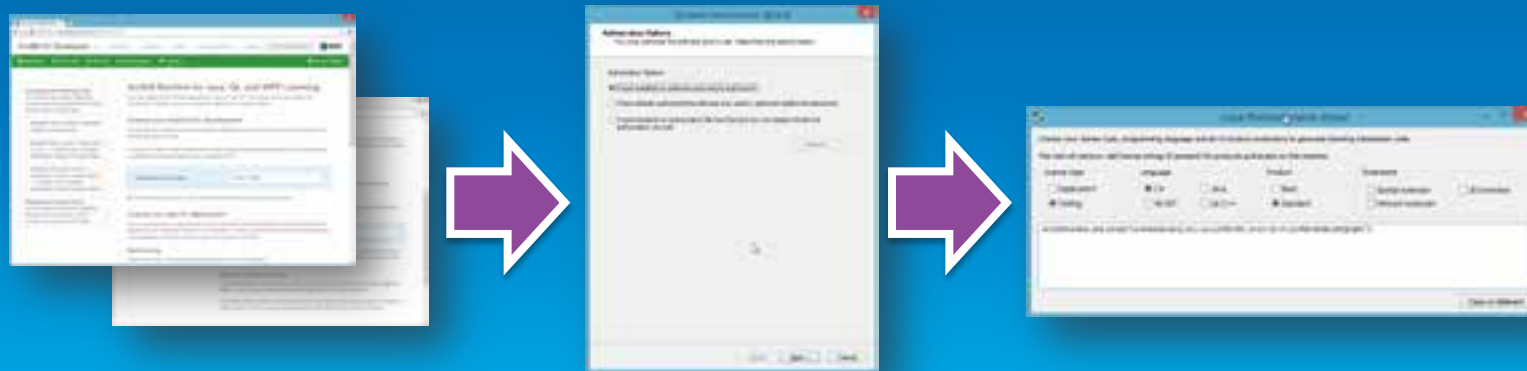
Plan	Credits	Users	Support
Free For Development	50	1	

- Download the ArcGIS Runtime SDKs free
  - Follow link from the Resource Center or ArcGIS Developers site
  - Login with ArcGIS Developer account



# What's new for ArcGIS Developers

- Get Dev / Test license codes from ArcGIS Developers site
  - <https://developers.arcgis.com/en/licensing/>
  - Use with Software Authorization Wizard during SDK install
- Get Basic deployment licenses
- Purchase Standard licenses from your esri distributor
- Run Software Auth. Wizard & enter number
- View all licenses in License Viewer



# Agenda

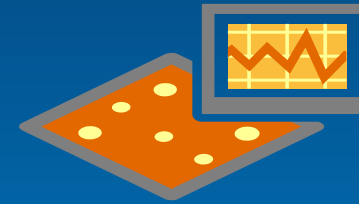
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# ArcGIS Runtime SDK 10.2 for WPF

## What's new – Part I

### Highlights:

- **Graphics rendering performance**
  - Good for many thousands of graphics
  
- **Support for async Tasks**
  - Greatly simplifies your async code



# ArcGIS Runtime SDK 10.2 for WPF

## What's new – Part II

- **Support for new ArcGIS for Server 10.2 features**
  - Rotation of labels, image services
- **Enhanced API for ArcGIS Online and web maps**
  - WebMapViewModel for MVVM
  - Add/update portal items
- **New security options**
  - Integrated Windows Authentication
  - OAuth2
- **Enhanced support for high DPI devices**
- **Hydrographic S57 layer and military symbology improvements**

# Agenda

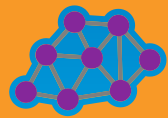
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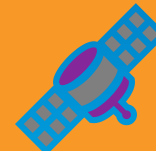
# ArcGIS Runtime SDK for .NET



# ArcGIS Runtime SDK for .NET



ArcGIS Runtime

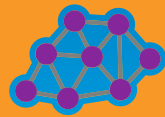


# ArcGIS Runtime SDK for .NET

Windows  
Desktop  
API

Windows  
Store app  
API

Windows  
Phone 8  
API



ArcGIS Runtime



# ArcGIS Runtime SDK for .NET



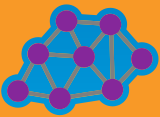
**Windows  
Desktop  
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**Windows  
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**Windows  
Phone 8  
API**



**ArcGIS Runtime**



# ArcGIS Runtime SDK for .NET



# ArcGIS Runtime SDK for .NET



The diagram consists of a light blue rectangular background. At the top center, the text 'ArcGIS Runtime SDK for .NET' is displayed in bold black font. Below this, there are two colored rectangular boxes. On the left, a purple box contains the word 'Desktop'. To the right and below the purple box is a wider orange box containing the text 'ArcGIS Runtime' in white font.

