Offline Routing and Geocoding using ArcGIS Runtime SDK

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Agenda

- Why offline routing and geocoding?
- Advantages of ArcGIS runtime SDK
- Demo 1: Prepare data for offline use
- Demo 2: Perform offline routing/geocoding on an Android device
Why Offline Routing and Geocoding?

- Internet connection is not available or not reliable
- Users have their own street network and geocoding index
- Local solve provides a better performance
  - Eliminate the negative impact of Internet latency
Advantages of ArcGIS Runtime SDK

• **Geocoding/Reverse Geocoding:**
  - Address, Place of Interest

• **Routing:**
  - Multiple stops: fixed sequence, optimal sequence
  - Stop time windows
  - Curb approach/U-Turn policy
  - Street network restrictions
  - Historical traffic
  - Point/Polyline/Polygon barriers

• **Available in 10.2.3 SDKs:**
  - Android, Java SE, iOS, Mac OS X, .Net (beta), and Qt
Demo

- Prepare transportation network and locator for offline use
- Deploy data on device
- Consume data in mobile application with runtime SDK
Demo 1: Prepare data

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Demo 2: Disconnected routing/geocoding on an Android device

Joseph Dean
Runtime Geocoding API Cheat Sheet

Creation (Offline/Online)

```java
Locator locator;
locator = Locator.createLocalLocator("/absolute/path/locator.loc");
locator = Locator.createOnlineLocator();
```

Geocoding

```java
List<LocatorGeocodeResult> results =
    locator.find(new LocatorFindParameters("380 New York St Redlands CA"));
LocatorGeocodeResult bestResult = results.get(0);
Point location = bestResult.getLocation();
String address = bestResult.getAddress();
```

Reverse Geocoding

```java
LocatorReverseGeocodeResult result = locator.reverseGeocode(new Point(-117, 34), 2000);
Map<String, String> addressFields = result.getAddressFields();
```
Runtime Routing API Cheat Sheet

Class Global Instances

```java
RouteTask mRouteTask;
RouteParameters mRouteParameters;
```

Switching between Online and Offline

```java
boolean offline = true;
if (offline) {
    mRouteTask = RouteTask.createLocalRouteTask("~/sandiego.geodatabase", "Streets_ND");
} else {
    mRouteTask = RouteTask.createOnlineRouteTask("service.url", null);
}
```
Optimized Routing

```java
mRouteParameters.setFindBestSequence(true);
mRouteParameters.setPreserveFirstStop(true);
mRouteParameters.setPreserveLastStop(true);
```
Runtime Routing API Cheat Sheet (Continued)

Adding Stops

```java
Graphic stop1 = new Graphic(new Point(x1,y1), null);
Graphic stop2 = new Graphic(new Point(x2,y2), null);
NAFeaturesAsFeature stops = new NAFeaturesAsFeature();
stops.addFeatures(new Graphic[] { stop1, stop2 });
mRouteParameters.setStops(stops);
```

Adding Polygon Barriers

```java
Polygon polygon = new Polygon();
polygon.startPath(x1, y1);
polygon.lineTo(x2,y2); polygon.lineTo(x3,y3);
NAFeaturesAsFeature barriers = new NAFeaturesAsFeature();
barriers.addFeature(new Graphic(polygon, null));
mRouteParameters.setPolygonBarriers(barriers);
```
Runtime SDKs Document and Sample

- Document: https://developers.arcgis.com/documentation/
- Samples: https://developers.arcgis.com/android/sample-code/
- Demo source code: https://github.com/Esri/arcgis-runtime-demos-android
What’s Next

- **Navigation application:**
  - Stand alone application
  - Remote control API
  - No SDK

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<tr>
<th>Session Name</th>
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<tr>
<td>ArcGIS Apps: The Road Ahead</td>
<td>Thursday 3:15pm – 4:30pm</td>
<td>Ballroom 06 D</td>
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### ArcGIS Runtime SDK sessions Thursday

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<tr>
<th>Session Name</th>
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<tr>
<td>Create your own Android App Tools Using ArcGIS Runtime SDKs</td>
<td>9:30am – 10:00am</td>
<td>Developer Island (demo theatre)</td>
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<tr>
<td>Developing Mobile Apps with ArcGIS Runtime SDK for .NET</td>
<td>10:15am – 11:30am</td>
<td>Room 05 A</td>
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<td>Dive Deep into the Performance of the ArcGIS Runtime SDKs Core Display Architecture</td>
<td>10:30am – 11:00am</td>
<td>Developer Island (demo theatre)</td>
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<tr>
<td>10 Things you Didn’t Know You Can Do with ArcGIS Runtime SDK for iOS</td>
<td>11:30am – 12:00pm</td>
<td>Developer Island (demo theatre)</td>
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<tr>
<td>Offline Routing Using Network Analysis in Runtime</td>
<td>11:30am – 12:00pm</td>
<td>Developer Island (demo theatre)</td>
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<td>ArcGIS Runtime SDKs: The Road Ahead</td>
<td>1:30pm – 2:45pm</td>
<td>Room 07 A/B</td>
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Thank you...

- Please fill out the session survey:

  **First Offering ID: 1745 (Wednesday)**
  **Second Offering ID: 1754 (Thursday)**

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