Developing Apps with the ArcGIS Runtime SDK for Android

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I’m here to help you get started with the ArcGIS Runtime SDK for Android

So let’s get started…
So what is the ArcGIS Runtime SDK for Android?

Your Android application building blocks to access the ArcGIS platform.
Runtime platforms

- **.NET**
  - Windows Mobile
  - Windows Phone
  - Windows Store

- **iOS**
- **Android**

- **OS X**
- **QT**
- **JavaSE**
- **Desktop Client**

- **Desktop**
- **Embedded**
- **Mobile**
Android Studio Demo...

Starting simple
Creating a hello world mapping app with my data
So how do I get started with the ArcGIS Runtime for Android

Glad you asked…
Download the IDE and Android SDK together

- Android studio is now the official IDE for Android development
  - Built on IntelliJ IDEA Community Edition, the popular Java IDE by JetBrains.
  - Code templates and GitHub integration
  - Flexible Gradle-based build system
- Esri fully supports it
- You can still use Eclipse, however all the Esri documentation points to Android Studio

Download the ArcGIS Runtime SDK for Android

https://developers.arcgis.com/android/
So what resources are available from Esri to help me build apps?

I'll show you…
Online documentation at developers.arcgis.com

https://developers.arcgis.com/android/
Does Esri have resources on Github?

You bet we do...samples, samples and more samples.
https://github.com/Esri/arcgis-runtime-samples-android
More helpful resources on Github

Maps-app Template:
https://github.com/Esri/maps-app-android

Android Quick Start Sample:
https://github.com/esri/quickstart-map-android

Android GPS Test Tool:
Android Studio Demo...

Let’s take a look at those samples

All the code…right where you need it.
I want to know more about the functionality available in the SDK’s

Ok, let me tell you what’s possible…
SDK Features

- Integrates with Android Studio
- Native ArcGIS Runtime client
- Maps (online/offline)
- Editing
- Routing
- Data collection
- Geoprocessing
- And much more!
Adding layers to your map

- Web Maps
- Tiled Map Service
- Dynamic Maps Service
- Feature Layer
- Graphics Layer

- Image Layer
- Offline Tiles
- WMS
- KML
- Open Street Map
Performing Analysis

• Using Tasks
  
  • Query / Find / Identify
    - Search for features in the map

• Geoprocessing
  - Spatial analysis using GP tools and models

• Locator
  - Geocode and reverse geocode addresses
  - ArcGIS World Geocoder (POI, Global Find, etc.)
Performing Analysis

- Using Tasks
  - Geometry Service
    - Perform geometry operations on the server
  - Routing Task
    - Point-to-point and multipoint driving directions
    - Barriers, Time Windows, Best Sequence
  - Closest Facility Task
    - Find nearest facility
  - Service Area Task
    - Compute drive times and service areas
Task Pattern

1. Create & Connect.

2. Set up parameters. Send.

3. Get Results.
Performing Analysis

- Native

- Geometry Engine
  - High-performance engine for performing geometric operations on the device
  - Buffer
  - Union
  - Cut
  - Project
  - Geodesic
  - Spatial relationships
  - etc.
Visualizing Results

- **Graphics**
  - Geometry
  - Attributes
  - Symbol

- **Symbols**
  - Picture, Marker, Line, Fill
  - Composite
  - Text
Offline API
No connection needed…
Adding data to the ArcGIS cloud

- Spatial Data In
  - KML
  - GPX
  - SHP
  - CSV

- Publish Hosted Services using ArcGIS Online
- Define Client Feature Editing Model on item
- Create and Share Web Maps in ArcGIS Online

- Export Spatial Data Out
  - SHP
  - CSV

- Discover and update maps on Devices

Edits
Offline Map Capabilities
Disconnected Use of the ArcGIS Platform

- Viewing and Interacting with Maps
- Querying Data
- Editing Features
  - Synchronization
- Spatial Intelligence
  - Find places and locations
  - Get directions
- Pre-planned or On-demand Workflows
- Occasionally Connected Scenarios
- All Runtime SDKs*
*You can also use GP tools in ArcGIS Desktop for a manual sync process*
How Does Sync Work?

The Flow of Data

Feature service with sync enabled

Generate geodatabase enabled for sync

Adds, edits, deletes

Generate delta geodatabase

Upload delta

Apply response to geodatabase
Runtime Licensing
Making it happen…
Runtime Licensing

Development and Deployment Workflow

1. Download and Install
2. Develop and Test
3. Deploy and Distribute
# License levels and functionality

<table>
<thead>
<tr>
<th>License Level</th>
<th>Available functionality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Developer (development and testing only)</td>
<td>All functionality (watermarks and debug messages will be generated, nag screens with local server*)</td>
</tr>
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</table>
| Basic                                              | Connected - all functionality  
Offline - map viewing only                                                                      |
| Standard                                           | Connected and offline - all functionality, includes:  
• Local locators (geocoding)  
• Local routing  
• Local geodatabase editing  
• Local geodatabase sync operations  
• Local server*                                                    |

* For those SDKs that support it
How to license your app at the basic level

- [http://developers.arcgis.com](http://developers.arcgis.com)

- Under Application section, create a New Application (or select existing)

- Click on Runtime SDK Licensing

- Copy the Client ID and use it to set your clientID
How to license your app at the standard level

• You have 2 options:

  1. Use an organization account (ArcGIS Online or Portal for ArcGIS)
     - Requires users of your app to log in with their account

  1. Use a license string obtained from Customer Service or your international distributor
     - License burnt into the app
     - Extensions can also be added with this option

For more info speak to sales or product management
Now that I have provided you an overview of the ArcGIS Runtime for SDK Android…

…go try it for yourself.
...or let’s say you are not a Android developer.

What other options does Esri have for you?
Other options to create mapping applications for android

• Build a responsive web app to work great on Android devices
  - Web App Builder for ArcGIS
    - Use to configure a web app without writing code or write code to build custom widgets
    - https://developers.arcgis.com/web-appbuilder/
  - ArcGIS API for Javascript
    - Build a custom web app
    - https://developers.arcgis.com/javascript/

• Build a hybrid mobile app
  - App Studio for ArcGIS
    - Use web dev skills and then deploy to native Android code
    - Check out the beta: https://betacommunity.esri.com/
  - Esri and Xamarin
    - For .NET developers…write C# code in Visual Studio…deploy to native Android
Thanks…Let’s have some questions

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Understanding our world.