Desktop

ArcGIS Runtime

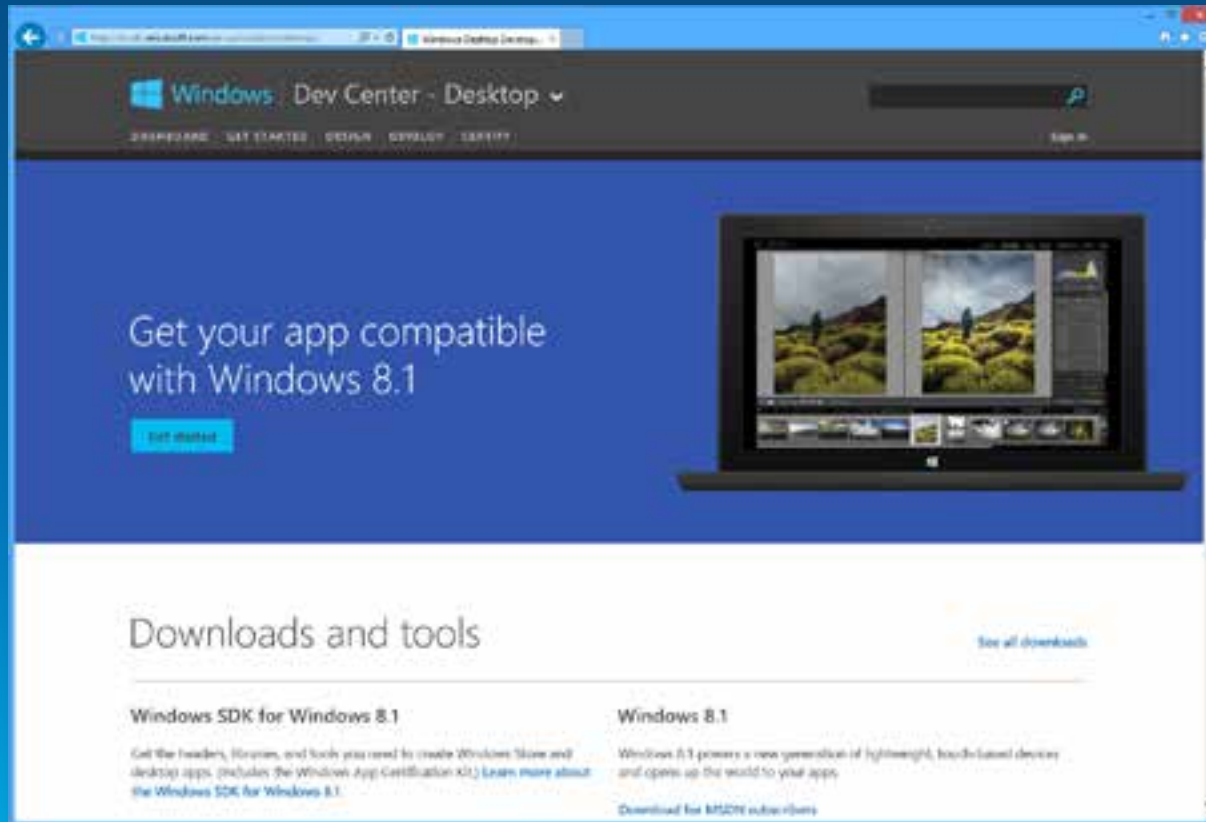
# ArcGIS Runtime SDK for .NET

## Windows Desktop

- **New API – Esri.ArcGIS.Runtime.dll**
  - .NET 4.5
  - Async Tasks
  - MVVM
- **Supported IDE:**
  - Visual Studio 2012 & Blend for 2012
  - Visual Studio 2013 & Blend for 2013
- **Supported OS:**
  - Windows 7, 8 & 8.1

# Getting started

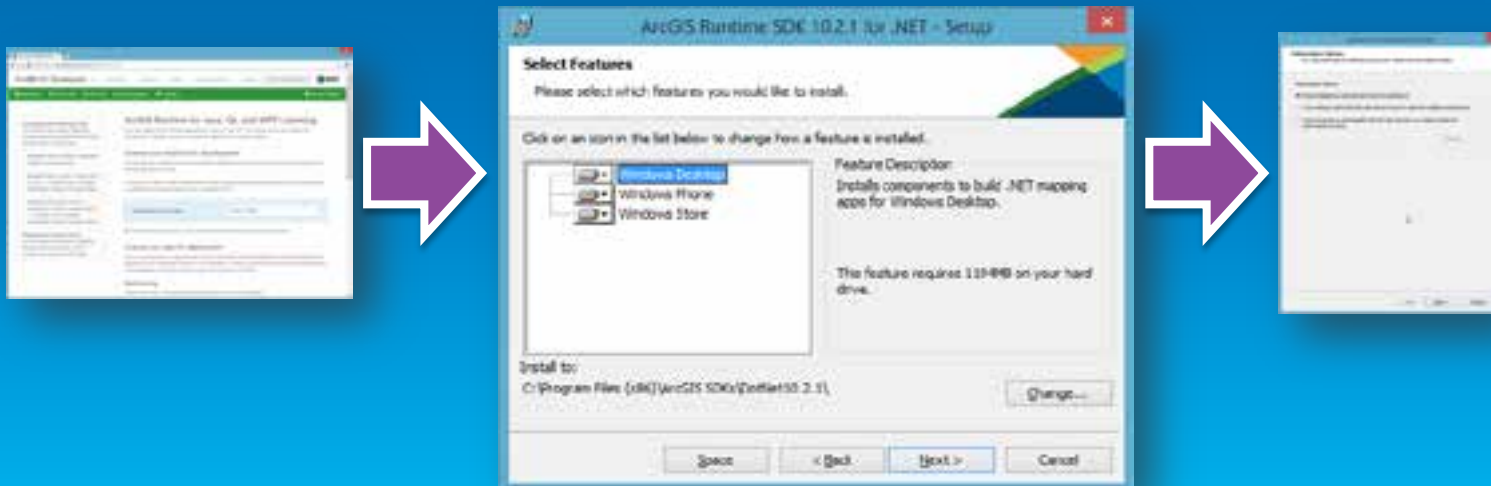
- Go to the Microsoft Dev Center – Desktop
- <http://msdn.microsoft.com/en-us/windows/desktop/>





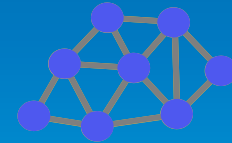
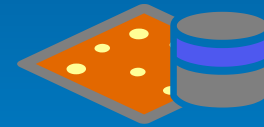
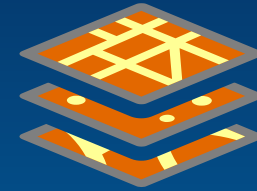
# Getting started (when final)

- Sign in to [developers.arcgis.com](https://developers.arcgis.com)
- Download ArcGIS Runtime SDK for .NET
- Install SDK
- License with developer auth number
- Read the doc online
- Get Toolkit and Samples from GitHub



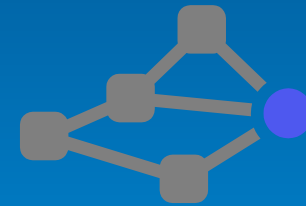
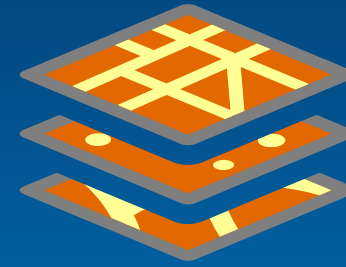
# Functionality

- Mapping
- Geometry operations
- Geocoding
- Routing
- Editing
- Geoprocessing
- Location display



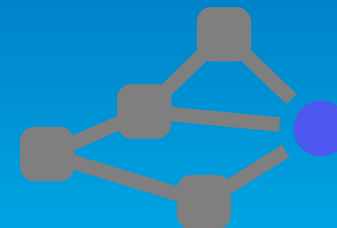
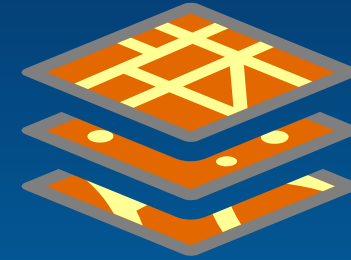
Demo

# Mapping and Geometry



# Mapping and Geometry

- **GIS-optimized map display**
  - Basemap, Operational, Graphics
  - Online and offline layers
  - **Feature** labelling
  - Location display
  - **Bindable layers collection for MVVM**
- **Geometry engine**
  - **Fast geometry operations without calling a service**



# Geocoding and Routing

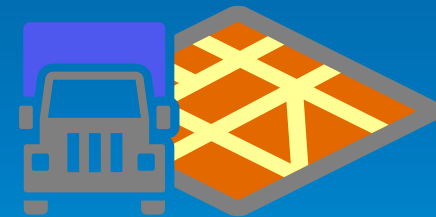
- **Geocoding**

- Uses ArcGIS Locators
- Online and offline
- Full address & single line search
- Online World geocoding service



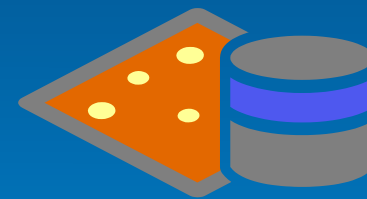
- **Routing**

- Uses ArcGIS Network Analyst
- Online and offline
- Supports multipoint, barriers, etc



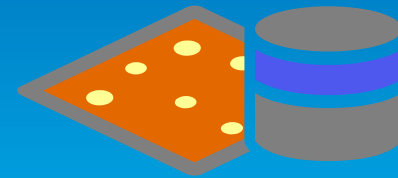
Demo

# Feature Layers



# Feature Layers and Editing

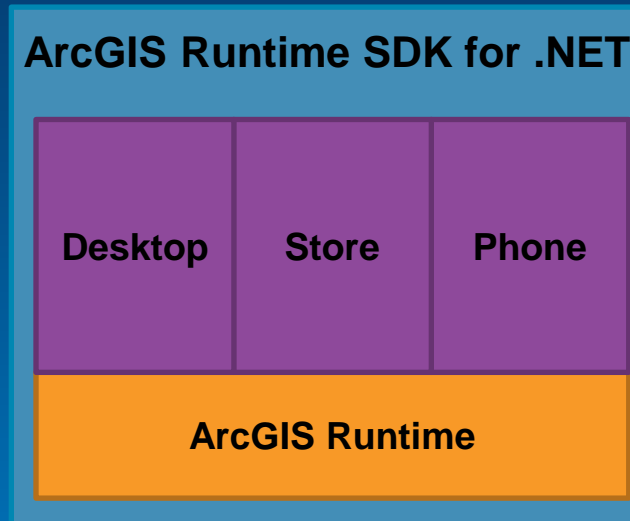
- Display, query and edit features
- Features have fixed schema
- Feature services and offline geodatabases
- API access to features and feature tables
- Query geodatabase tables for features
- Edit geometry, attributes and attachments
- Feature templates
- Editor tracking & access control



# What is available?



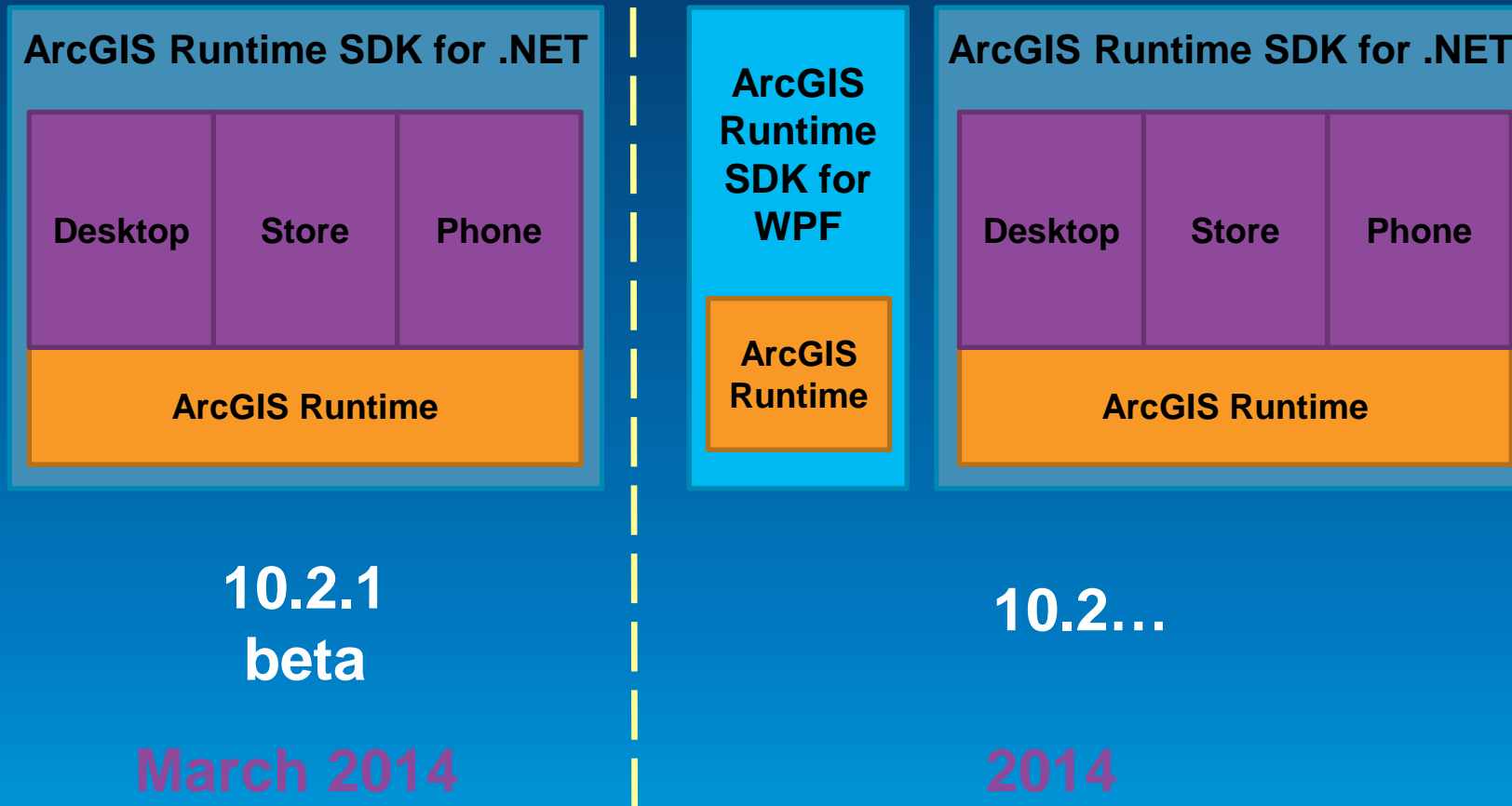
**Oct 2013**  
**10.2**



**March 2014**  
**10.2.1 beta**



# Roadmap



## Which should you choose?

- **Continue to use current WPF SDK for existing projects**
- **Work with .NET SDK if starting a new project for deployment mid-late 2014**
- **Or plan to migrate?**
  - **Use async Task support in 10.2 WPF SDK**
    - **Instead of events**
  - **Use accelerated display mode**
    - **Avoid custom XAML symbols**
  - **Use 'using' rather than fully qualifying class names**

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- **Building Windows Store apps**
- Building Windows Phone apps

# ArcGIS Runtime SDK for .NET



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The diagram consists of a light blue rectangular background. At the top center, the text 'ArcGIS Runtime SDK for .NET' is displayed in bold black font. Below this, centered, is a purple rectangular box containing the word 'Store' in bold black font. At the bottom, centered, is a wider orange rectangular box containing the text 'ArcGIS Runtime' in bold white font. The purple box is positioned directly above the orange box, indicating that the 'Store' component is part of or dependent on the 'ArcGIS Runtime'.

Store

ArcGIS Runtime

## Windows Store Apps

- App design different to traditional Windows dev
- Prescriptive UI design pattern
- Content first approach
- Single window full-screen apps
- Recommend navigation patterns
- Touch likely to be the primary user input
- Push notifications



vs.

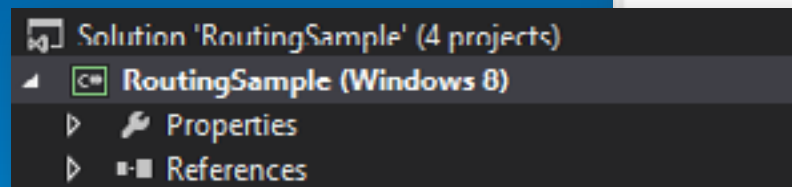


# Getting started – Building Windows Store apps

- Same Microsoft process for Store and Phone
- Develop:
  - Sign up for free Microsoft account
- Publish:
  - Individual account (\$ per year)
- Publish + enterprise capabilities:
  - Company account (\$ per year)

# Getting started – Building Windows Store apps

- Prerequisites:
  - Windows 8.1 and VS2013
  - VS2013 will upgrade existing 8.0 apps to target 8.1
  - Cannot downgrade

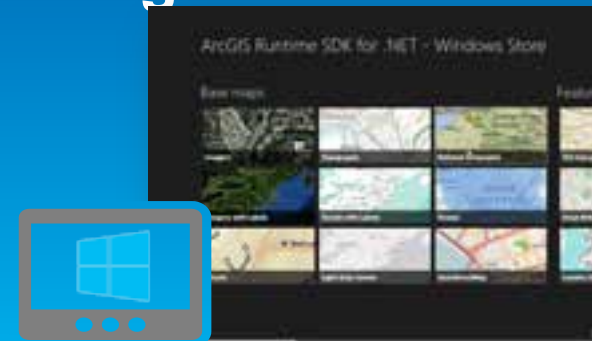


<http://msdn.microsoft.com/en-us/library/windows/apps/dn376326.aspx>



# Deployment

- Deployment different to traditional Windows apps
- Support for ARM processor
- Limited local file system access
- Need to request access permission
  - Location, Documents, Skydrive
- App certification
- Deploy app in the Windows Store
- Deploy outside the Store - 'sideloading'
- Windows 8.1 only



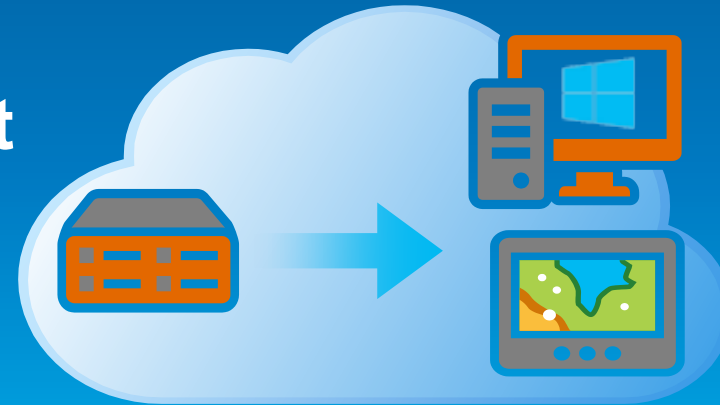
# App deployment

- **Two deployment routes**

- **Windows Store**

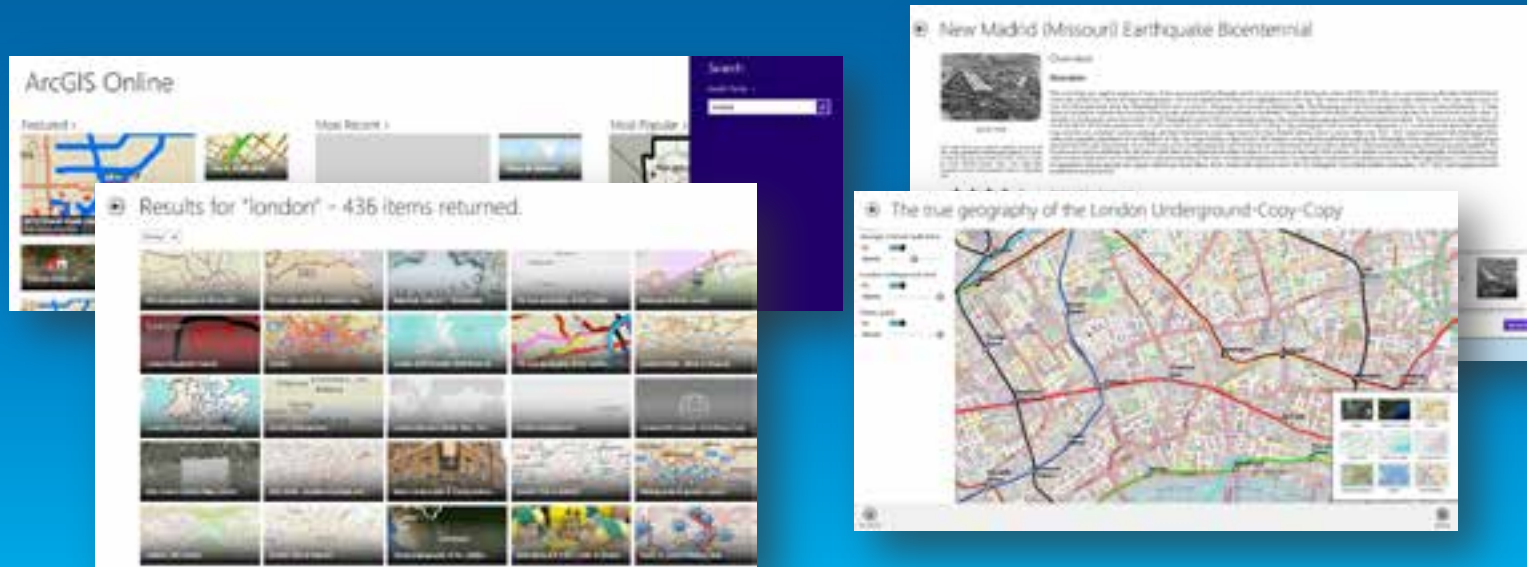


- **Enterprise deployment**



# ArcGIS Portal Viewer

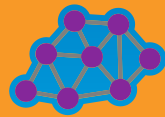
- ArcGIS Windows Store app for browsing ArcGIS Portal content
  - ArcGIS Online
  - Portal for ArcGIS
- Available as a sample on Github with 10.2.1 public beta



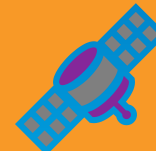
# ArcGIS Runtime SDK for .NET



**Windows  
Store app  
API**



**ArcGIS Runtime**



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# Microsoft Windows Phone Platform

- **Windows Phone 8.0**
  - Shares components with Windows 8
  - Many new platform capabilities
  - Enterprise deployment
- **Windows Phone 7.8**
  - Just new WP8 style
- **Windows Phone Store**
  - 175,000+ apps



# ArcGIS Runtime SDK for .NET



# ArcGIS Runtime SDK for .NET

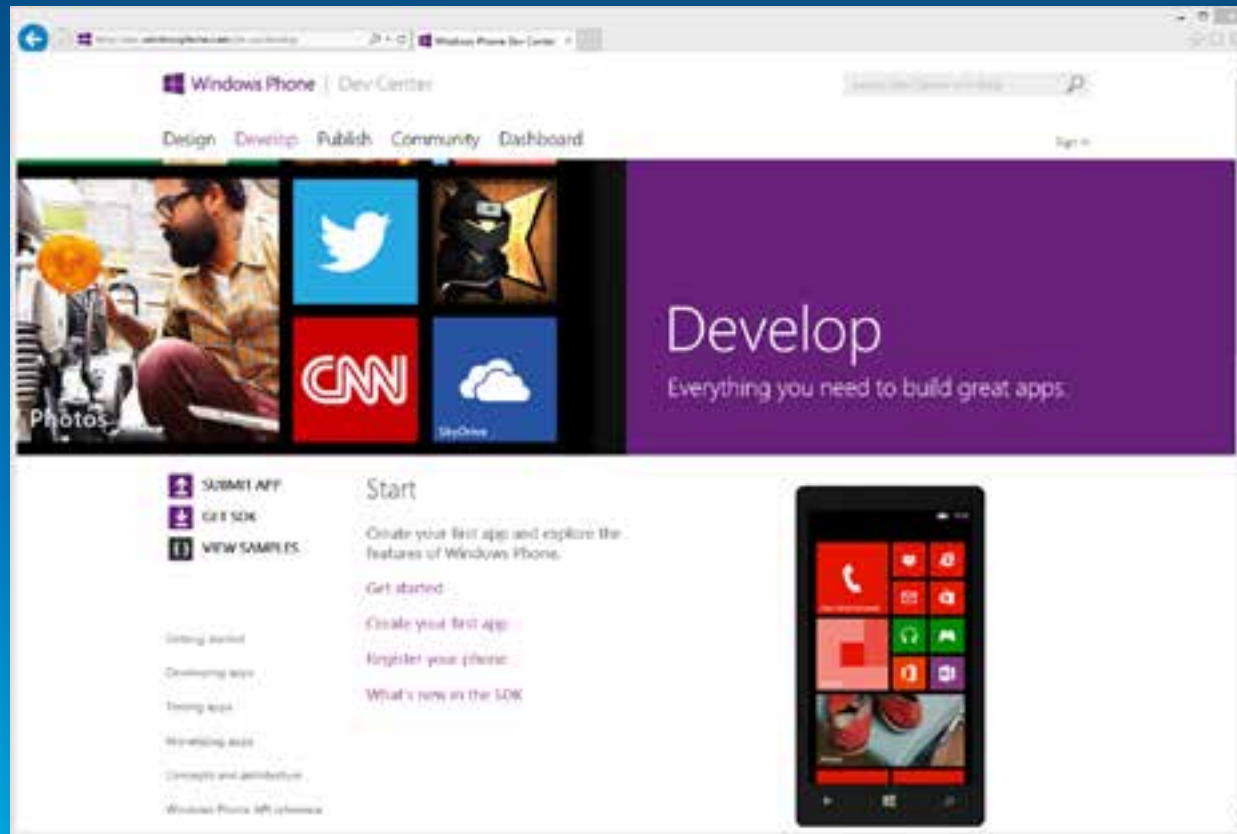
Phone

ArcGIS Runtime



# Getting started

- Go to Microsoft Windows Phone Dev Center
- <http://developer.windowsphone.com/en-us>

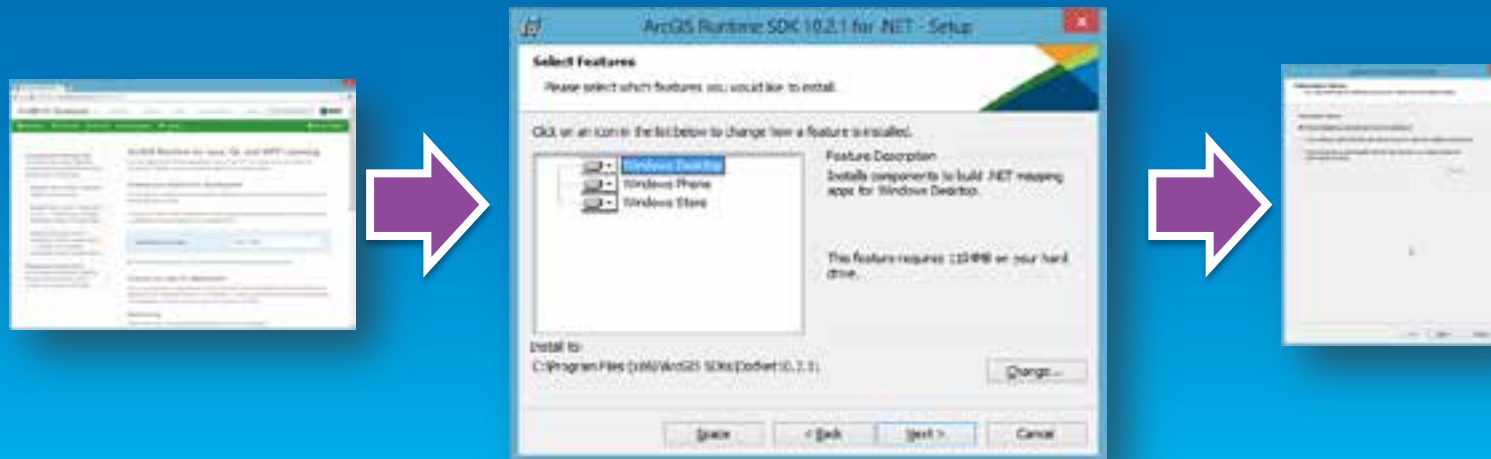


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- License with developer auth number
- Read the doc online
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# Development and Testing

- **Emulator**

- Included with SDK
- Can simulate GPS, etc
- Requires Hyper-V



- **Device**

- No substitute for real device
- Need to unlock
- Microsoft account (1 device)
- Developer account (3 devices)



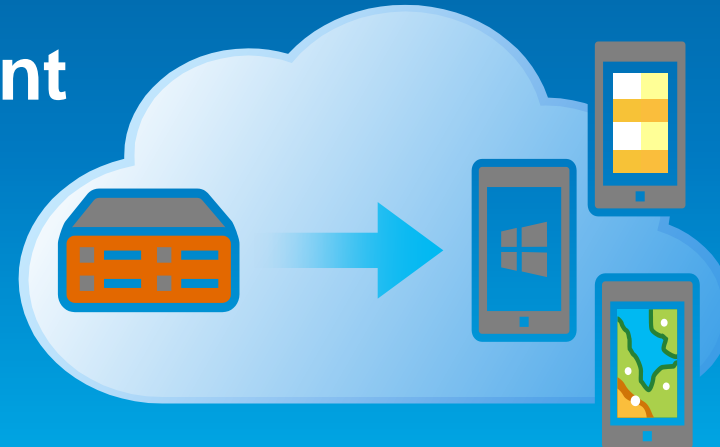
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- **Windows Phone Store**



- **Enterprise deployment**





# Questions?

Need help?

<http://forums.arcgis.com>

Enhancement requests?



Understanding our world.